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Windfall

Volume 3. No. 2 August 1983 £1

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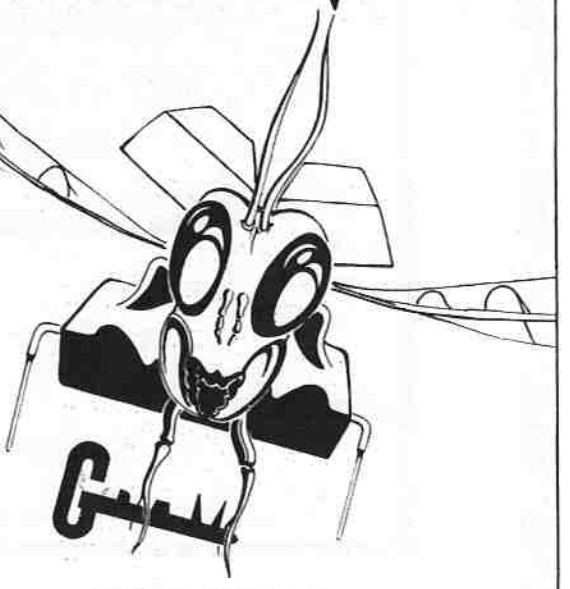

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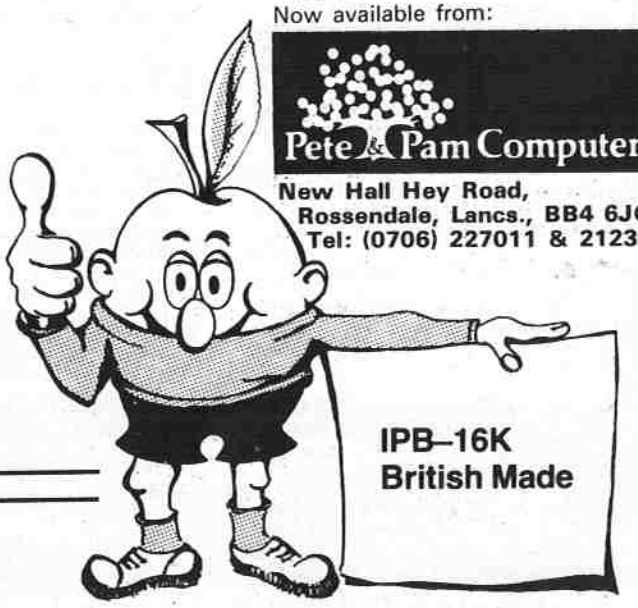

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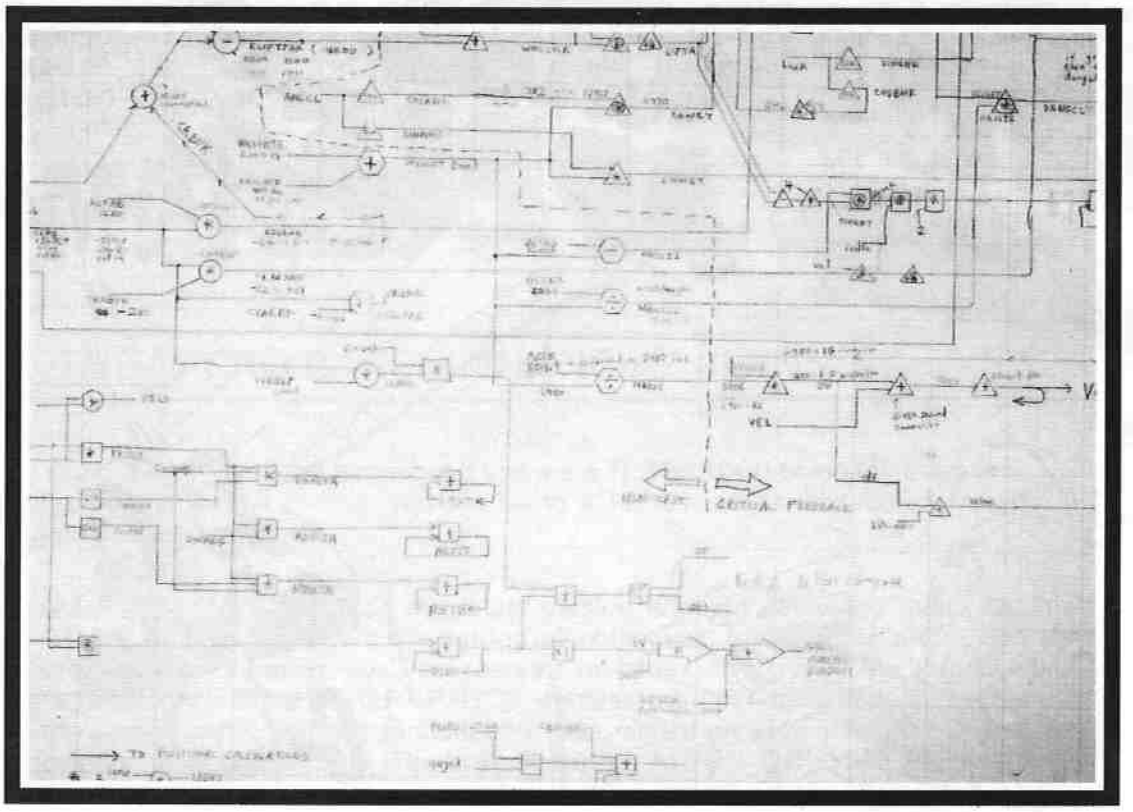

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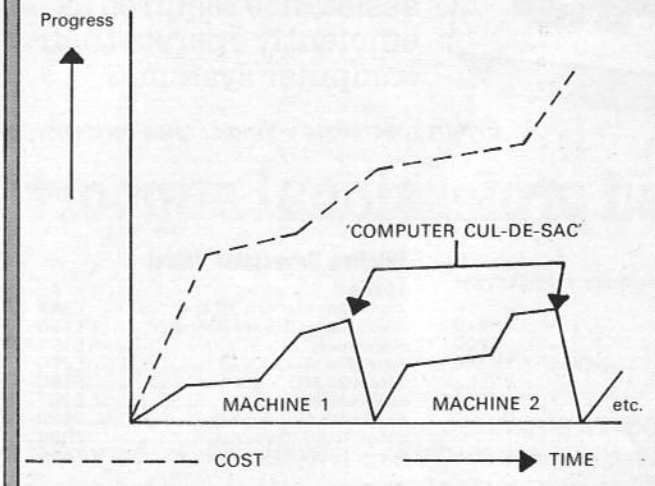

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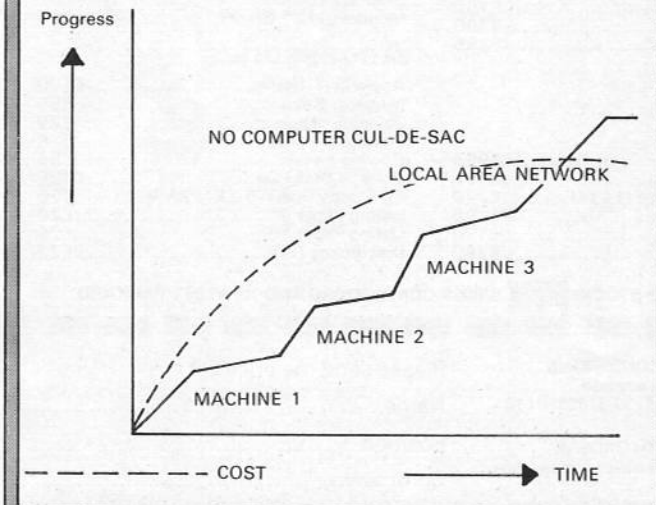

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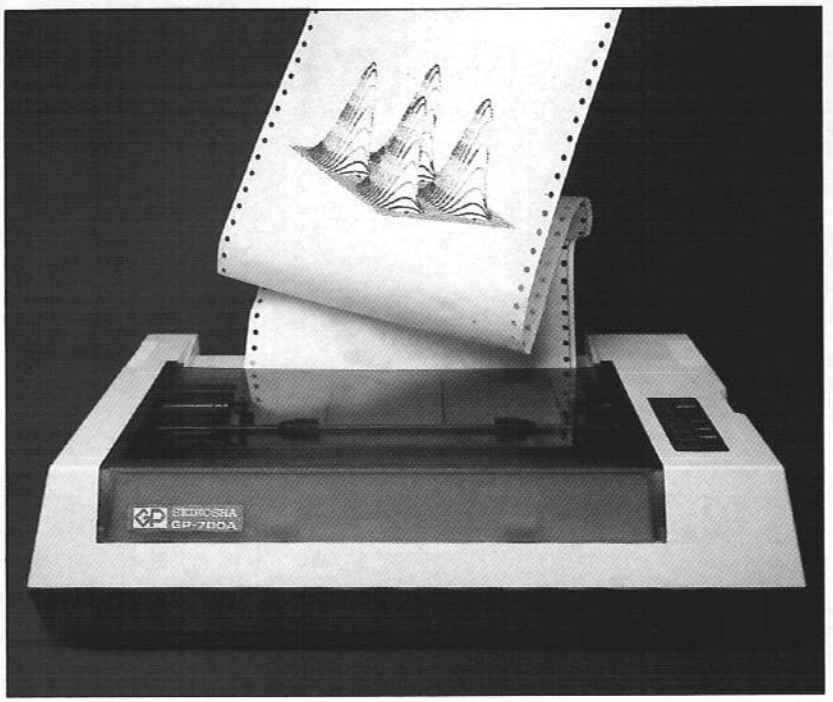

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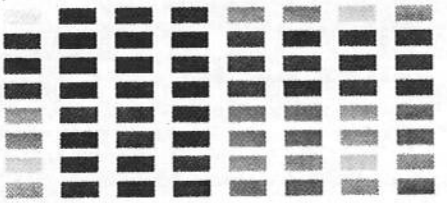

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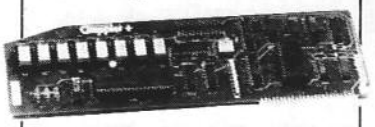

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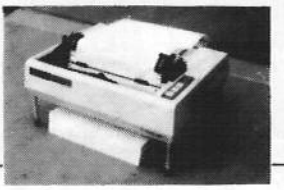

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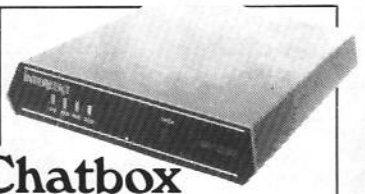

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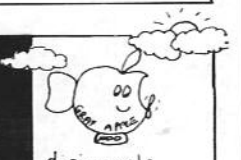

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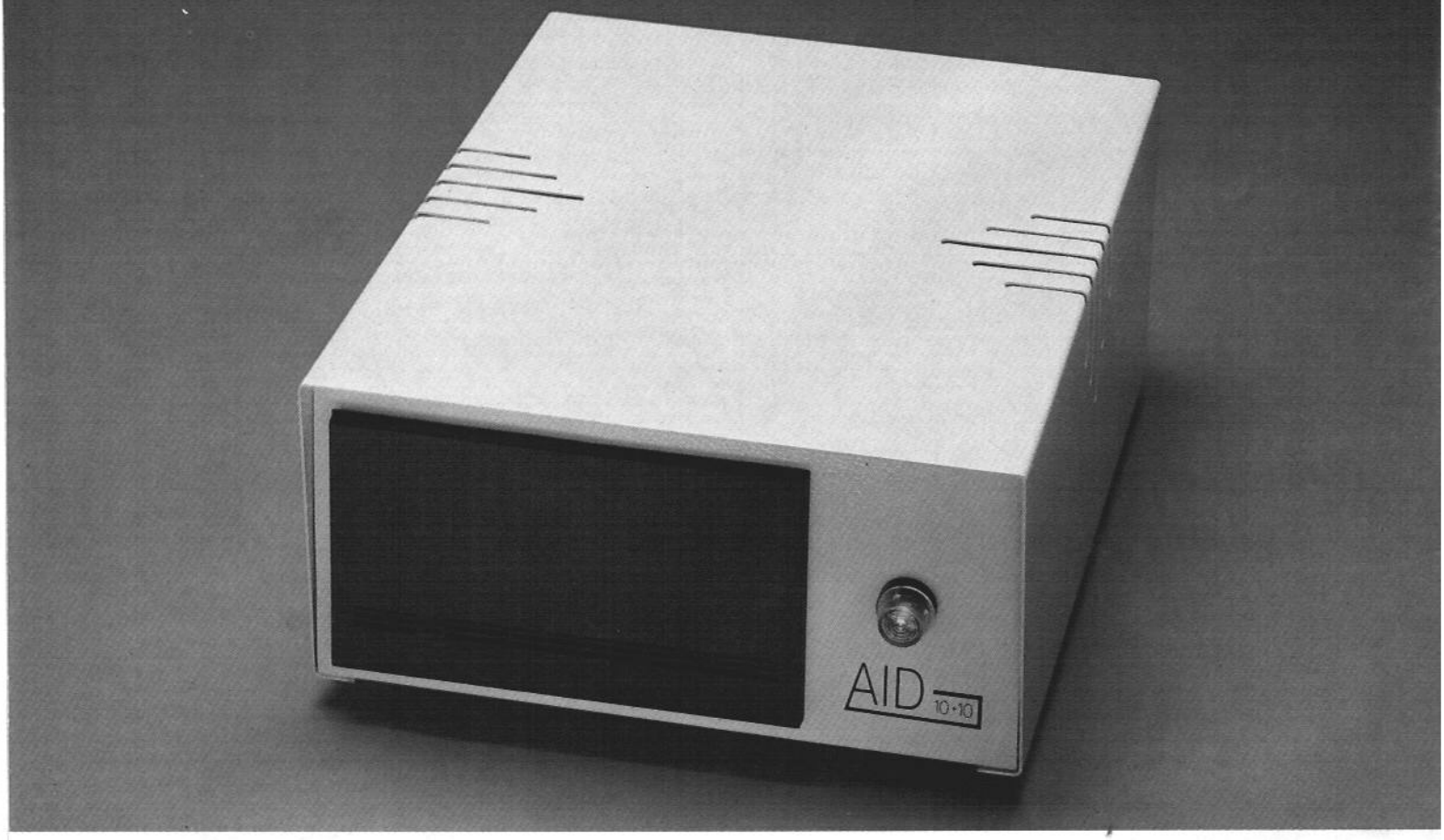

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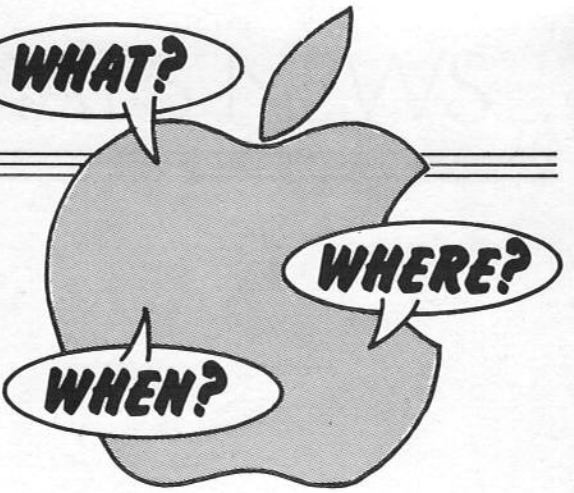
WHAT'S NEWS...

By David Creasey



Workshop will speed Lisa software development

A REMARKABLE software development tool launched by Apple will make the work of independent programmers easier and faster, and should ensure a steady flow of third party applications software for Lisa.

The first part of the Lisa Toolkit, the Workshop, will be available this month at the same time as Lisa goes on general release in the UK.

"People can start writing their application part today with a view to writing an integrated program. That will be enough work for them until the full Toolkit is available early next year, which will allow them to put the package straight onto Lisa", said Bruce Blumberg, system software and database product manager for the Lisa division in Cupertino.

He said the Toolkit was a revolutionary tool for writing revolutionary applications.

"We have taken the 200 man years of experience gained in developing Lisa and created a toolkit which handles most of the things a software writer needs to put his package on Lisa.

"All he has to do is write the application-specific code and then 'pull-in' the relevant software modules to complete a full Lisa application."

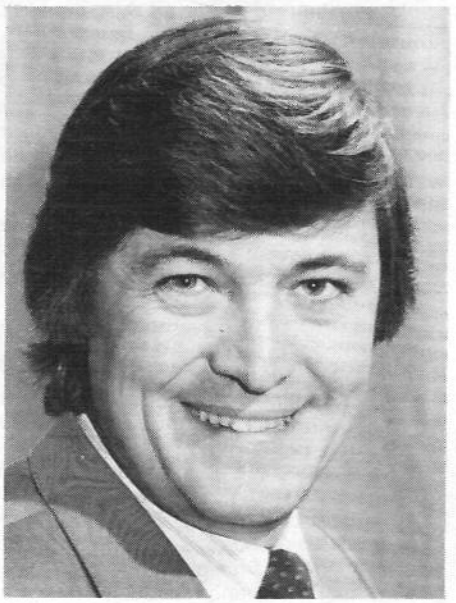
Bruce Daniels, software manager at Apple in Cupertino, explained: "Our solution with the Toolkit is to provide a working generic application.

"The user then specifies the areas that are different between their proposed application and the generic one, and writes the appropriate code. He can of course override anything in the generic application, but if it fits the bill, he leaves it in."

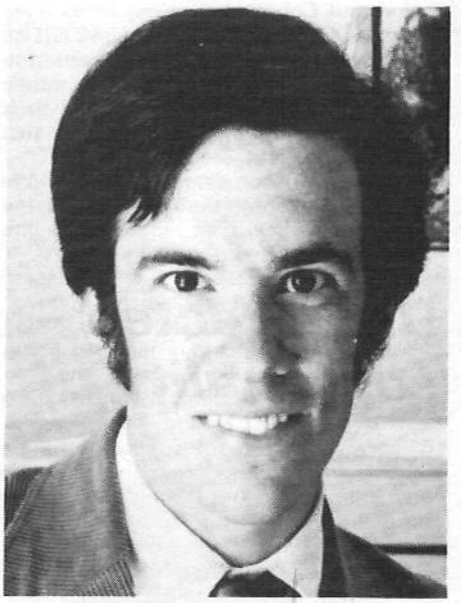
The Toolkit itself provides building blocks such as paragraph editing, structured graphics, access to networking, datacommunications and telecommunications, a tutor package and international data entry and formatting to handle packages from different machines.

The Toolkit modules include the Lisa Operating System (which is multi-tasking with a priority scheduling mechanism), Lisa Pascal (very similar to Apple III Pascal), Workshop, Quickdraw, a keyboard-orientated interface, a mouse orientated text editor and a hardware interface.

It supports Pascal, Cobol, Basic Plus, 68000 Assembler, a linker, and a variety of development utilities including a machine language de-bugger, and Apple is working to put Fortran and "C" languages into the Toolkit by next year.



Brian Reynolds... high praise for British software applications firms



Bruce Blumberg... "200 man years of experience went into developing Lisa"

Aiming for a million

APPLE expects to be selling one million Lisa-type computers a year within three years time.

That confident prediction was made by Bruce Blumberg and Bruce Daniels, both from Apple in Cupertino, at a press briefing held at Heathrow Airport.

It is an astounding figure – particularly when relating it to a Lisa family of micros – and even if you were to knock a nought off the end it would still mean an annual turnover of 100,000 Apple-quality machines.

At just under £8,000 Lisa itself will never be a million seller. However it will remain the flagship of a whole family of micros that Apple has so far only hinted at.

All Daniels would say was: "That figure indicates that within the Lisa range will be a very low priced machine.

"We will have two families of micros – the Lisa family and the II and III range," he added.

★ ★ ★

SOME of the best software applications development companies in the world are British, claims Brian Reynolds, of Apple UK, and he says Apple is using them to support Lisa.

The company recently held a special presentation of the Lisa Workshop and Toolkit for 50 UK software houses. "Most of them have gone away to write software for Lisa, and some even placed orders for Lisa on the spot", said Reynolds.

The main applications developed will

→

be for the office, covering financial planning and modelling, database communications (ICL protocols, viewdata and teletext), and general business software including accounting, packages, inventory, payroll, systems software, computer aided design and Cobol.

● Apple UK has appointed 40 "Lisa Information Centres" throughout the country and in the past few weeks they have been running Lisa seminars in their areas and handling potential sales enquiries.

When Lisa becomes generally available in the UK this month their title will change to Lisa dealer.

Unprotected — copy utility

IT seems logical to suppose that a software writer who also manufactures a copy utility (Wildcard) would manage to come up with an unbreakable copy protection system for his own programs.

But when we asked Mike Hardwick, co-author of the Format-80 word processing package whether anyone would be able to copy the program he said: "It's not protected – you can use Copy-A on the system master disc".

His reasons were quite simple. Business users needed to make backup copies of their software as they couldn't afford the risk of a disc going bad on them at a crucial moment and being left without software or recourse to the manufacturer for support.

Hardwick said he wasn't worried about his software being ripped off. "If people want to do that there isn't any way we can stop them", he said.

"And for the price of a package most people won't want to poach the software and lose the backup facilities available to registered users".

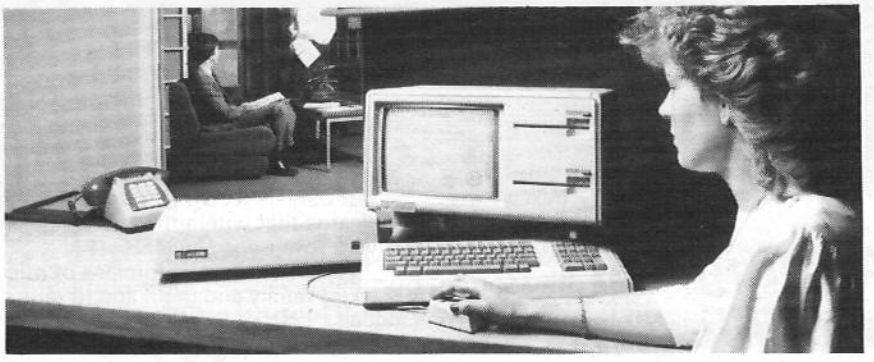
Format-80 runs on both the Apple II and the IIe with an 80 column board.

A year ago the Apple II version sold for over £300, the price was reduced to £199 a few months ago and the latest version retails for £129.

"We dropped the price to compete with Applewriter", said Hardwick.

"The package itself is better", he claimed. "Our problem is getting people to look at it in the first place".

Another marketing problem lay with persuading people used to a particular word processor to try something different. "They are reluctant to change an old habit even when they know something better is available," he said.



Lisa software up and running

TWO British software houses already have packages running on Lisa.

Busifile, a management information retrieval system, was written by Eurobeta Information Systems – authors of the Ormbeta range of software – and is marketed by Business Systems International.

It was developed initially on an Apple III, written in UCSD Pascal, and it was implemented on Lisa in three different stages, using Apple's new applications aid, Toolkit.

"This package will act as a nucleus of a new generation of window-based, integrated software," said Ken Helps of BSI.

Vlasak Computer Systems' Lisa Stock package is a development of the company's Orbit integrated business accounting system, sales of which have topped the £1 million mark since its release on the Apple III.

Logo users' get-together

THE author of the Logo system, Professor Seymour Papert of the Massachusetts Institute of Technology, visits Britain next month to speak at the first annual conference of the British Logo User Group.

The conference will incorporate workshops and seminars, with topics ranging from the philosophy underlying Logo to specific practical applications, especially in the classroom. It is being held at the University of Technology at Loughborough.

Apple aid children

MICROS are being used increasingly to help disabled children gain greater independence in daily living, in education and recreation.

The Apple's role in this field will be demonstrated in workshop sessions at a special course on technology and disabled children at Castle Priory College in Oxfordshire from October 30 to November 4.

The Spastics Society, which is organising the event in association with Roger Jefcoate, consultant assessor and lecturer in electronic aids for the severely disabled, says it is the only course of its kind in the world.

It adds that although there will be a chance to look at other micros used in this field, most of the course speakers are familiar with Apples and will be using these.

It has also appealed to course participants to bring their own software to share with others.

The multi-disciplinary course will cover a range of technical aids as well as application techniques developed for children with physical, mental or multiple disability.

Flying the flag

APPLE UK is flying the flag in style with the help of former British Airways pilot John Kitchen and his gyro plane, the Apple Gyro.

Kitchens's task is to fly the Apple Gyro at UK and European airshows and to distribute literature describing what Apples are and can do.

Since being taken on by Apple last spring he's travelled 5,000 miles spreading the Apple message. He has visited 14 shows and at each has been inundated with questions about Apple and the gyro.

His display comprises a routine six minute flight and he says so far this summer he has been able to put the Apple logo in front of more than 350,000 people.

"I also have fun on the motorways", says Kitchen, who transports his brightly coloured machine by trailer.

"It is a strange looking device and people often draw level with my car to have a good stare. Some of them wave and cheer, others look away and try to hide their curiosity".

Kitchen uses an Apple IIe in his manufacturing/retailing business and is delighted to be able to promote the machine as well.

Cash boost for Robocom

THE maker of the Bit Stick graphics system, Robocom, has received a large cash injection as part of a major British/American marketing and manufacturing arrangement which has led to the formation of a new American company.

Electronic equipment manufacturer Eurotherm International purchased a 25 per cent shareholding in Robocom for £150,000 plus a £100,000 loan facility.

The financial interest is just one aspect of the agreement signed by the two companies. It also covers collaboration on technical and marketing matters – particularly in the area of new product development – and the setting up of a joint US venture company to exploit the North American market for micro-based drawing systems.

The new company, called Chessell-Robocom, will be based at Newtown, Pennsylvania, under the aegis of an EI subsidiary, the Chessell Corporation.

Apple Seeds, yet

TWO ladies from Maryland walked into our offices recently and claimed they'd flown to the UK specially to visit us.

Subsequent chat revealed that Shirley Weaver and her daughter Jenni were in fact in the UK on holiday – but had made a special trip to our head office to renew their *Windfall* subscriptions.

They belong to Washington Apple Pie – with more than 3,000 members it's the second largest Apple user group in the United States.

Group meetings at the United States Navy Hospital Medical School in Washington DC often attract between 500 and 1,000 enthusiastic Apple users.

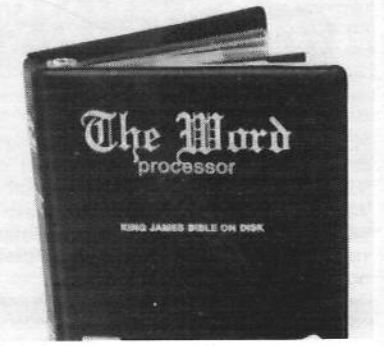
Shirley says the meetings start with a one and a half hour session where members can buy discs containing public domain programs for $5 each – or else receive a free disc coupon in exchange for an original program.

The main meeting each month features a question and answer session with a panel of experts who have specialist knowledge of a particular package relating to a specific subject.

Occasionally there are general workshops on a variety of topics and other events such as the garage sale – a bring and buy event – held last month.

After the main meeting the evening breaks up into special interest groups covering business, education, law, communications, Pascal, games, CP/M and a range of other subjects.

There is even a special group for children. Apple Seeds, naturally.



FOR people who regard computers as something akin to a religion there's a competitor in the field now in the form of a new software package.

And to add confusion to an already littered marketplace, the package is called, simply, The Word processor.

The Word processor is a disc based version of the King James Bible and it is published by Bible Research Systems of Texas.

It is described as an excellent Bible study aid, as a user can search the scriptures for any word or phrase. Any portion of the Bible can be printed or displayed, and a library of research materials can be created.

IBM's release of the Personal Computer was described by Apple and other companies as legitimising the micro marketplace.

Perhaps this package will now bring respectability to the software scene?

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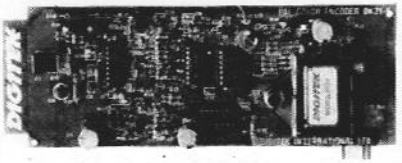

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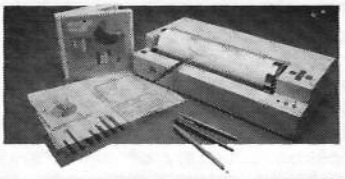

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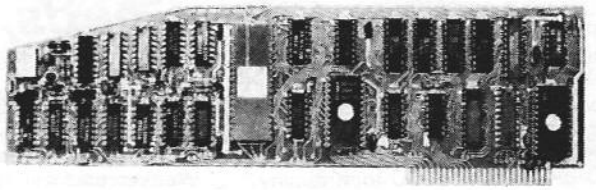

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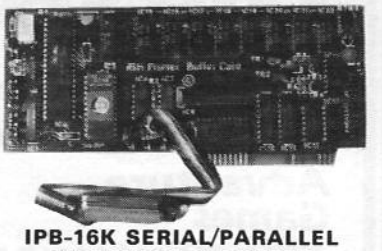

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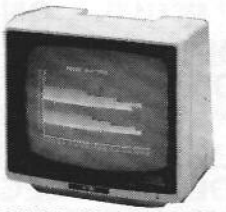

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Get HELP while on the run..

LOOKING through a few back issues of *Windfall* recently, I came across some correspondence about getting "help" pages on view while a program was running, writes **J.P. Lewis.**

The point being discussed was the danger of loading binary file images of a previously saved screen from disc.

Since this is a tediously slow process anyway, irrespective of any problems it may cause, I thought that I would share my method of generating help information (Figure I) with other *Windfall* readers.

The idea is simple. Since the 16k language card is not normally available to Applesoft programs, use it to hold copies of information screens. These screens can be copied onto the $400-$7FF memory map very rapidly and the original screen can be stored elsewhere as a temporary measure until the information has been read.

My method is to save up to 15 pages on the language card, and to use the last 1k as a buffer for the video memory map. To choose which of the 15 pages I want to look at, I make use of Applesoft's USR function, which passes its parameter to the floating point accumulator (FAC).

This can be picked up by the machine code and converted into the corresponding memory locations. There is a little problem in this however, as there are two sections of memory in the language card addressed as $D000–$DFFF. This requires a little extra handling, but once a suitable system has been devised for numbering the help pages, the coding is fairly straightforward.

I think the program is self-explanatory, but I apologise to any purists for all the self-modifying code. Points to note are:

☐ HELP pages 0 to 3 are stored in bank 2 of $D000–$DFFF, pages 4 to 10 are stored in $E000–$FFFF, and pages 11 to 14 are in bank 1 of $D000–$DFFF.

☐ A HELP page stays on view until the

→

```
;Generating HELP pages from 16k RAM

;J.P.Lewis     1/5/83

;Pie 2 editor with ASM/65 assembler

        .OPT NOL,NOS
        .OFS=$60

VIDEO   =$400
KBD     =$C000
KBDSTB  =$C010
RAMON1  =$C08B  ;Select Ram read on language card, bank1
RAMON2  =$C083  ;ditto, bank 2
ROMON   =$C082  ;Deselect Ram read, (enable ROM)
IQERR   =$E199  ;Illegal quantity error message.
CONINT  =$E6FB  ;Convert contents of FAC into an integer
                ;in the X register.

        *=$300

        JSR CONINT
        CPX £$F         ;Check that a valid page
        BCC SAFE        ;number has been chosen.
        JMP IQERR

SAFE    CPX £$B         ;Pages 0 to 10 use bank 2,
        BCC BANK2       ;pages 11 to 14 use bank 1
        BIT RAMON1      ;Switch to Page 1 of RAM
        BIT RAMON1
        TXA             ;To use the arithmetic below
        SEC             ;to calculate the memory locations
        SBC £$B         ;used, subtract 11 from the page
        JMP SWAP        ;number, and work from there.

BANK2   BIT RAMON2      ;Switch to page 2 of RAM
        BIT RAMON2
        TXA             ;Convert the chosen page number into
SWAP    ASL A           ;a memory reference:  Multiply by 4
        ASL A           ;then add $D0.  Pages zero and 11
        CLC             ;are at $D000-$D3FF, and so on.
        ADC £$D0
        STA DUMP2+2     ;In-line modification of the
        LDA £$FC        ;code used for copying the pages
        STA DUMP1+2     ;from the video to the language
        LDY £$4         ;card.
        STY VID1+2
        STY VID2+2

        LDX £0
VID1    LDA VIDEO,X     ;Save the video screen at
DUMP1   STA $FC00,X     ;$FC00 to $FFFF.
DUMP2   LDA $FFFF,X     ;Dummy address.  Load the chosen page
VID2    STA VIDEO,X     ;from the language card to the screen.
        INX
        BNE VID1
        INC VID1+2      ;Move on to the next 256 of data.
        INC VID2+2
        INC DUMP1+2
        INC DUMP2+2
        DEY             ;Check to see if 4 blocks of 256 bytes
        BNE VID1        ;have been shifted.
WAIT    LDA KBD         ;Wait for the <return> key
        BPL WAIT        ;to be pressed before
        CMP £$8D        ;loading the original page
        BNE WAIT        ;back onto the screen.
        BIT KBDSTB

        LDY £$FC        ;Reset the transfer code back to
        STY BACK1+2     ;the correct starting values.
        LDY £4
        STY BACK2+2
        LDX £0
BACK1   LDA $FC00,X     ;Shift 256 bytes.
BACK2   STA VIDEO,X
        INX
        BNE BACK1
        INC BACK1+2     ;Move to next bloack of 256 bytes
        INC BACK2+2
        DEY
        BNE BACK1       ;Check for all 4 blocks moved.

        BIT ROMON       ;Switch ROM back on, and write-protect
        RTS             ;the language card before returning
.END
```

Figure I: The HELP program

return key is pressed. This should be pointed out either at the start of your Applesoft program or on each help page.
☐ After the original screen is copied back onto the video, the ramcard is write-protected.
☐ Calls for pages above 14 result in an ILLEGAL QUANTITY error message

```
*300.384

0300- 20 FB E6 E0 0F 90 03 4C
0308- 99 E1 E0 0B 90 0D 2C 8B
0310- C0 2C 8B C0 8A 38 E9 0B
0318- 4C 22 03 2C 83 C0 2C 83
0320- C0 8A 0A 0A 18 69 D0 8D
0328- 41 03 A9 FC 8D 3E 03 A0
0330- 04 8C 3B 03 8C 44 03 A2
0338- 00 BD 00 08 9D 00 00 BD
0340- 00 E0 9D 00 08 E8 D0 F1
0348- EE 3B 03 EE 44 03 EE 3E
0350- 03 EE 41 03 88 D0 E2 AD
0358- 00 C0 10 FB C9 8D D0 F7
0360- 2C 10 C0 A0 FC 8C 71 03
0368- A0 04 8C 74 03 A2 00 BD
0370- 00 00 9D 00 08 E8 D0 F7
0378- EE 71 03 EE 74 03 88 D0
0380- EE 2C 82 C0 60
```

Figure II: Hex dump of the HELP code

appearing. If you have fewer than 15 pages this can be modified in the machine code.

To use this routine, you should BLOAD the code (given as a hex dump in Figure II) at $300, then change the JMP command at $A to point to $300.

You also need to put in a lot of preparation for all the HELP pages you want to have available. To keep this as simple as possible I have a short Applesoft program that inputs 24 strings, then clears the screen, outputs them, and ends with a BSAVE of the screen memory map.

When I have all the screens I want, I load them in order from $1000 onwards, and save them in one single block. Figure III is a fragment of a program (using only the first 11 Help pages) that shows how I implement the system.

● *Mr Lewis' approach to using the language card to print screen HELP pages is similar to one that appeared in the June 1983 issue of Windfall, but it allows more pages and passes the page number in a more convenient way.*

```
10 RMSWTCH = 12 * 4096 + 8 * 16 +
     1: REM  This gives $C081.
20  POKE RMSWTCH,1: POKE RMSWTCH,
     1: REM  Write enable the lan
     guage card.
30  PRINT  CHR$ (4)"BLOAD HELPDAT
     A,A$D000"
40  PRINT  CHR$ (4)"BLOAD Help.co
     de"
50  POKE 11,0: POKE 12,3: REM   S
     et up the USR pointers
60  REM

Rest of program


300  REM  Sample HELP call, which
      assumes that the user has b
     een warned to respond with a
      '?' if he needs help
310 HELP = 7: REM   Page seven of
      help is appropriate here
320  INPUT "Next action ? ";A$
330  IF A$ = "?" THEN HELP =  USR
     (HELP): GOTO 310
340  REM  Rest of program.
```

Figure III: How to make use of HELP in Applesoft programs

DOS stands in danger from altered reset vectors

WITH reference to Dave Miller's article on disabling the autostart reset *(Windfall, March 1983)* users should be aware that the use of altered reset vectors can cause trouble with DOS, writes **M.F. Sheppard.**

As explained in the Apple Reference Manual, when RESET is pressed the I/O vectors (CSW and KSW) are set to point to the standard routines (for screen and keyboard respectively), which disconnects DOS.

Normally when DOS is in operation the reset vectors point to the DOS Warmstart entry at $9DBF, so that DOS can reconnect itself. If however they point anywhere else (including any Basic entry), then DOS may not be able to get back in.

Try the following short program:

```
10 POKE 1010,102:POKE 1011,213:CALL -1169
20 INPUT A$:REM ALLOWS 'RESET' TO BE PRESSED
40 PRINT CHR$(4);"CATALOG"
```

When RUN and any normal input made in response to the "?", the CATALOG is displayed normally. If however you press RESET at the pause, although the program runs again you will just see the word CATALOG displayed after the input, because the CTRL/D has had no effect.

Now the discussion on Pages 101-105 of the DOS Manual shows that DOS can be re-connected by the routine at (hex) 3EA, (decimal) 1002. Adding the following line to the program above does it, and the complete program will re-run correctly after RESET.

```
30 CALL 1002: PRINT
```

This does not need any "PR in" statement because the I/O vectors are not already pointing to DOS. However, the first character after this CALL is not printed, so a blank PRINT is needed to ensure that the CTRL/D is effective.

I discovered this effect in a TASC compiled program, but it is also applicable to normal Applesoft. With the amendment above, it is perfectly possible to make a compiled program restart on RESET, or jump to any specific line, by pointing the Reset vectors to the appropriate location. This may be found by a trial compilation using dummy values for the reset vectors.

Incidentally, K. Williamson has asked me to point out that the answer to the loss of TASC COMMON strings described by C.A.G. Webster and himself *(Windfall, September 1982)* is given in the TASC manual. Use REM!CLEARCHAIN before the command to BRUN the next program. I have verified that this moves all COMMON strings to the top of memory and resets the string pointers correctly.

Appletip

A text file can be used to save the variables and arrays etc of a crashed Basic program by typing the following from the keyboard (assuming that D$ was defined as usual in the program).

```
POKE 51,0 : POKE 118,254
PRINT D$"OPEN FILENAME"
PRINT D$"WRITE FILENAME"
PRINT (variables, arrays)
PRINT D$"CLOSE FILENAME)
```

The Accelerator Board is a plug-in card that more than triples the speed of programs run on the Apple II. It has its own 6502 processor and 64k on-board memory.

More than 1,000 have been sold (at £299) since the product was launched in the UK four months ago, and the sole European distributor, Pete and Pam Computers, says it expects to sell 10,000 of the boards before the end of the year.

Our reviewer, who has tested it with educational, business and games software, assemblers, the Pascal Operating System and 128k RAM disc emulators, says that its use will save time and money for the businessman and will delight people who use Apple IIs for interest and enjoyment.

A IIe version of the board costing £350 was released last month.

Plug in, switch on . . . and then hang on to your hat, for this is the ACCELERATOR

By J.P. LEWIS

WHEN the Accelerator II – "How much would you pay to make your Apple II Plus run three and a half times faster?" – arrived on my desk it was sealed in a plastic bag inside a rigid cardboard box generously lined with sculptured foam rubber. With it came the manual, a single $5\frac{1}{4}$in disc and the registration card.

The manual was delightfully thin, so I did manage to pause long enough to note that it was a three section affair. Part I was for people who don't like to read manuals, Part II for those who revel in all the technical details, and Part III was basically a list of those programs that had already been tested with the card.

At first glance the board looks big, and this isn't too surprising when you start counting chips. There are 43 ordinary chips, plus a 6502 microprocessor, a DIP switch block, and a surprise package labelled Saturn Systems. Despite this vast number of components (compare the count with the average 80 column card) the board is actually about the same size as most other peripheral cards for the Apple.

This feat is accomplished by an extremely well-ordered design. The front of the board is a tidy, rectangular array of chips and the back, although displaying a large number of tracks, conveys a feeling of simplicity of design.

I was slightly amused to notice that most of the chips on the board had had their identification marks removed ("would you buy a used car . . ."), but I can't blame the producers for trying to protect their design.

Apart from this, there were only two flaws in the model I received. First it was running on a MOS 6502, not the CMOS 6502C which I had been expecting.

Secondly two tracks on the back had been wired in over the printed circuit. Neither flaw affects the performance of the board – my friends who understand all about hardware were quite impressed that there were ONLY two bodges – but I would have liked the opportunity to play with the extra instructions built into the CMOS chip.

When something new arrives for evaluation, I try to follow a routine of examining presentation, documentation and finally usage. In the case of the Accelerator I was forced to stick to this routine as I didn't have an Apple II Plus handy. So back to the manual.

Part I (the quick guide for impatient users) leads you step by step through setting the DIP switches on the board to allow for "slow" (time-dependant) hardware such as disc drives, slotting the board into the Apple and finally finding out whether you can boot up your programs as normal, or whether you need to use the special preboot disc supplied.

Part II is a slightly more comprehensive description of how the board works, what you can do to avoid pre-boot discs, and what limitations there are on using the board.

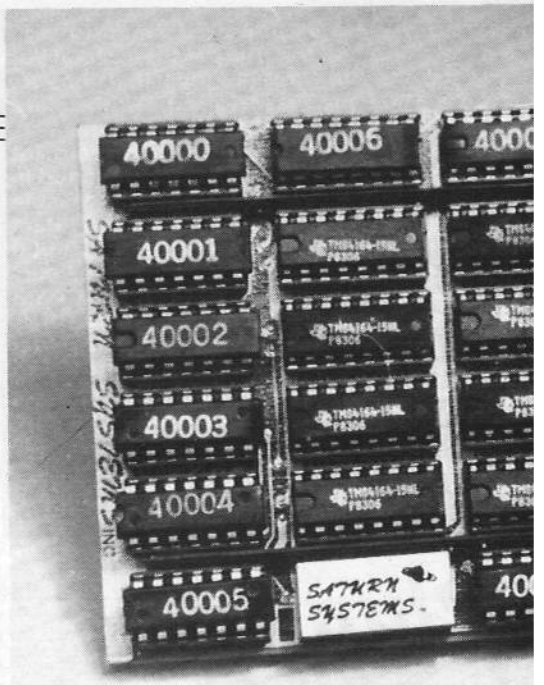
In fact, there isn't very much that needs to be said about the board. It was designed to take over from the on-board processor and memory, and without any unnecessary extra frills and complications, that is exactly what it does.

Basically, the card is a 6502 running at 3.6 mHz instead of 1 mHz, with its own 64k of memory, and the ability to override the motherboard 6502.

Extra hardware on the board ensures that the Accelerator passes information and control to the motherboard only for handling the video display and, possibly, the other time-dependant chores such as operating disc drives and modem links.

This section also mentions some limita-

→



tions on what you can use with the Accelerator card. If you have the Corvus Omninet link in your Apple, or use one of several Z80 cards, you need to disable the Accelerator. This loss is caused by problems of DMA (Direct Memory Access).

Since the Omninet card, and several Z80 cards, use DMA to move information in to and out of the Apple's memory, there are, I suspect, two parts to the problem. First that the information wouldn't go to the correct 64k, and secondly DMA requires the co-processor to affect the DMA line on the main processor at the right moment and, with the Accelerator running, the wrong processor would be affected at the wrong moment.

CPM and network users be warned. Check your hardware manuals for the initials DMA before buying an Accelerator.

A possible nuisance factor, but not a catastrophe, arises when you plug communications devices into your Apple (the manual mentions as an example the Micromodem II).

The DIP switches on the Accelerator allow you to specify which slots are to contain time dependant devices, but these are restricted to slots 4, 5, 6 and 7. Since communications devices usually seem to go in slot 2 (a virtual necessity if you run Pascal) this seems to leave you with the choice of disabling the card or rearranging your Apple internally from time to time.

The acid test of any piece of new hard or software is ease of use. How hard is it to handle, how much does the end user have to know to make best use of it? For the Accelerator II, the answers are: Very easy and virtually nothing.

All you have to do to get the Accelerator working is pick a slot, flip a DIP switch, then plug the board in. If you have to allow for any more complicated operations it could only be because you have some excess equipment in your Apple, in which case you are hardly likely to be worried by the slight degree of extra preparation needed.

Once the hardware is set up you need only remember that sometimes you have to boot up with the Accelerator's preboot disc before starting work. To find out when, simply refer to the list of common programs in the manual.

For just a little extra effort, you can even bypass this problem, because included on the Accelerator's preboot disc are some programs which you can run to modify "normal", that is standard DOS, Pascal, or CP/M discs so that they can find the Accelerator, and treat it suitably as they boot.

If you do not want to doctor your normal booting discs, there are five possible things to do when booting. The first is to boot your discs as normal. This option is for such programs as Visicalc, Pie Writer, Compilers, and all sorts of other programs which are written largely in machine code (but see note on Phantom 0 booting below).

The other four possibilities involve picking the appropriate option from a menu that appears when you boot up with the Accelerator II preboot.

Fast Applesoft: The option to choose for running programs which are written in Applesoft, or use a lot of monitor routines. This option copies the $D000-$FFFF ROMs, that is the Applesoft and operating system ROMs from the motherboard into the corresponding memory locations on the Accelerator.

Phantom 0: The option for Pascal or Integer Basic programs (or, if you don't have a 16k RAM card, the option for programs that are able to expand into a 16k card such as Visicalc, the Lisa assembler etc).

This option allows the Accelerator to intercept any information which would normally pass to a slot 0 Ramcard, and redirect it to the equivalent memory locations on board. It is actually possible to use the Accelerator in slot 0, in which case it will emulate a normal language card, but this leads to the hassle of pulling the Apple apart from time to time if you want to do anything other than machine code or Pascal work.

Disable: This ensures that the card is switched off permanently until you power down the Apple and switch on again. A must for Corvus networks, and some Z80 cards.

Slow down: Allows the Accelerator to run, but only at the normal 1 mHz of the Apple II. Useful only if you can't cope with high-speed Space Invaders.

I tried to cover as many fronts as possible while using the card, and managed to spend a little time on each of the following:

- Educational material (written by myself) to cover Applesoft.
- Visicalc (all three versions, with and without 143k expansion).
- Omnis (just a little bit).
- Pie/ASM65 assembler, DOS Toolkit Assembler.
- Pascal operating system.
- Just a few games.

Where possible, I also experimented with the effects of using the Accelerator in conjunction with 128k RAMcards which were emulating disc drives.

I was unable to try any CP/M material as I didn't have a suitable Z80 card available.

There isn't very much I can say about the tests I ran. The thing works . . . very well! There were certain things that impressed me greatly but all I can do is describe what I did, and give some timings.

I doubt if I can put across the impact and psychological effect of seeing everything happen 3.6 times as fast as normal. It is an interesting fact that, despite the unbiased evidence of a stopwatch, being able to SEE an obvious improvement of speed quite often led to a feeling that things were happening as much as 10 times as fast as usual.

I had my machine set up as follows:

Slot 0: Language Card
Slot 1: Epson printer interface
Slot 2: Empty
Slot 3: Viewmax 80 column card
Slot 4: RAM128
Slot 5: Empty
Slot 6: Disc drives
Slot 7: RAM128
On side: Highly necessary fan.

To my surprise, the power supply did not fold up when I put the Accelerator into slot 2, despite all the other hardware drawing on it.

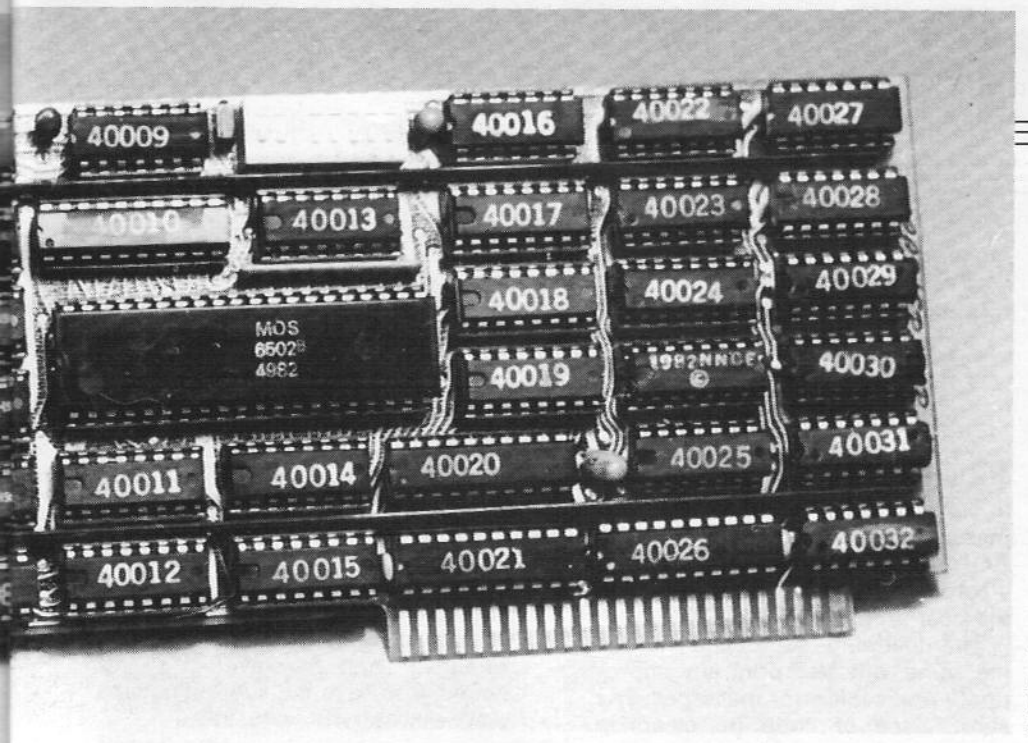
Experiment 1.

Educational Applesoft programs. Use preboot, pick FAST APPLESOFT option. Most of this software relies on the visual impact of hi-res graphics, using screen switching, or hi-res text programs with character sets redefined to appear as graphics.

The effect of the Accelerator was delightful. Instead of triangles rotating and squares shearing in jerky steps, all the actions became smooth and almost continuous.

Experiment 2.

Visicalc (versions 193, 202, 208). Boot



The Accelerator . . packed tight with chips, technology and get up and go

as normal for 193 and 208, Phantom 0 preboot for the 202 (despite the manual instructions). I have a couple of simple models that I used to get a speed test.

Model 1: GOTO A1, enter a 1; GOTO B1, enter 1+A1; replicate B1 relative across the first row. GOTO A2, enter 1+A1; replicate A2 relative across row 2; finally replicate row 2 relative down to row 40. (This doesn't get completed, normal Visicalc runs out of memory at about AV40.) Having entered the model, change A1, and see how long the recalculation takes.

Model 2: As for model 1, but use 1.01*A1 instead of 1+A1. This fills standard Visicalc by position AC40.

I also ran these tests on a 143k expanded Visicalc, filling it to row 200. (Model 1 reached AK200, model 2 reached X200.) The recalculation times to the nearest tenth of a second were as follows:

	Normal VC	Accelerated	143k VC	Accelerated
Model 1	21.3	6.3	102.4	31.0
Model 2	16.9	5.1	89.4	27.4

It doesn't need a Visicalc model to calculate that the maximum possible speed factor of 3.6 is nearly reached in these figures.

Apart from the easily measurable improvement on recalculation, Replicating was the major "psychological" time saver, since the impression of speed was so obvious when you could see figures streaming down the screen as the columns were reproduced. On the other hand, although a Row Insertion into a full 143k took only 12 seconds instead of 43 seconds, this still felt a very long wait.

Experiment 3.

Games: Most of them boot as normal.

Space Invaders: Faster, high-pitched, but not impossible.

Head-On: Hilarious, I couldn't clear a single screenful.

Brick out (Fast Applesoft): I managed to get a high score of seven after five games.

Sargon (chess): For the first time ever I could play a whole game at level 3 (I lost) without losing patience over the long waits, and level 2 was a move a minute (or better).

Backgammon: Gets really gutsy if you try to match the speed of the accelerated Apple. Much more like playing a human opponent for pace.

Experiment 4.

Pascal: Phantom 0 preboot. Two tests here, one on "system effects", one on "program effects". Test one was simply to edit (for subjective effects) and compile a couple of Pascal programs. This was one of the occasions when I also timed the effects of using RAM128 cards as pseudo-discs.

Program 1 was 455 lines, contained 24 procedures, and had to be compiled with the (*$S+*) option.

On disc system alone, compiling took 2 minutes 52 seconds

On disc system with accelerator 2 minutes 12 seconds

On RAM128 alone 1 minute 36 seconds

On RAM128 with accelerator 30.5 seconds

The last figure comes to about 900 lines per minute!

Program 2 was about 350 lines, but fewer procedures, and didn't need the swapping option. This compiled at almost 1100 lpm (only half the speed of the Sage IV).

Apart from the advantage of faster compiling, the nicest thing about accelerating Pascal is the editing. The slight pauses that normally occur during operations like paging up or down, jumping around the text and so on, simply do not occur, so the task of entering a program becomes much more comfortable.

A final timing test for Pascal was a short program to find the first 1900 prime numbers. Accelerated time 13.5 seconds, otherwise 43.2 seconds.

Experiment 5.

Assemblers: ASM65, DOS Toolkit EDASM. Booting as normal. Again I used RAM128s as disc drives, mainly to improve the speed of loading and saving text files (EDASM), and swapping between editor and assembler (ASM65).

Without going into all the details, I found that EDASM could assemble at about 1,000 lines per minute and ASM65 clocked around 7,000 lpm. I couldn't be too sure about the latter, as none of the programs I assembled were more than 300 lines long. I hate to think what the Lisa 2.5 assembler could do (70,000?).

I ran into very few problems with the card. I didn't like the way I had to switch off before rebooting if I wanted to change between options on the Accelerator preboot. I didn't like being told by the manual that some of the DIP switches on the board were for diagnostic purposes without any further (even vague would do) information.

One of my discs would not boot until the Accelerator was disabled, as it had a deviously time dependant security lock on it. This is probably a very rare problem.

Considering the great benefits I enjoyed from the card these are trivial niggles.

Conclusions

I couldn't think of any reason for not wanting an Accelerator II of my own, and it's going to be quite hard handing it back.

There are many ways in which it can save time, and consequently money, for anyone who works with the Apple computer. Even if you use your Apple simply for interest and enjoyment, the difference it makes to the machine's performance will delight you.

Printing error messages

In the June 1982 issue of Windfall an Appletip presented a way of printing the DOS error messages from within an ONERR GOTO subroutine without having to incorporate the text of them within the host program.

The following subroutine will do the same, but also print any appropriate Applesoft error messages. The short piece of code (to clear up some stack errors) from the Applesoft manual has also been incorporated.

The subroutine is relocatable, but for convenience has been assembled for the popular $300 (768) address. It is best, I think, to type it in and save it to disc, **BLOAD**ing it whenever and wherever it is required. Top save the subroutine type **BSAVE ERRORPRINTER,A$300,L$3C.**

Max Parrott

```
*DISASSEMBLY AND HEXADECIMAL DUMP

*300LL

0300-   20 FB DA    JSR   $DAFB
0303-   A6 DE       LDX   $DE
0305-   F0 09       BEQ   $0310
0307-   E0 10       CPX   #$10
0309-   B0 05       BCS   $0310
030B-   20 02 A7    JSR   $A702
030E-   30 12       BMI   $0322
0310-   BD 60 D2    LDA   $D260,X
0313-   48          PHA
0314-   20 5C DB    JSR   $DB5C
0317-   E8          INX
0318-   68          PLA
0319-   10 F5       BPL   $0310
031B-   A9 50       LDA   #$50
031D-   A0 D3       LDY   #$D3
031F-   20 3A DB    JSR   $DB3A
0322-   A9 58       LDA   #$58
0324-   A0 D3       LDY   #$D3
0326-   20 3A DB    JSR   $DB3A
0329-   A5 DB       LDA   $DB
032B-   A6 DA       LDX   $DA
032D-   20 24 ED    JSR   $ED24
0330-   68          PLA
0331-   A8          TAY
0332-   68          PLA
0333-   A6 DF       LDX   $DF
0335-   9A          TXS
0336-   48          PHA
0337-   98          TYA
0338-   48          PHA
0339-   4C FB DA    JMP   $DAFB
033C-   00          BRK
033D-   00          BRK
033E-   00          BRK
033F-   00          BRK
0340-   00          BRK
0341-   00          BRK
0342-   00          BRK
0343-   00          BRK
0344-   00          BRK
*300.33B

0300- 20 FB DA A6 DE F0 09 E0
0308- 10 B0 05 20 02 A7 30 12
0310- BD 60 D2 48 20 5C DB E8
0318- 68 10 F5 A9 50 A0 D3 20
0320- 3A DB A9 58 A0 D3 20 3A
0328- DB A5 DB A6 DA 20 24 ED
0330- 68 A8 68 A6 DF 9A 48 98
0338- 48 4C FB DA
```

Give WRITE CODE ERROR the crunch treatment

Quite often when using the Pascal or Fortran systems you will meet a WRITE CODE ERROR, especially when linking or compiling (the message may be slightly different). It is often cured by entering the filer and crunching the disc.

Max Parrott

Easy access to the assembler

I read on Page 22 of the February 1982 issue of Windfall how to save the Integer Basic mini-assembler to disc and then access it with an Applesoft program. I have found a simpler method of accessing the assembler direct from the keyboard if you have a language card.

Method

Load DOS 3.3 System Master
Type INT
Type CALL–151
Type F666G

Screen

```
]
]INT
>CALL-151
*F666G
!.
```

To run programs return to the monitor mode by typing $FF69G. To exit from the assembler to Integer Basic type $E003G.

Graham Shields

Coping with commas and quotes

The Apple INPUT command recognises commas as delimiters and will produce an "EXTRA IGNORED" message unless the text is surrounded or at least preceded by quotes.

Problems arise if the text data is to be stored on disc, as when the data is read back any commas which were included now act as delimiters and the part of the data after the comma ignored.

One way of avoiding this problem is to change the code for a comma to a value which will not be interpreted as a delimiter. There are two such values – 108 and 236. These will display as commas on the VDU without losing the rest of the data.

However, there is still a problem if you wish to print the data. Most printers will interpret these codes as a lowercase "l".

The routine shown to overcome this is a modification of one to print text in upper and lowercase characters according to CTRL Z flags embedded in the text.

At the data entry point any commas have had their code changed to 236, $EC, thus allowing the text to be stored on disc, displayed on the VDU and correctly printed via this routine. Similarly double quotes may be trapped at input, converted to CHRS (226) and handled by the routine.

The routine just fits in the unused area of DOS from $BA69 and can be BLOADed or made into a permanent patch. It is called by POKEing 43603,105 and 43604,186. No PR#1 command has to be issued but if tabbing is required it is best to do so. Use of this routine must be terminated by issuing PR#0 as a DOS command.

Another use of the routine is to change the last JMP to JMP $FDF0 (4C F0 FD) so that screen output can be toggled between upper and lowercase display if a lowercase chip has been installed.

Philip Bolt

```
BA69-   C9 9A      CMP   #$9A
BA6B-   D0 0A      BNE   $BA77
BA6D-   A9 20      LDA   #$20
BA6F-   4D 76 BA   EOR   $BA76
BA72-   8D 76 BA   STA   $BA76
BA75-   60         RTS
BA76-   00         BRK
BA77-   C9 C1      CMP   #$C1
BA79-   30 13      BMI   $BA8E
BA7B-   C9 E2      CMP   #$E2
BA7D-   F0 04      BEQ   $BA83
BA7F-   C9 EC      CMP   #$EC
BA81-   D0 04      BNE   $BA87
BA83-   49 40      EOR   #$40
BA85-   D0 07      BNE   $BA8E
BA87-   C9 DA      CMP   #$DB
BA89-   10 03      BPL   $BA8E
BA8B-   0D 76 BA   ORA   $BA76
BA8E-   4C 02 C1   JMP   $C102
```

Ampersand enhancement

Here is enhancement for Derek Turner's DOS modification to edit an Applesoft program with ampersand (Windfall April 1983, page 21):

If you type:

```
CALL-151
9E76:4C DF BC
BCDF:48 8A 48 98 48 08 20 99 F3 20 58 FC
A9 21 8D 21 00 28 68 A8 68 AA 68 4C A5 D6
```

and you **INIT** a fresh disc;
and you boot this disc;
and you enter **&(linenum1)(,linenum2)**;
then:

9E76 changes **3F5–3F7** to **4C DF BC** when booting, making the ampersand hook;

BCDF–BAE4 saves registers A, X, Y, P;

BCE5 assures you are in TEXT mode with full window;

BCE8 clears the screen;

BCEB–BCEF makes **POKE33,33**, reducing the window to 33 columns;

BCF0–BCF5 restores registers A, X, Y, P;

BCF6 does a **LIST(linenum1)(,linenum2)** in the current program, and it is easier to change a line with **PRINT** statements without leaving gaps in the new line.

Unused space BCDF–BCFF of DOS is preferable than unused space BA69–BA95 of DOS because this last space is bigger and can be better employed for other DOS modifications.

Can somebody add more to DOS in order to not be obliged to type ESC!I . . . IJ to move the cursor to VTAB1 HTAB1?

Marcel Mañé, Barcelona

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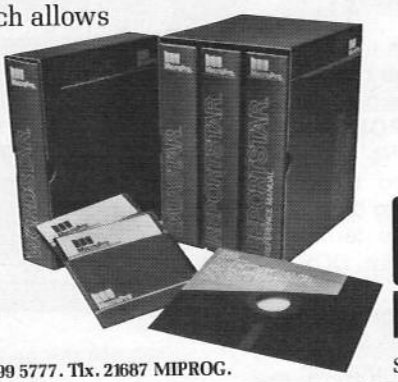

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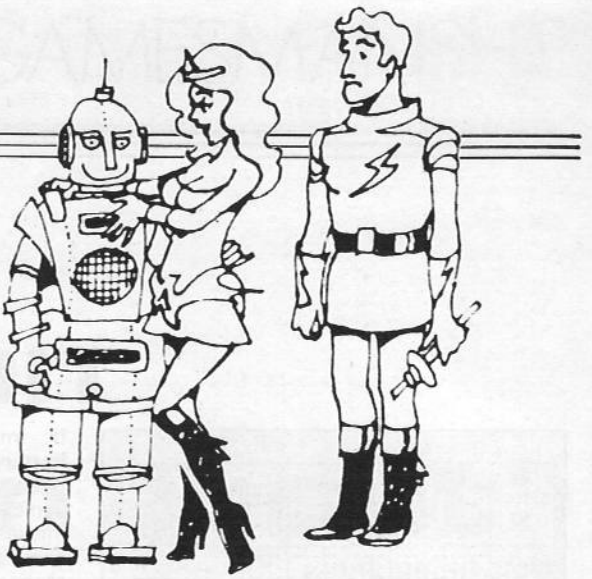
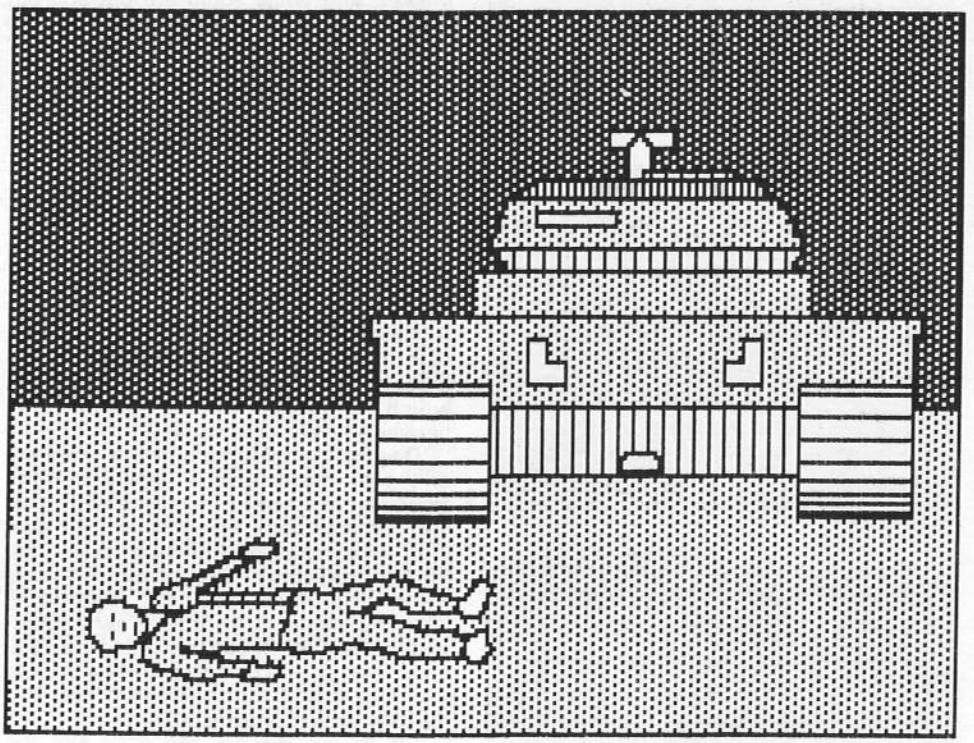


An Apple a day keeps the KGB at bay



By CLIFF McKNIGHT

PSST! Fancy yourself as James Bond? Well, try playing Kabul Spy and see how good you *really* are. I'll admit that my final score suggests that I should have been the spy who was left out in the cold – just call me 003.5.

As the name suggests, Kabul Spy from Sirius Software is an adventure game in which you are a secret agent. Your mission is to find Professor Eisenstadt (captured, perhaps, by the KGB) and make sure his sensitive knowledge is not compromised. He is being held somewhere in Afghanistan and the only information you have is that a native guide will meet you in Quetta and help you cross the border.

One of the problems with Afghanistan is that the inhabitants don't speak English, so somewhere along the way you'll have to pick up some useful phrases or find other means of communicating. It's a sensitive political situation in that part of the world, so you'll have to keep your diplomatic wits about you.

You start with all the usual trappings of the secret agent – cyanide pill, pistol, and so forth. It's a pity the backroom boys didn't think to supply you with a map or phrase book or waterwings . . . rivers can play havoc with a spy's possessions.

The format of Kabul Spy is fairly standard – hi-res colour graphics with text underneath, communication via simple sentences (Get rock, etc) and various puzzles to be solved en route to your goal. The game comes on a double-sided disc which indicates the size. I mapped just over 100 frames, which is a big game.

Although most of the play involves Side 2, there is a fair bit of flipping back and forth between sides. In fact, if you save the game regularly, you can spend quite a bit of time turning the disc over. You can save up to 10 games on a separate disc.

One less-than-usual feature of Kabul Spy is that the text portion of the game can be sent to a printer as well as to the screen. I'm not sure how useful a feature this is because you have access to the full text screen. However, if you often find that the bit of text you wanted has just scrolled off the top of the screen this may be the feature for you.

In addition to the problem-solving nature of the game, there is also a scoring system to keep you on your toes. You can display your current score and number of moves at any point, and you can also request a hint. However, hints cost 10 points each and may still leave you puzzled.

The final paragraph of the manual reads as follows: "Playing Kabul Spy successfully involves solving many puzzles. They are not intended to be solved quickly, so don't get frustrated if you can't make rapid progress." Of all the advice in the manual, I think this is the best.

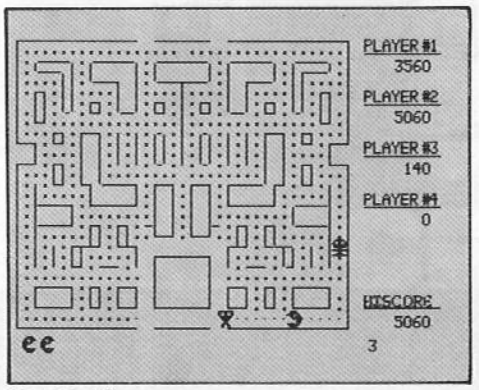
Kabul Spy is quite a difficult game, certainly not one for newcomers to adventure games. The structure is complex and there are some tricky mazes, so the task of mapping is demanding in itself. Some of the solutions to the puzzles had me laughing and cursing simultaneously – if you make it past the drawbridge you'll know what I mean.

It is nice to see an adventure game in a realistic, contemporary setting. Having said that, I must admit that I would have preferred not to resort to the use of magic words. I know they are part of the adventure writer's tool kit, but most adventure games have a fantasy or fiction setting.

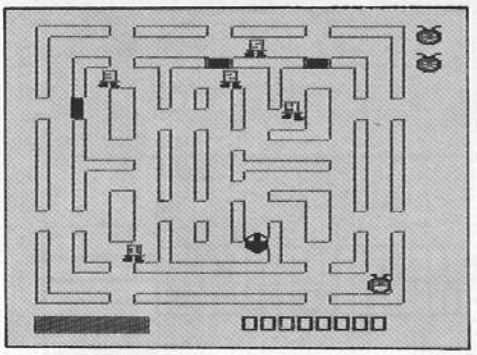
Kabul Spy can be recommended as a demanding game which also offers value for money. It should give you hours of enjoyment if you like mental exercise. In fact, all it lacks is the ubiquitous martini – shaken but not stirred.

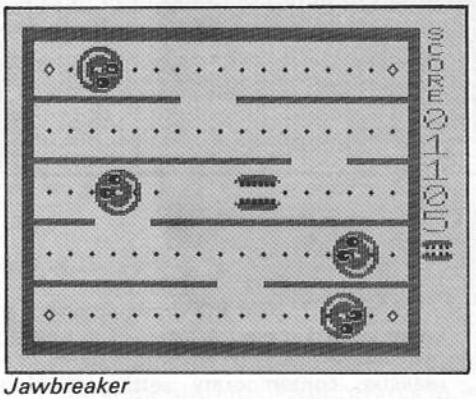
Title: Kabul Spy
Author: Tim Wilson
Publisher: Sirius Software
Requirements: Apple II

Watch
awful

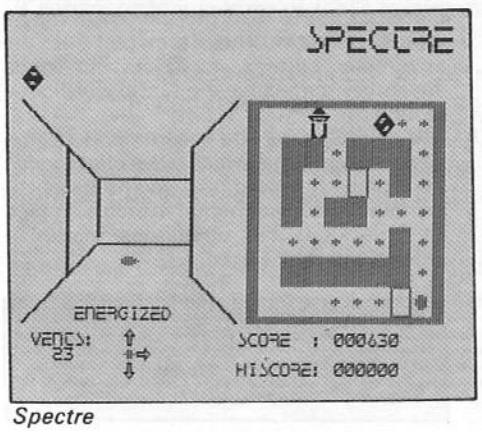


Taxman 2


Succession



Jawbreaker



Spectre

IF imitation is the sincerest form of flattery, then an awful lot of people have been very sincere about Pac-Man. A more cynical view might suggest that pecuniary interests were behind the flattery, so spare a thought for Toro Iwatani. He's the man who invented Pac-Man and never even received a bonus from his employers!

There are Pac-Man variants available for practically every home micro on the market, and while some are out-and-out, copies (and therefore occasionally the subject of court cases) others have taken the original idea and developed it. Among the latter are the four I'm about to describe.

Super Taxman 2 has not departed much in format from the original. The Taxman still goes around collecting the money and avoiding the irate citizens unless he has a temporary arrest warrant. However, Hal Labs have added various refinements. For example, you can select the starting level from 1 to 99. Some of the levels are "challenge" levels, completion of which yields an extra life. You can also choose to see one of the five cartoons which otherwise appear as rewards between levels occasionally.

Despite the plethora of levels there are only four mazes which appear in turn. However, the speed increases with level number and some levels have their own little idiosyncrasies. Although levels 1 to 99 are selectable, the game continues above this. Mind you, the method of counting seems to go a little awry. Completing level 99 (it *can* be done) takes you on to level 0, and completing level 0 takes you onto level 2 – but a different level 2 to the one which is selectable.

Up to five players can play, and the game has a pause facility which includes a "Ready?" prompt when you release the pause. Also, the movement keys can be selected, as can the type of display (colour/monochrome). The graphics are tailored to the type of display selected, which would have been an excellent feature if Hal Labs hadn't tried to be too clever with the colours.

Super Taxman 2 uses a musical interlude, the choice of which surprised me. I'd always assumed that programs like Musicomp and Electric Duet used classical pieces as examples because they are in the public domain; no royalty payments need to be made. However, Hal Labs have used The Beatles' "When I'm Sixty-Four". I'd be interested to know how much has to be paid in royalties and I also wonder why they didn't use "Taxman". No doubt it was too hard to program effectively!

Overall, I think Super Taxman 2 is a worthy addition to the Pac-Man ranks. If you haven't got a version but always meant to get one, it was worth waiting for this one. In some ways I still prefer the original Pac-Man – I'm a purist at heart – but as a variant Super Taxman 2 is good value.

In Succession you are once again eating in a maze. This time there are no dots to eat en route, only the residents of the maze. The twist is that they are numbered and you have to eat them in order. Eating out of order has an immediate emetic effect and you have to start from 1 again. Of course, there is also a large creature with a big mouth whose sole aim is to eat you. Oh yes, and you have to eat all the creatures before the timer runs out.

Level 1 has five creatures, and each of the other three levels has an extra creature. Also, each level is a bit faster than earlier levels. If you are being chased, you can exit through one of the doors on the edge of the screen. However, you reappear at some random point which may not be to your advantage. Movement keys are selectable to cater for personal preferences.

I must admit to having a problem with Succession which has somewhat limited my enjoyment of it. I can't make out the numbers on the edible creatures unless I look at the screen from the side, which means I can't comfortably reach the keyboard and my view of the maze is distorted. I'm not the only one in our house who has this problem, although to be fair my daughter doesn't seem to suffer in the same way. It's no better in colour, either.

Jawbreaker is different in many ways, although the eating and dodging theme is retained. While you're busy eating sweets in the candy store, a swarm of happy faces is trying to catch you. If they are successful, they pull your teeth out!

There is a happy face (or demon dentist, as we christened them) on each floor, but you can move up and down through the gaps in the floor/ceiling. To make things a bit more difficult the gaps are moving continuously.

In keeping with the genre, eating an energiser enables you to eat the happy faces for a short time. Clearing the screen of edibles yields a wonderul piece of graphics in which your teeth are cleaned before moving to the next level.

The starting level can be selected from 0 to 9, with level 0 being described as a "teddy-bear level especially for young children". This gives the game a slightly wider age range than many, although lots of kids seem to manage without "teddy

out..there's an lot of Pac-Men about!

bear" levels these days. It's a nice thought, though.

Like Super Taxman 2, Jawbreaker also has the occasional cartoon as reward between levels. However, it's a moot point how rewarding the sight of teeth being drilled is, particularly to the accompaniment of an appropriate drill noise! I had some trouble with the disc on occasion, too. It clacked away instead of showing the cartoon, and had to be rebooted.

Jawbreaker is a fun game if you've got a good set of teeth, and the graphics/animation are very well done. The colours are really good, too, because they have been kept simple. The sounds can be toggled off if they set your teeth on edge too much, and as with the other two games, the movement keys are selectable. In fact, you have to reselect the keys before each game, which seems a little unnecessary.

In Spectre, the scenario is once again slightly different. Instead of eating things you must move around closing the space ports on the decks of your space station. Closing them removes them from the screen so it's just like eating things in the more usual context.

It's not clear why you left the ports all open in the first place but now that a roving swarm of alien Questers has discovered you it's time to close them. This means moving around the (guess what?) mazes of your station. As you might expect, getting "energised" means that you can destroy the Questers ~~but~~ not for long.

Where Spectre differs greatly from the basic form is in terms of the display. There are two main parts to this: a 3D maze display (like Wizardry or Wayout) and a locator screen. The latter shows the positions of the walls at the beginning of a level but they disappear after five seconds. Similarly, the position of the Questers can be displayed on the locator screen but only a limited number of times per level.

All the action is accompanied by sounds and there is the usual pause facility via the ESC key. Movement keys cannnot be selected but they can be used in either a relative or an absolute mode. For example, in absolute mode the $-\rightarrow$ key will move you towards the right of the locator screen; in relative mode it will cause you to turn right at the next available corner.

Relative mode makes a lot of sense if you pay attention to the 3D maze whereas absolute mode is easier when using the locator screen. You can easily move between the modes during play because changing mode is achieved while the game is paused.

I'm not sure if my memory is playing tricks on me but the picture on the front of Spectre reminds me of Space Kadet. Are Datamost running out of illustration ideas? It's strange if they are, because they don't seem to be short of ideas for the games themselves.

It's questionable whether Spectre really belongs in the Pac-Man camp because it has developed the concept almost beyond recognition. It certainly has a different feel to it despite the mazes and energisers.

Pac-Man has been around for a few years now and looks set to rival Space Invaders for staying power. Unlike Toro Iwatani, some people are still making money out of the idea. Who said flattery gets you nowhere?

Title: Super Taxman 2
Author: Brian Fitzgerald
Publisher: Hal Labs
Requirements: None stated

Title: Succession
Author: Chris Eisnaugle
Publisher: Piccadilly Software
Requirements: Apple II

Title: Jawbreaker
Author: Chuckles
Publisher: Sierra On-Line
Requirements: Apple II

Title: Spectre
Authors: Bob Flanagan and Scott Miller
Publisher: Datamost
Requirements: Apple II

QUICK SPINS

Crime Wave: *Patrol the city streets in your police car and be on the lookout for bank robbers. Tow them to jail if you can catch them, but don't crash into any innocent motorists.* (Penguin Software).

Evolution: *Starting from amoeba, you've got to struggle to survive if you're ever going to evolve into a human. Six different evolutionary stages, up to 99 levels, and only the strong survive.* (Sydney Development Corp).

The Missing Ring: *Many have searched for it and lived to regret it. Others weren't so lucky. Now it's your turn – if your dare. For one to five players, each character capable of independent action and decisions.* (Datamost).

Police Artist. *As an eye witness to a crime you must remember the culprit's face in order to pick it out of a police line-up or reconstruct it from a catalogue of face parts. The program creates more than 1,000,000 different faces, each with a unique name.* (Sir-Tech Software)

Dawn Patrol: *You are in the cockpit of any one of 12 Allied or German planes from World War 1. Each plane is programmed to respond to its controls the way the real plane did. Real-time simulation and animated hi-res graphics as you try to shoot down the enemy.* (TSR).

Dark Crystal: *After the movie comes the hi-res adventure game. Help Jen and Kira to battle the Garthim and defeat the Skeksis. Heal the crystal or evil will rule the world forever.* (Sierra On-Line).

Dungeon!: *An Apple version of the famous boardgame. From one to eight players compete against each other and challenge the evil monsters lurking in the rooms. Anything can be hiding in the shadows of the dungeon!* (TSR).

MICRO-PLANNER Part 2

How does resource scheduling work?

THIS is the second part of PETER THOMASON's review of Micro Planner.

A measure of the success of the package is the fact that ICL has purchased the rights to use it on its computer systems.

Users include companies ranging from the Ford Motor Company, the Central Electricity Generating Board and Taylor Woodrow to small one-man businesses.

Networking has a place in many companies, whatever their size. In future issues we shall examine its basic principles and how they may be applied to real life activities.

THE resource scheduling program is designed to consider the use of resources and to produce schedules which level out their usage with the aim of increasing efficiency. Time analysis takes no account of resource restrictions and it is usually neither possible nor expedient to start activities at the calculated earliest times.

The purpose of the resource scheduling program is to give a clearer picture of how the project should be worked. This is done by scheduling activities, where possible, between their earliest feasible start dates and latest permissible finish dates. At the same time the program must take account of conditions and restrictions imposed to meet management requirements.

Resources likely to be considered are men, machines, money, materials or space. The program must consider all their conflicting requirements while still maintaining the logical constraints of the network.

To carry out resource scheduling, the computer must be given the following information:

- The resources required for each activity;
- The resources available to the project as a whole;
- Any management impositions to be observed during the scheduling.

Resources required

The estimated duration of an activity normally depends upon the resources it uses. More often than not estimates are based on manpower resources (the time taken by X men to do a particular job), but other resources, such as machines, may be taken into account as well.

Micro Planner categorises resources in two ways:

☐ Those, such as manpower, which are called "normal" type (for example, six bricklayers available each day).

☐ Those which can be consumed, such as materials, which are categorised as "pool" type (for example, a pool of 10,000 bricks may be available and will be used up).

Those categories refer to availability. Usage of resources can also be categorised in two ways:

☐ "Rate constant" meaning that a resource is used at a particular rate (for example, six bricklayers used each day for all or part of the activity's duration).

☐ "Total constant" meaning that a fixed quantity of a resource is required for an activity regardless of its duration (for example, 10,000 bricks needed for the activity however long it takes).

Current versions of Micro Planner treat all resources as rate constant but it is understood that plans are afoot to introduce the total constant category.

Where a resource is used for only part of an activity's duration, it can be termed a complex resource. Micro Planner allows resources to be used in either simple or complex form at the discretion of the user.

Where resources may be used in different stages of a single activity, users can define this more complicated pattern of resource usage without increasing the number of activities. The value of complex resources is thus in the reduction of network sizes.

Threshold resources

In the ICL PERT package (see later) resources are considered in a little more detail than in Micro Planner. The main difference is that decision tables (also see later) and threshold levels become involved in the scheduling decision.

Were threshold resources to be used (perhaps they will in a later version of Micro Planner) then the program would allow the user to specify additional (or threshold) resources which can be made available if a project cannot be completed on time using the normal resources.

These threshold resources might represent overtime, shift work or subcontracting, and the way in which the program would use them could be controlled to some extent by the user himself in his choice of the decision table employed during the scheduling process.

The resource analysis process

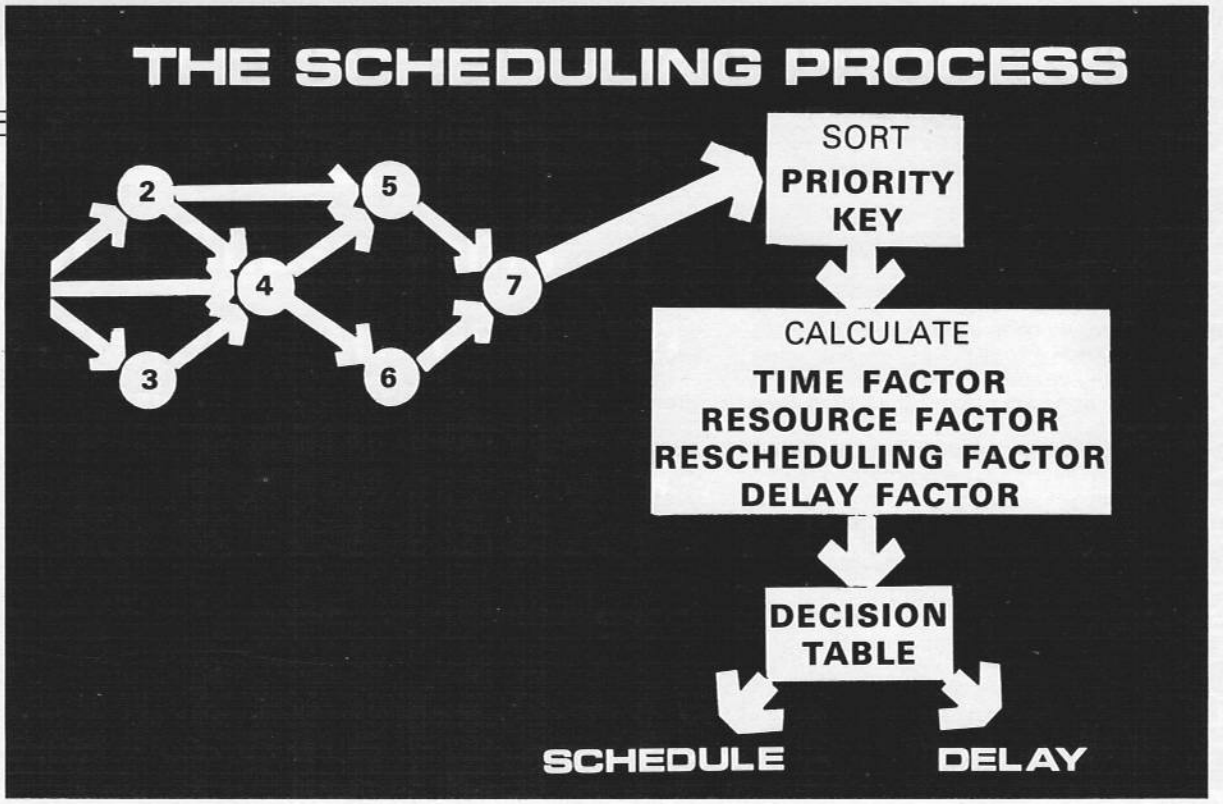
The resource analysis program takes the results of the time analysis programs together with the resource requirements, availabilities and any management impositions and attempts to schedule each activity within the total span of time from its earliest start to its latest finish.

The position within this span of time at which the activity is scheduled is determined by two factors, the desirability to avoid exceeding the quantity of resource available and the need to obey any management impositions.

In some projects the main consideration is to ensure that under no circumstances will the resource levels be exceeded, and in other projects the main consideration is to avoid exceeding the end date.

In certain circumstances, however, a user may wish to specify buffer resources or extra time to be made available if the project cannot be completed on time using normal levels. The order in which these thresholds *(see above)* are used and the freedom with which they are used depends on the type of schedule requested by the user.

In Micro Planner the basic alternatives open to the user are either to impose normal time limitations or else to impose normal resource level limitations on the scheduling. However, a very small step beyond this will bring the program up to



optimum scheduling capability, at least for this type of operation.

In the case of a more developed program the decision tables (with which readers would be able to compare ultimate with present scheduling) would be:

1. Aggregation at PERT time earliest dates.
2. Aggregation at PERT time latest dates.
3. Resource limited schedule – no threshold resource.
4. Resource limited schedule – threshold resource used to avoid extending threshold time.
5. Resource limited schedule – threshold resource used to avoid extending threshold time and long delays due to un-scheduling.
6. Time limited schedule – threshold time used to avoid extending threshold resource. Splitting of non-split activities to avoid exceptionally long delays.
7. Time limited schedule – threshold time used to avoid extending threshold resource.
8. Time limited schedule – no threshold time.

The process of decision making

To schedule a project, the program examines in turn each of the time periods during which the project may take place. For each time period the calculation has three broad phases.

1. A sort of the activities which are free to proceed in order of importance. (An activity is free to proceed if all the activities immediately in front of it in the network have been allocated resources.)
2. The allocation of available resources to some of these activities considering them in order of importance.
3. The elimination of activities whose resource requirements have been totally satisfied and the consequent freeing of subsequent activities.

During phase 2 the program scans a list of activities which are competing for the resources available on the time period in question. For each activity the computer may decide:

- To allocate to the activity the resource it requires (which is then subtracted from the total availability for the time period).
- To delay the activity, which will make it more critical, since its float will decrease.

In order to make the decision, the computer considers four aspects of the activity in its current state.

1. Resources: If the activity were scheduled, would there be enough resource? A point to be remembered is that some of the resource available on this time period has already been allocated to earlier and therefore more important activities.

2. Time: What is the time status of the activity?

3. Rescheduling factor: How much will the completion date of the activity be delayed if it is not scheduled in this period? If the activity is not already in progress, or if it is splittable, the answer is one period.

If the activity is non-splittable, and the previous 10 periods of it have been allocated resources, the delay could be 11 periods, since to keep it in one piece whilst avoiding the current time period, the program must reschedule the entire activity starting on following time period.

When faced with the above situation Micro Planner will opt for continuing the activity at the expense of overloading resources. It will compensate for this however, by giving non-split activities highest priority once they have started. Minimum-split activities are also allocated highest priority when the minimum split conditions are not satisfied.

4. Delay factor: Assuming the delay calculated in 3 was incurred, what would be the time state of the activity?

Each of the above four decisions can be broken down into finer detail and the whole represented in the form of a decision table. The appropriate "square" in that table determines whether the activity in question is to be scheduled (that is, allocated the required resources) for this period or not (that is, be delayed).

Multiple calendars

During all the above procedures Micro Planner has to consider one other complicating factor – differing calendars. Within each project, users are able to define as many as six different calendars. By calendar we mean those periods during which work can be carried out as opposed to non-working periods.

Thus one activity in a network may work, say, to a five day week whilst its neighbour may only be able to work at weekends or possibly on a continuous seven day cycle. The program translates the implications of these differences into floats, priorities etc. During resource analysis as well as time analysis it will pick its way through the relevant calendar for the activity currently under scrutiny.

How come anything this sophisticated on a little Apple?

The question really refers to the best mainframe project management software of all (ICL PERT) which would seem to be alive and well in Bristol although it has been marginally alive for the past decade or so in Reading. (Micro Planning Services is in Bristol and ICL is in Reading.)

This is a fascinating question and one

→

MICRO-PLANNER Part 2

which I would have never dared to ask if I had not known that ICL are aware – and even complimentary, according to Micro Planning Services – about the use of their system.

Let's start with the mainframe. In 1966 there had been 15 programs and some 100 man-years of programming effort expended by ICL. All this eventually produced ICT Tape PERT, written in Plan (1900 Assembler) and running on any 1900 with 8k words (24 bit) or more and a selection of tape units (reel-to-reel).

In 1967 I implemented the first reference sell of the disc version, the equivalent of Micro Planner, which required 16k and could use up to 32k words, one or more EDS with any 1900.

Later the 2900 equivalent arrived with minor changes (mainly serial or parallel scheduling) on the larger (byte) systems. So here we are, in a position of sitting on software that grew like Topsy in ICL and is now probably worth, in investment terms alone, many thousands of pounds!

It was easily the most valuable single package in ICL's software library, and now you can buy it or hire it for several thousand pounds with another £70,000 or so for the machine to run it on. So what happened? Perhaps ICL couldn't sell it – even if it was good. Or were they with the wrong end of the stick compared with the little Apple and Micro Planner?

Micro Planner was written by an ex-user of ICL PERT. He worked in a customer's department on project management. Having seen the potential of the system he then set about writing it for the Apple II, later the Apple III. He began by taking some of the concepts and writing them as an exercise and went on from there.

The big difference between the mainframe version and Micro Planner is the inter-active mode. It took me (and users) about two years to really master ICL's version, whereas the Micro Planner user should be able to achieve very similar results within a couple of weeks at the most.

Here we have the problem – a mainframe supplier has the software support who know the program but rarely if ever implement it. They have systems people who go on a course and become the official specialist in their area which provides them with very little real experience, and then the user is faced with having to pay for a specialist with part of a more expensive machine. The £70,000 requires about four people in order to run this package. An Apple requires only one.

In a peculiar way each mainframe manufacturer gave the impetus to minis and then micros. In a similar way, the software which was fully running by 1970 is the basis of all currently available mainframe application systems. These are rudimentary at a user level if compared with Visicalc type packages and Micro Planner.

Where mainframes have slipped up is in knowing about large computer systems, but having very little inclination, ability or involvement at the user level. And here will be the death knell of the big mainframes. It is the lack of competence among their staff and management from chairmen down to salesmen in knowing, understanding and being able to help the real user – today's business managers, small and large.

Well done Micro Planner – you've put the corporate giants in their place. And well done Apple for making it all possible!

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WHAT computer should you buy? That question troubles not only first timers thinking of incorporating a micro into their business, but also well established firms looking to extend the use and number of their machines.

Perhaps more specifically, if you are looking at a major manufacturer such as Apple, the question should be which model should you buy? (There *are* plenty of reasons for buying Apple – the machines are inherently reliable for one thing – but that isn't the subject of this article.)

Apple has had a busy year, launching new computers and new peripherals and with many other developments up its sleeve. For the businessman who has been using an Apple II Plus successfully – despite the fact that it was never designed primarily as a business machine – the IIe overcomes some of the early design limitations.

However there are some it doesn't, and a strong contender for any business is a product which seldom sees the light of day in editorial columns – the Apple III.

Here DAVID CREASEY examines some of the additional features offered by the III and considers whether the IIe and the III should co-exist peacefully together, or compete against each other for the same market.

IIe or

II's company they say – and many thousands of small businesses around the world have proved this to be true, even though latecomers to the field are now bragging about "enhanced" company.

However there is a big brother out there and he is well worth watching and using. The Apple III has had a slightly disappointing past but appears to be gathering strength for a far better future.

The latest enigmatic phrase from Apple is: "Catch the IIIrd Wave". It adorns posters and badges. It intrigues people. What does it mean?

Apple isn't saying – although staff suggest it is linked to Alvin Toffler's book The Third Wave. Perhaps it is a subtle version of "third time lucky" for what has been a very underrated machine.

The initial launch of the III in the US in 1980 was disastrous and thousands of machines were recalled because of chip failures and other faults. It was launched too soon before all the bugs were ironed out – and many people, who haven't bothered to take a second look, still remember it as a failure. The second burst of activity came with the product's launch in the UK in 1981. Now that the market is starting to pick up and businessmen are looking to the III to provide the workhorse capabilities that Apple originally envisioned, there is a resurgence of interest – the IIIrd Wave perhaps?

The question "Why buy a III when there is a IIe?" sums up a real dilemma faced by prospective Apple buyers.

One could add to that by asking "Why buy anything" *until* the fabled next offering appears. But it seems pointless always waiting for the yet-to-be-released. We are interested in using an Apple now ... so what should we buy?

For £2,395 you get a 256k III with disc drive and monitor. The basic 64k IIe costs £845, but for a better comparison let us configure the IIe system to match the III as closely as possible – that is with extended 80 column card giving it 128k memory and 80 column display, disc drive and monitor. It costs £1,259 – £1,136 less than a III.

It is interesting to see where Apple positions the two machines in its marketing strategy.

The IIe, it says, is for the user who wants to start small with minimal capital outlay and build up from a basic starter system. It is also for the user who wants to use a micro for a specialist (or "vertical" in the jargon) task.

It describes the III as an integrated solution and a complete system with enough memory capacity to handle large

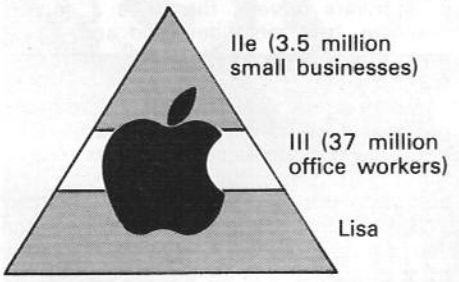
Catching the IIIrd Wave?

tasks which doesn't require continual purchases of add-ons for expansion.

More specifically Steve Holmes of Apple says the IIe is a small business computer while the III is for the small business and/or the office – with bigger storage and a faster speed, making it useful for large accounting, spreadsheet and database applications.

"You need that capability in an office environment," said Holmes, who although he is UK product manager for the IIe, uses a III for his own officework.

He equates the Apple product line with



a pyramid – and surprisingly he places the best selling IIe at the tip of the pyramid when it comes to business applications in Europe.

In the rose-tinted Holmes' pyramid the IIe caters for 3.5 million small businesses in Europe. In the middle is the III, with fewer packages, but a potential market of 37 million office workers, and at the bottom Lisa and related (unannounced) machines, each with perhaps only a handful of software applications packages and an enormous office market to aim at.

Using this guideline the IIe fits small businesses and specialist markets such as dentists, newsagents and architects because of the enormous variety of software packages available. The III bridges the gap between small business and the office and Lisa is for the office worker who will often use only two or three software applications packages each day with spreadsheet, wordprocessing and graphics topping the list.

Apple is obviously very ambitious, particularly with Lisa costing £7,950, and it is interesting to speculate where the company is going.

I believe that the company's statements about an integrated family of machines are not just marketing flannel. The III is powerful, both as a programmer's development tool and as a business aid, and Apple is unlikely to ditch the machine merely because it is not a volume seller.

What it could be planning is to develop a common operating environment for all its micros so that data, if not programs themselves, becomes interchangeable between a IIe, a III and a Lisa.

Critics have suggested that when Applenet becomes available linking IIe, III and Lisa the III will become redundant because the advantage of its extra speed and storage capabilities will become irrelevant.

There is also speculation that when Macintosh – thought to be a scaled down, much less versatile version of Lisa – is released the III will be driven from the market.

Apple UK however is adamant that the III will not disappear, and a spokesman said the only circumstances where it might do so would be evolutionary – in the same way as the II became the IIe.

The III is firmly embedded in the company's future development plans.

Apple also stresses that it is not trying to sell IIIs in place of IIs. It is trying to develop a specific market and sell the

→

III?

Catching the IIIrd Wave?

right machine for the right task. The difference lies in the starting point. The IIe is for home and education markets, and fits small business environments where a progression or expansion capability is not required.

The Apple III is a 256k machine that offers two major things over the IIe – speed, and the amount of data it can process in memory at any one time. And as the new Lisa sets a market standard in provision of an operating system, so too does the III with its SOS – Sophisticated Operating System.

It is this as much as anything that gives the III the edge. SOS provides the common denominator in all programming languages on the III (Macro Assembler, Business Basic, enhanced Pascal, Trans-Forth and Cobol) and provides a standard means for languages and applications to share and access memory storage configurations, or take advantage of peripherals such as printers or plotters.

From a businessman's point of view this means that files created with one application can be used as input to other applications.

Built-in to the Apple III is a sculptured keyboard with auto repeat keys. These can be individually reprogrammed as function keys, a numeric keypad, a disc drive for loading applications and saving data files, text and colour graphics and plugs for black and white monitor, colour monitor (both RGB and NTSC), additional floppy drives and a printer or communications modem.

There are also four internal expansion slots used primarily for the Profile hard disc, parallel printers or CP/M softcard.

Peripheral expansion is extremely flexible – any printer, disc storage unit or plotter added to the III has an accompanying program called a driver which describes the characteristics of the peripheral to the computer.

This means that once you have bought a system you will not need to make major adjustments to add either software or hardware to it. SOS drivers provide a simple means of incorporating enhancements or upgrades into the system.

The III is based on the 6502B processor, a faster version of the processor used in the Apple IIe. The use of the same processor gives the III one of its most useful features for the II user who wants to retain accumulated hardware peripherals and software but at the same time increase processing power to match a growing business.

The emulation mode, as it is called in the III, enables the user to run most Apple II software written in Applesoft or Integer Basic.

The machine doesn't continue to operate as a III when using emulation mode and you lose some of the enhancements such as 80 column screen, increased memory capacity and processing speed. You cannot run Pascal or any program which uses the II's language card system.

The emulation mode is really designed for someone who wants to access the vast range of II software – maybe games – or who has upgraded from a II but who doesn't want to discard some old software. He may have Visicalc on the Apple II but as he uses it infrequently (if such a businessman exists) feels it isn't worth paying the extra money to upgrade the program itself from the II to the III version.

There is far more to the III than a souped-up version of the II Plus and the user who restricts himself to using it in this mode is really only scratching the surface of the processing power offered by the machine.

The III starts to make its mark when a user wants, for example, to store more than 1000 records on a database and wants to do executive workstation applications. It is for serious data management.

When you load a program such as Visicalc it occupies a considerable chunk of memory space. Once you've loaded Visicalc into the III however, you still have 192k internal memory left to construct and process a worksheet model, compared with 18k on a II plus and 32k on a IIe. You can, of course, buy memory expansion cards to give the II machines extra capacity.

And as I have said, data interchange between programs such as Applewriter, Visicalc or Business Graphics on the III is easily handled with the SOS operating system.

In terms of a growth path, a user might start with standard $5\frac{1}{4}$in disc drives. Then, as his storage requirements expand, he can copy data straight across to the larger capacity Unifile drives and eventually transfer to the 5mbyte Profile hard disc – and he shouldn't have to retype any of his files in the process.

There is no question about the success of the IIe. Apple can't make enough of the machines in the US and is only just managing to keep up with demand in the UK and Europe. It is a phenomenally popular successor to the Apple II Plus and has already taken the II range over the million sales mark (units not cash!).

What of its bigger and more sedate brother? Nearly 100,000 IIIs are thought to have been sold in the US to date and several thousand in the UK, although no official figure is available. It is a steadily growing market.

The amount of software packages written specifically for the III has also increased dramatically – more than doubling in the past six months to top the 150 mark in the UK (with well over 300 packages available in the US).

It also runs Apple II software under emulation and the recently released CP/M softcard opens up an even larger range of business programs. Apple Pascal III will read Apple II Pascal data files and Apple II CP/M formatted discs can be read by Apple III CP/M.

As a user's tool, and provided the dealer who supplies the machine understands it and is prepared to give proper support in terms of advice and installation of software drivers, the III is a superb machine. It is misunderstood and sorely underrated, both by dealers and by the marketplace.

However if dealers and the marketplace give it a chance, and if Apple continues to support it as part of its overall family of products, it will do well alongside the perennial and popular IIe.

There is no easy answer as to whether you should buy a IIe (which can do most of the applications handled by a III) or whether you should pay the extra £1,136 for the more powerful and expandable option of the III.

The IIe will do a job for the present. The III does the same, but also offers a clear growth path for the future as a business expands.

To make a choice the prospective buyer should first analyse very carefully his current and future requirements.

With this clearly established it should then be a relatively easy task to decide, with the help of a dealer, which system fits.

There is no reason to buy a III if the IIe will meet your needs – but there are plenty of reasons for taking a close look at the III.

SOME dealers and software developers are critical of the Apple III. They claim it hasn't got a future and never really had a past. They say it is difficult to use, too expensive or doesn't have enough software, and that it will be obliterated by Apple's next fabled, yet-to-be-released offering (though Apple UK is adamant that the III does have a future).

Other dealers say they avoid the III because they don't know much about it and sell a minimal number of the machines as part of their dealership agreement.

However the Apple dealer has a key role to play in the use of a III – and one of the reasons that some dealers are reluctant to promote the machine might be simply that it requires them to provide a much closer after-sales service and commitment to the user than the IIe.

Apple UK says it is the dealer's task from the outset to:

- *Match the application software to the customer's requirements.*
- *Match the software to the hardware (that is, appropriate printer).*
- *Set up the system and train staff if installing a professional business system. The dealer is selling a professional system to a professional user and should behave professionally. Whether or not the dealer charges for this service is up to him.*
- *If the dealer is worth his salt he should be able to install the device drivers on applications software in a matter of minutes. It shouldn't be left to the end user to do this.*

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- ★ Faster and easier to use than nibble copiers or other copy cards.
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- ★ Suspend work with one program while you use another (for instance, interrupt word-processing a letter to look up an address in a database, then resume the letter exactly where you left off).
- ★ Move protected programs to hard disc or 8" disk; copy several programs onto the same disk.
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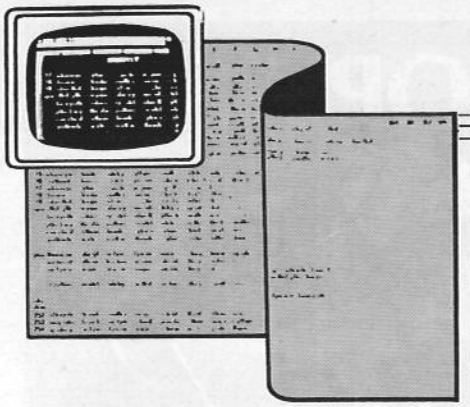

WHAT IF

...we use indices to make changes?

IT was a great pleasure for me to meet and talk to so many of the readers of this column at the Apple '83 Exhibition. Thank you for all your comments, compliments and criticism.

Arising from this feedback, this month I am going to put the emphasis back on Visicalc models rather than on reviewing peripheral Visicalc software.

However I must mention a new program called Sidevise that prints Visicalc files sideways. It is an ideal tool if you have to print a wide VC model the whole width of an A4 or a foolscap page. But more about this at some other time.

It is said that "one fool can ask more questions than 10 wise men can answer". I am reminded of that saying whenever I read or see "What if" being demonstrated on VC or on any of the other financial planning packages.

I think spreadsheets should have built-in protection to stop foolhardy executives making reckless, whimsical and unsystematic *What if* changes in carefully thought out VC models.

Suppose, for example, that after a lot of scrupulous planning you prepared a VC model as shown in Exhibit I. You attend a meeting to discuss your proposition, and your colleagues start haphazardly playing *What if* with the model you worked so hard to develop.

	M	N	O	P	Q	R	S	T	U	V
8	A MODEL FOR 'WHAT-IF' ANALYSIS									
9	==========									
10	DES-	QUNTY.								% CONTRI-
11	CRIP	AVAIL.		SELLING				%	% OF	BUTION TO
12	TION	FOR	COST	PRICE	TOTAL	TOTAL	GROSS	PROFIT	TOTAL	TOTAL
13	(CODED)	SALE	EACH	EACH	COST	INCOME	PROFIT	MARGIN	COST	PROFIT
14	-------	------	------	------	------	------	------	------	------	-------
15	QD135	14	120	148	1680	2072	392	23.33	14.29	13.55%
16	WA341	5	60	86	300	430	130	43.33	2.55	4.494%
17	EZ298	55	24	31	1320	1705	385	29.17	11.22	13.308%
18	TV213	8	30	42	240	336	96	40.00	2.04	3.318%
19	TA152	45	150	183	6750	8235	1485	22.00	57.40	51.331%
20	SL150	50	9	12	450	600	150	33.33	3.83	5.185%
21	LY364	85	12	15	1020	1275	255	25.00	8.67	8.814%
22	-------	------	------	------	------	------	------	------	------	-------
23	TOTAL	----	----	----	11760	14653	2893	24.60	100.00	100.00%
24	==========									

Exhibit I

	A	B	C	D	E	F	G
8	'WHAT-IF' WORK AREA						
9	----------						
10	DES-	QUNTY.			QUNTY.		SELLING
11	CRIP	AVAIL.		SELLING	FOR	COST	PRICE
12	TION	FOR	COST	PRICE	SALE	EACH	EACH
13	(CODED)	SALE	EACH	EACH	INDEX	INDEX	INDEX
14	-------	------	------	------	------	------	------
15	QD135	14	120	148	1.4286	1	1
16	WA341	5	60	86	1	1	1
17	EZ298	55	24	31	1	1	1
18	TV213	8	30	42	1	1	1
19	TA152	45	150	183	1	1	1
20	SL150	50	9	12	1	1	1
21	LY364	85	12	15	1	1	1
22	----------						

Exhibit II

Should one or more of the variables in columns N, O or P be arbitrary overwritten, you would get a new set of meaningless figures in row 23. They would be meaningless because the revised model would not tell you whether you were better or worse off than before making the *What if* changes.

But even if a record was kept of the previous totals in row 23, it would be impossible to trace in the model which cells in columns N, O or P had been altered, and what were the figures which brought about the changes in row 23.

Finally, to add to the confusion, someone at the meeting would inevitably try more *What if* changes based on speculative wishful thinking, and the whole process would get you and everybody else nowhere as the original model was probably not designed for use at an executive brain-storming meeting.

Incidentally, I still remember from the days of my childhood, the ultimate stock phrase answer to awkward or impertinent *What if* questions. The response was in the form of a counter question and answer statement: "What if grandma had wheels – she could have been an omnibus". That response was sure to put an end to any further *What if* questioning.

So how do you develop VC models which are conducive to systematic *What if* analysis? How do you go about designing models which automatically analyse any variances arising from making one or more concurrent *What if* changes? Models in which some or all of the original assumptions or propositions can be quickly and easily restored, without having to reload the model from a disc?

The answer lies in using index numbers to make the *What if* changes rather than changing the actual variables.

Take, for example, Exhibit II, which is actually the start of Exhibit I. The variables in columns B, C and D show the original proposition with all their implied assumptions and considerations.

Each of the cells in columns E, F and G between row 15 and 21 contain the index

	M	N	O	P	Q	R	S	T	U	V
8	A M O D E L F O R 'W H A T - I F' A N A L Y S I S									
9	==========									
10	DES-	QUNTY.								% CONTRI-
11	CRIP	AVAIL.		SELLING				%	% OF	BUTION
12	TION	FOR	COST	PRICE	TOTAL	TOTAL	GROSS	PROFIT	TOTAL	TO TOTAL
13	(CODED)	SALE	EACH	EACH	COST	INCOME	PROFIT	MARGIN	COST	PROFIT
14	-------	------	------	------	------	------	------	------	------	-------
15	QD135	20	120	148	2400	2960	560	23.33	19.23	18.30%
16	WA341	5	60	86	300	430	130	43.33	2.40	4.25%
17	EZ298	55	24	31	1320	1705	385	29.17	10.58	12.58%
18	TV213	8	30	42	240	336	96	40.00	1.92	3.14%
19	TA152	45	150	183	6750	8235	1485	22.00	54.09	48.51%
20	SL150	50	9	12	450	600	150	33.33	3.61	4.90%
21	LY364	85	12	15	1020	1275	255	25.00	8.17	8.33%
22	-------	------	------	------	------	------	------	------	------	-------
23	TOTAL	----	----	----	12480	15541	3061	24.53	100.00	100.00%
24	VARIANCES FROM PREV. TOTALS:				720	888	168	-.30	----	-----
	M	N	O	P	Q	R	S	T	U	V
3	PRE-'WHAT-IF' TOTALS:				11760	14653	2893	24.60	----	----
4	----------									

Exhibit III

number 1. Now each variable in Exhibit I (in columns N, O and P) is linked to an index number and a variable in Exhibit II. For example, the formula in cell N15 reads B15*E15, the formula in O15 is C15*F15, P15=D15*G15 and so on for the rest of the figures in columns N, O and P in Exhibit I.

The formulae in columns Q, R, S, T and U are self explanatory. The formula in V15 is S15/S23*100, and this has to be replicated from V16 to V21.

Let us see the effect of changing the quantity available for sale of the product coded QD135 in cell A15 from 14 (as shown in cell B15) to 20.

You must first resist the natural reaction to enter 20 in either B15 or in N15. Instead, place the cursor in cell E15 and enter the formula 20/B15.

E15 will become 1.4286 (that is an increase of 42.86 per cent from the original proposition) and cell N15 will become 20. B15 will remain 14, the original figure.

The effect of this one change will be – see Exhibit III, row 24 – to increase total cost by £720, increase total income by £888, increase the gross profit by £168 and reduce negligibly the overall profit margin.

Exhibit III also shows how columns U and V have changed in comparison to Exhibit I. As this was just a whimsical *What if* test we can put the cursor back on E15, type the figure 1, press the exclamation mark twice (assuming we are in the manual operating mode) and every cell in our model will be restored to its original content.

Similarly we can move the cursor to cell F19, type .9, press the exclamation mark and thus examine the overall effects of a 10 per cent reduction in the cost of the product coded TA152.

You are not confined, of course, to examining only one *What if* change at a time. You could examine the composite effect on cost and profit of simultaneously

By NICK LEVY

making a dozen *What if* changes, and always go back to your original benchmark by restoring to 1 all the indices in columns E, F and G.

Note that you can use the model to perform sensitivity analysis. For example, what will be the effect if the selling price of QD135 (row 15) goes up by 10 per cent and sales drop by 10 per cent?

To find out, type .9 in E15 and type 1.1 in G15, press the exclamation mark once (assuming the model is in the manual mode) and you will get the results shown in Exhibit IV.

As you can see from row 24, cost will drop by £168, total income will drop by £21, and gross profits will increase by £147. The latter represents an increase of more than 6.6 per cent in the gross profit margin (cell T24).

Note that the formula in T24 must not be a replicate of the formulae in either Q, R or S.

What all these changes demonstrate is that a one per cent change in the selling price of product QD135 is more sensitive than a one per cent change in the quantities available for sale.

In other words, a one per cent change in price of product code QD135 will have a greater effect on the gross profit than a one per cent change in the volume of sales for that product.

Remember that whenever you change one or more of the indices in columns E, F and G, the results before making the changes will serve as a benchmark against which to compare the effects of the changes.

So before making any *What if* changes you must decide whether you want to make the comparison between the new *What if* changes and the previous *What if* results, or between the new proposition and the original results as they were when all the indices stood at 1.

How are the before and after *What if* variances calculated in row 24 (Exhibit III

	M	N	O	P	Q	R	S	T	U	V
8	A M O D E L F O R 'W H A T - I F' A N A L Y S I S									
9	==========									
10	DES-	QUNTY.								% CONTRI-
11	CRIP	AVAIL.		SELLING				%	% OF	BUTION
12	TION	FOR	COST	PRICE	TOTAL	TOTAL	GROSS	PROFIT	TOTAL	TO TOTAL
13	(CODED)	SALE	EACH	EACH	COST	INCOME	PROFIT	MARGIN	COST	PROFIT
14	-------	------	------	------	------	------	------	------	------	-------
15	QD135	13	120	163	1512	2051	539	35.67	13.04	17.74%
16	WA341	5	60	86	300	430	130	43.33	2.59	4.28%
17	EZ298	55	24	31	1320	1705	385	29.17	11.39	12.66%
18	TV213	8	30	42	240	336	96	40.00	2.07	3.16%
19	TA152	45	150	183	6750	8235	1485	22.00	58.23	48.84%
20	SL150	50	9	12	450	600	150	33.33	3.88	4.93%
21	LY364	85	12	15	1020	1275	255	25.00	8.80	8.39%
22	-------	------	------	------	------	------	------	------	------	-------
23	TOTAL	----	----	----	11592	14632	3040	26.23	100.00	100.00%
24	VARIANCES FROM PREV. TOTALS:				-168	-21	147	6.61	----	-----
	M	N	O	P	Q	R	S	T	U	V
3	PRE-'WHAT-IF' TOTALS:				11760	14653	2893	24.60	----	----
4	----------									

Exhibit IV

● *Nick Levy is the principal of Interface Management Resources and gives specialist lectures on spreadsheets.*

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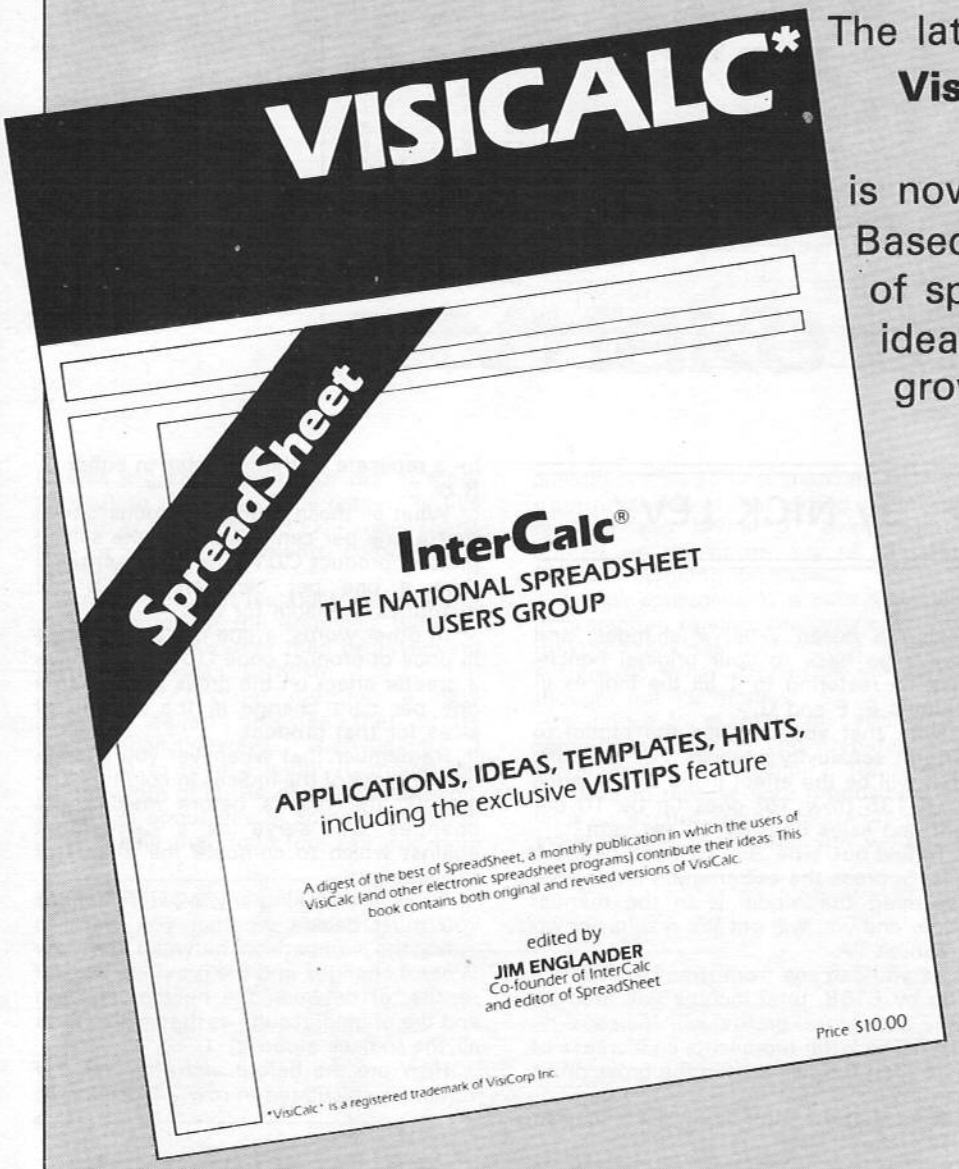

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and IV)? The secret lies in taking advantage of Visicalc's delayed action when making forward references (for a full exposition see page 2-63 in the VC Manual).

Exhibits III and IV consist of two horizontal windows. The lower starts with row 3, the upper with row 8.

Each cell in row 3 is a copy of the parallel entry in row 23. Q3 is +Q23, R3 is +R23 and so on. The formula in Q24 is +Q23–Q3, in R24: +R23–R3 and in S24: +S23–S3.

In cell T24 however the formula is +T23–T3/T3*100 (in order to establish the relative percentage change rather than the less meaningful absolute percentage changes. After all, an increase from four to five per cent is much larger than an increase from 50 to 51 per cent).

When Visicalc calculates row 24 immediately after row 23 has been updated, row 3 has not yet had a chance to be updated so it will contain the pre-What if figures.

The calculations in row 24 will therefore show the before and after *What if* results. If however you press the exclamation mark again row 3 is updated and all the entries in row 24 become nil.

The formula in V15 is @INT(S15/S23*100*100+.5)/100 (replicated from V16 to V21). The object of that presentation is to demonstrate how calculations producing results with more than 10 decimal places can be rounded to exactly two decimal places.

If in the above formula you replace the 100 with 1000 or 10000 then the results will be rounded to three and four decimal places respectively.

The difference between results rounded to two decimal places using the above formula and results rounded to two decimal places using the command /F$ is that whereas the first computation will contain exactly two decimal places, the second only displays two significant decimal places of what could be a result with over 10 decimal places.

Any subsequent calculation using such results will take into account all the decimal places inherent in the formula, not just the figures which are visible on the screen.

In summary: If you have to construct a model which is likely to undergo a lot of *What if* examinations before the final version is approved, use indices for trying out the various *What if* changes.

It is much easier and simpler, when using Visicalc, to change and to restore index numbers, than to restore the original variables in cells which have been overwritten.

Make use of Visicalc's phased calculations arising when making forward references, to calculate the before and after results of *What if* propositions.

For readers who cannot spare the time to reconstruct the above model, I have created a VC data disc containing "What-if?" mode as well as the model and the datagrammes discussed in the April issue of *Windfall* (The economics of using electronic worksheets).

The latter deals with variances analysis of overhead expenditure, and the reason for including it on the disc is because some of the exhibits accompanying the April article were only printed in part.

This VC data disc is configured to work on any Apple using the 16 sector version of Visicalc. Note that the VC model dealing with the overhead variances analysis can only be loaded on Apples with a minimum of 64k memory.

The disc costs £10 including VAT and postage, or £11.50 (airmail postage) for overseas readers, and is available from: Visicalc Disc Offer, Windfall, Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY.

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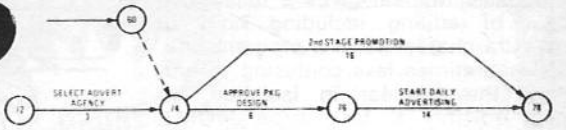

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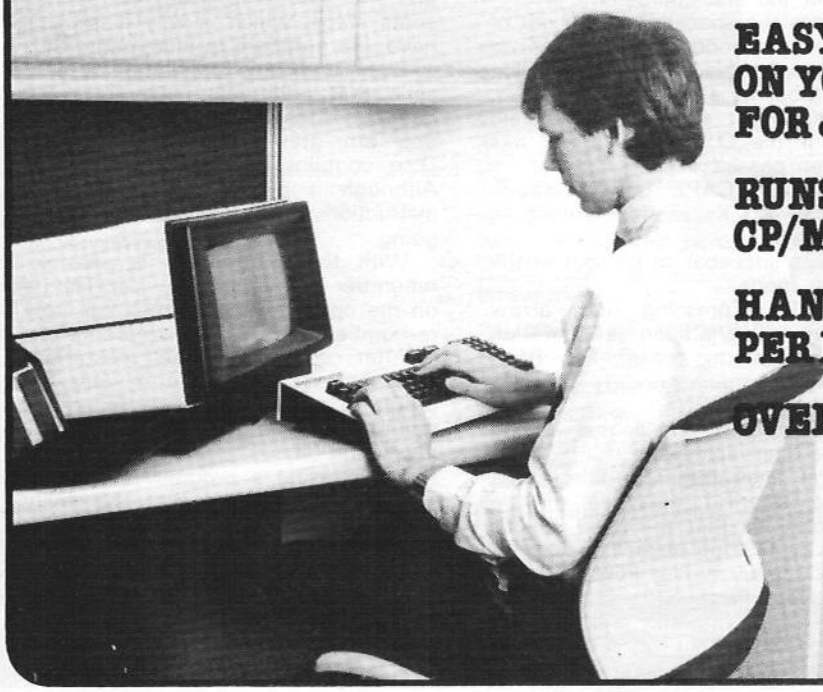

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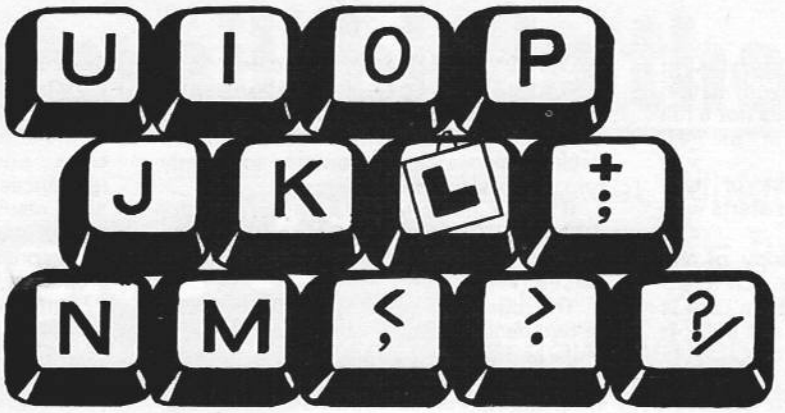

Getting to grips with editing

By L. GAZZARD

EDITING is one function of the Apple II that I feel has been sadly neglected in its development. It is so cumbersome to use that it is often much quicker to re-type the program line.

Both the Applesoft Tutorial and Basic Programming Reference Manual give examples of editing, but for some reason use different keys to move the cursor.

The Applesoft Tutorial uses I, J, K and M, the Basic Manual uses A, B, C, D. I find I, J, K, M easier as they follow a logical moving sequence (Applesoft Tutorial page 52). A, B, C and D cursor moves require that the ESCAPE key is pressed after each cursor move. (Basic Programming Reference Manual Page 110).

The Basic Manual gives a fuller description of editing including how to insert extra characters in a program line.

It is sometimes less confusing to edit lines if they appear in isolation, so before editing a line type HOME (RETURN) LIST (line number) (RETURN). This clears the screen and displays the line selected.

When a program line is LISTed the lengths of the lines are automatically adjusted so that there are no more than 33 characters on any line.

If your particular program line occupies more than one line when LISTed you will find that re-copying the line with the right arrow to the last character will have copied all the extra spaces that LISTing introduced after the 33rd character position.

So it is necessary to place the cursor on the first character of the second LISTed line by means of a pure cursor move before copying the remaining characters with the right arrow key. A pure cursor move simply moves the flashing cursor to any position on the screen without deleting or adding characters.

Using the example in the Basic Programming Reference Manual on Page 114 type:

```
10  PRINT  TAB( 10);"THIS IS
    A PROGRAM"( RETURN )
```

Then press RETURN. To alter and re-copy the program line take the following steps:

(1) Type LIST 10 (RETURN)

(2) Press ESCAPE (and release). Type J,I,I,I until the cursor is over the first character.

(3) Press the spacebar to get out of the edit mode.

(4) Type 2 (this will alter the line number as a demonstration).

(5) Press right arrow (copying key) until the O of PROGRAM has been passed over.

(6) Press ESCAPE (and release). Type K,K,K... until cursor is over G.

(7) Press spacebar to get out of the edit mode.

(8) Continue pressing right arrow until last character (a quotation mark in this case) has been passed.

(9) Press (RETURN).

(10) Type LIST to check that editing has been achieved.

If several lines require editing it is worthwhile altering the size of the screen display so that the extra spaces introduced by LISTing do not occur.

This is done by typing POKE 33, 33 (RETURN) (See Page 129 of the Basic Manual) then LISTing the line number. After this command the right arrow key can be used from the beginning of a LISTed line to the end without gaining extra spaces and steps (6) and (7) can be omitted.

After editing is complete type POKE 33,40 (RETURN) to restore the screen display to normal width.

When writing programs every programmer needs to insert extra lines at some stage, which is why it is usual to have line numbers in increments of 10.

Even with this precaution it is possible that additional lines are required between consecutive numbers, and I for one am grateful the System Master Disc contains a renumbering program. Although it also contains renumbering instructions I had some difficulty getting going.

With this program it is possible to renumber in a variety of ways. The panel on the opposite page shows you how to re-number from 10 in increments of 10.

After unravelling the mysteries of renumbering I found it a very useful program, and with my new found power renumbered every program I could lay my hands on.

While using a program for structural calculations, I found that the answers computed were not the ones I expected. After some time checking this lengthy program I eventually discovered certain numbers used in calculations had been changed by the renumbering routine.

A call to Apple confirmed that there was a mistake in their System Master

renumbering program which changed all constants following an asterisk. The following instructions will correct the error. It should then be SAVEd on your own initialised disc.

I now have the renumber program saved on all discs in use so that I can renumber any program without having to change discs. This is particularly useful if you have only one disc drive.

The renumbering program is corrected as follows:

(1) Insert Systems Master disc in drive no. 1.
(2) Switch on computer and monitor or if already on type PR#6 (RETURN)
(3) When disc stops type LOAD RENUMBER (RETURN)
(4) When disc stops type POKE 4789,172 (RETURN) POKE 4790,171 (RETURN)
(5) Remove System Master disc and replace with initialised disc.
(6) Type SAVE RENUMBER (RETURN)

How to renumber a program

(1) Insert disc with renumbering program in drive no. 1.
(2) (a) Switch on computer and monitor; or (b) if already on type PR#6 (RETURN); or (c) if the drive has been in use carry out the next instruction.
(3) Type RUN RENUMBER (RETURN).
(4) When information appears on screen press (RETURN).
(5) Further information will appear on screen. If you don't understand it it is probably not applicable!
(6) (a) If program to be renumbered is on disc already in drive no. 1 type LOAD (program name) (RETURN); or (b) if program to be renumbered is on another disc remove disc from drive no. 1 and replace with other disc. Type LOAD (program name) (RETURN); or (c) if program to be renumbered in drive no. 2 type LOAD (program name), D2 (RETURN).
(7) When program has LOADed type & (RETURN).
(8) After a pause, depending on length of program being renumbered, the cursor will flash when complete.
(9) Type SAVE (program name) (RETURN). This transfers the RENUMBERED program to the disc.
(10) Type LIST (RETURN) if you want to see that program lines and GOTO numbers etc., have been renumbered.

If the printer has been connected to slot 1 and is plugged in and switched on as directed by the printer manual the printer becomes operational by typing PR#1 (RETURN) from the computer keyboard.

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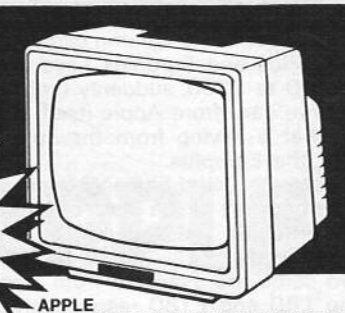

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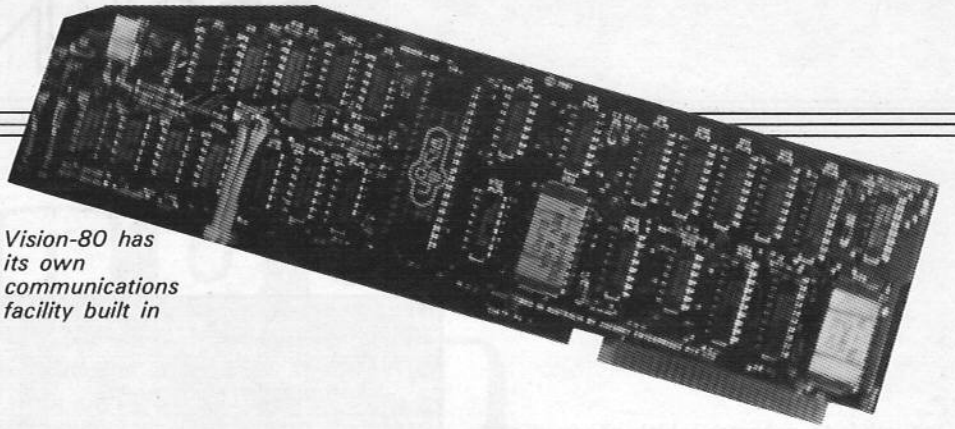


Vision-80 has its own communications facility built in

Independent 80 column cards for the IIe

By NEVILLE ASH

ONE of the most dramatic changes in the new Apple IIe compared with the Europlus has been with the cost and positioning of the 80 column card.

While prices of 80 column cards for the Apple II Plus and Europlus have ranged from £150 to £200, suddenly there is an 80 column card from Apple itself for just £80. What a saving from the cost of a card for the Europlus.

However this card has only been made possible because of the electronics inside the new IIe. So the situation has really changed.

Two cards are available from Apple – costing £80 and £180 respectively. The more expensive one has an extra 64k of RAM which can be used with lots of new IIe programs like Multiplan.

On the surface there is a choice of just these two cards and nothing else. But just like the growth industry around the original Apple, this same industry has been hard at work for the IIe. After all, an independent card at the same price as the £80 Apple card, which had more possibilities, would be a real bargain.

At the same time there is another case for a card which can be used with both the Europlus and the IIe, which could offer particular features, when compared with the lowest cost Apple one. Then this card's cost could be split between two Apples making it marginally more expensive than buying the Apple IIe card for the IIe alone.

The Ramview80 from Elite Software – creators of Format-80 – offers a basic card for the same price as the Apple one, with a number of extra possibilities. Unlike the Apple product, Ramview-80 can be upgraded from just a simple 80 column card to an extra 64k RAM mode. And when you have upgraded to 64k – more of that later – a further modification allows you to use the ultra-high resolution graphics mode, described in the reference manual.

The manual for Ramview80 has diagrams showing exactly how the card fits into the IIe, so there can be no chance of an error.

And as far as upgrading to 64k yourself, diagrams link up with the text to make it quite simple.

Let's go through this adaptation step by step. First remove the integrated circuit number 5 (IC5), which is the largest chip on the board. Now cut the joined triangles at points A, B & C as shown in the diagram. Do be careful not to cut any of the other tracks on the board.

Now, using a small soldering iron, join the triangles at A & B. The board should now resemble the next diagram in the manual. Last stage is to plug-in eight 64k-by-1 4164 RAM chips into IC positions 7 through 14, in the sockets provided at the top of the board. Note these RAM chips should be rated no slower than 150 nano-seconds.

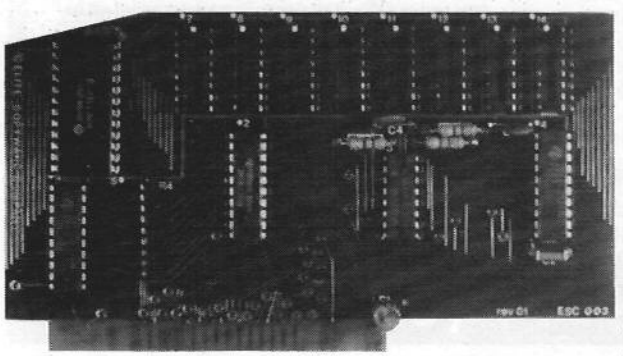
Why should you go to all this work on the Ramview card? Because the chips themselves will only cost around £35, making a card the equivalent of the Apple extended memory version for a total cost of £115 – a saving of £65.

Now the upgrade has been completed, by doing just a bit more you can benefit from the ultra-high resolution graphics mode described in the Apple IIe reference manual.

Locate the two triangles at position D on the back of the board – shown in a diagram in the manual – and solder the two together. With this link joined you'll be able to use the ultra high resolution graphics on the IIe.

The card will be recognised by a program using the 80 column facility and boots up in the normal way. However if the boot disc leaves the flashing cursor on the screen just type PR # 3 and you'll be able to run the program.

When you want to return to 40 column



Ramview 80 for Apple IIe

RAMVIEW 80

VISION 80

mode just press ESC CTRL-O. From within a program printing a CTRL-U or CHR$(21) will clear the 40 column screen, and leave the cursor in the top left hand corner.

While many people will find the idea of adding their own 64k of RAM and using a soldering iron attractive, where do you get these chips? Your best bet is to read the hobby electronics magazines where there will be pages of companies offering them. Just make sure they are the right ones. Shopping around may bring the price lower.

However if you feel that using a soldering iron is beyond you a friendly dealer should be able to help – or even supply the Ramview complete with chips installed.

The Ramview is an attractive buy, but has two drawbacks – it can only be used with the Apple IIe and there is no built-in communications facility.

Vision80 is an Australian card distributed here by Pace Software Supplies. It can be used with *both* the Europlus and IIe, plus a communications facility. The main difference is changing over from use on a Europlus to a IIe, is simply changing a chip. What could be easier?

As a straight price comparison then Vision80 is more expensive than the Apple card with the extra 64k but look a bit closer and it appears more attractive. Comparing the Vision80 with the standard Apple card for the IIe, there are a number of distinct advantages.

There is a full Applesoft implementation and provision for input to a printer while you are in the 80 column mode ... facility for INPUT and GET statements ... couples with Applesoft closer than the Apple card ... a correct Text facility.

And for the Europlus, Vision80 provides the shift key upper and lower case facility.

Vision80 offers a communications facility for both Apples, which is something no other current 80 card appears to have as a feature.

Working through either an Apple communications card or serial card, the communications mode lets the user specify the number of bits transmitted, the parity and the number of stop bits.

The commands allow transmission and receiving of files and take control of a remote Apple (also using a Vision80 card), DOS commands can be entered, permit a break to be transmitted and also toggle between half and full duplex modes.

This communications firmware costs around £50 on its own, so really the comparison should be with the £195 price of the Vision80 reduced by £50. At £145 Vision80 is an extremely attractive buy as an 80 column card.

Adding the communications facility, and for the price of the Apple card with 64k RAM, you have a card for either the IIe or Europlus with communications built in.

If an 80 column card is not needed all the time, one like Vision80 could be shared between two Apple owners having different models.

Two interesting utilities work with Vision80. One gives you an 80 column display with Visicalc and expands memory to 143k when a 128k RAM card is used. And AWII is an 80 column pre-boot facility for Applewriter II.

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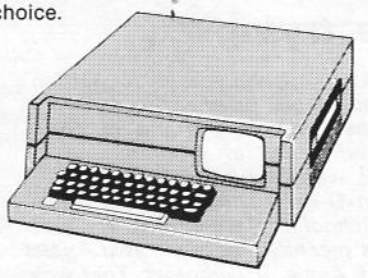

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There's a fortune waiting for the rookie's manual

I READ with much interest and feeling the letter by K.B.R. de Boer (Windfall, June) because it describes so exactly the plight of the Apple novice – or any other computer novice for that matter.

I use an Apple II Plus in my job as treasurer of a charity, and found initially that unless one had unlimited evening hours to devote to the tutorial and DOS manual there was little hope of learning much about programming.

There are weekends, of course, but I do have a family and they expect me to be around sometimes. We bought the Apple to modernise our accounts system, and to be fair the TABS manual was reasonably understandable and is better now that some updating has been undertaken.

Conversely, we bought the Omnis database, and the manual was dreadful – even their boffin admitted that it was written for experts and not rookies!

It all makes one fight shy of buying anything on disc unless one has used it first, or knows someone who has. Otherwise $120 + + just buys more gobbledygook to add to the rest one already has.

Yes, the man who writes a program and a manual aimed at the novice is indeed heading for a fortune – there's probably only one of his kind in the whole world.

Thank you for Windfall – some pages cater for the rookie, anyway! **– L.H. Grant, Gosport.**

Well at least we're trying . . .

I AM thankful to your magazine for getting me from absolutely nowhere to a certain level in the fascinating world of computers. Your series of programming in seven days was very helpful.

I am an O level student at the International School of Tanganyika, and our school has recently purchased two Apple IIs and one Apple /// computer. That was when I was first introduced to a computer. At about the same time as the purchase, my school started subscribing to your magazine.

Although I was disappointed at first to find a lot with which my limited knowledge could not cope, I was boosted by the "seven day" idea. I hope you will continue to help beginners in such ways.

I have one request to make. After seeing wonderful uses of hi-resolution graphics on the computer, I have planned a program which would need it, but I am not sure of the various ways in which it can be used. Can your magazine possibly give me a clue? **– Gaurav Desai, Dares Salaam, Tanzania.**

A bug under the Spreadsheet

SADLY in its present form the Spreadsheet – or Magicalc – has a bug. Enter 99.96 then /FI (format integer) and answer is not 100 but 140!

Don't panic, I gather help is on the way. I spoke to the Call-A.P.P.L.E. hotline and they have this matter in hand for members who bought the program from the club.

I was also advised that Artsci would be dealing with those who bought it as Magicalc, but here I would suggest contact your supplier in the UK first.

They are also aware that some of us would like to access the extra 64k on the 80 column extended card for the Apple IIe. This matter is also in hand, and will be dealt with at the same time, so they say. **– Peter Trinder, Sunningdale, Berkshire.**

More points about Pilot

I FULLY endorse the comments made by Max Young (Windfall, April) regarding the inability of Apple Pilot to provide a printout of the Pilot lesson as it is running.

While I view Pilot lessons as only one more teaching aid alongside tapes, slides, overheads, chalk, etc, and, while the information in Pilot lessons must be reinforced and may be presented in other ways, I still think it would be useful to have this printing facility easily available in Apple Pilot.

The original article on Apple Pilot (Windfall, January) was aimed at a naive (not in the derogratory sense) audience, not experienced Pilot programmers and consequently my comments about the editing features must be read in context.

Editing is sophisticated in Pilot but, for the beginner, it is yet another set of commands to be mastered. While beginners learn to produce simple Pilot programs very quickly, the editing features take longer to learn.

For example, recently I ran a five day course on Apple Pilot and it was not until well into the second day and, for some, much later before they were totally familiar with the editing commands.

These were true beginners in the sense that they had little or no computer experience and certainly no experience of another language. I would have thought that Pilot was likely to be taken up by teachers who might well fall into this category. For a beginner it is much easier to say: "If it's wrong re-type the line" (Basic) than "Into lesson text editor, move the cursor, insert/delete/exchange etc., make your correction, back to edit mode, quit the edit mode".

But again, I would like to endorse what Max Young says, "Pilot is a most valuable and flexible tool," and is, in my experience, easy for beginners to pick up. As I said in the original article, mastery of the editing is a question of practice.

I am pleased that Max Young has had no problems with disc wear. My comments were based on the "average" life of a floppy of 40 hours. We have had no problems which we can pinpoint as being due to disc wear. We have had problems duplicating old, re-initialised discs, but not with brand new ones. Whether this is due to disc wear or not is difficult to know.

Finally may I comment on the conclusion reached in the first paragraph of Max Young's letter, that I have not really used

Apple Pilot. I found this to be unnecessary and counter-productive. Max Young and myself are both obviously enthusiastic about Apple Pilot and should be communicating positively, not hurling abuse at each other across the pages of Windfall.

I will not bore your readership with my experience of computing and in particular Pilot, but if Mr Young would care to send me his full address then I will gladly send him my curriculum vitae! – **Brian S. Rushton, Coleraine.**

Hidden darts error

AS a novice to computers and programming, I attempted to play "Apple Darts" from your March issue. Can you explain why my program stops at the flashing letter 'T' at the start of the game with the instruction ILLEGAL QUANTITY ERROR AT 230. I have attached a copy of my program printout which may help. – **Eric Mason, Reading.**

● Your problem with Darts proved fascinating, for two reasons. The first illustrates one problem with Basic error messages.

The error in line 230 was actually caused by a syntax error in a line far removed. The second reason was that I had never realised that what you typed would constitute an error.

Your problem is caused simply by the presence of a comma at the end of each DATA statement (lines 1200-1230 inclusively).

Applesoft is picking up a zero line after each comma which makes a nonsense of the shape table being POKEed in at 768. It therefore knows that a number is illegal in line 230 and the resultant error message occurs. – **Max Parrott.**

. . . and a bug

I ENJOYED Darts very much (Windfall, March 1983). Being a natural cheat, I wanted to remove the wobble when I was playing so I shoehorned in at 250 IF NAME$(MI) = "PAUL" THEN 280.

This threw up an interesting bug. If X = 0 at line 400, the machine would read the 20s (or multiples) as 1 (or multiples) and the 3s as 19s. I cannot work out why, but it was avoided by changing line 400 to read Y=Y–96 X=X–140: IF X=Z THEN X =.1. – **Paul Dawson, London.**

29's the end of the line

HAVING read the article on Snakebyte in Windfall of February, 1983, we eagerly practised on our Apple. The great day came! Level 28! The final challenge!

And what happened when level 28 was completed? Did our friendly computer congratulate us on the achievement of completing the game?

*No, it just carried on to Level 29. Does **anyone** know how many levels there are in Snakebyte please?* **Anon.**

● THIS letter arrived without a signature. Obviously the excitement of reaching level 29 was too much! The friendly folk at Sirius Software tell me that there are no more levels after 29, but unfortunately there's only one sure way to prove it . . . let us know what happens when you do. In the meantime, we'd love to know who you are! **Cliff McKnight.**

All comes to nought

REGARDING the Neat syntax sifter in Appletips (February 1983), while this works wonderfully the first time it finds an error, and prints it out, on putting the error right it is impossible to clear the printout of the late error.

Line 63120 becomes updated with the error line and will not restore, which is a great pity as it is such a useful program.

I enclose a listing from my printer which I have checked and rechecked, but can find no mistake in my input.

I assume the "0" in line 63040 is a nought and that line 63120 is List OOOOO:end, that is five Os, not noughts, which seems very odd, but I have changed the noughts for Os and the Os for nought, but with no effect.

This could be such a very useful routine, I would start all my programs with it. – **Frank H. Mallett, Shoreham.**

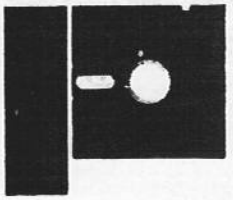
● I have looked at the problem because I originally tested the program out and didn't find the snag to which you refer. I agree that it is a useful routine.

I typed out the program again, from your listing, with the addition of a line 50 to test a subsequent error and ran it. I found that as long as there is an END command before the error printing routine it behaves itself. Thus the following program listing was obtained after correcting the first error in line 40.

I can only assume that your version was going through the routine twice because of the missing line 100 and not due to another error and so it did not need updating.

Line 63040 should contain a nought and line 63120 can contain either noughts or Os because these values are overwritten by line 63100. – **Max Parrott.**

```
10  ONERR  GOTO 63000
20  PRINT "THIS IS A TEST OF SYNTAX SIFTER"
30  PRINT "THE QUOTES ARE MISSING AT START OF NEXT LINE"
40  PRINT "THE QUOTES ARE MISSING"
50  PRINT HERE TO O"
100  END
63000 Y =  PEEK (222)
63010  IF Y <  > 16 THEN  END
63020 X =  PEEK (218) +  PEEK (219) * 256
63030 X$ =  STR$ (X)
63040  IF  LEN (X$) < 5 THEN X$ = "O" + X$: GOTO 63040
63050  TEXT : HOME
63060  POKE 33,33
63070  VTAB 12: PRINT "SYNTAX ERROR IN ";X; CHR$ (7)
63080 CURR =  PEEK (121) +  PEEK (122) * 256
63090  FOR I = 1 TO 5
63100  POKE CURR + 78 + I, ASC ( MID$ (X$,I,1))
63110  NEXT I
63120  LIST 00050: END
```



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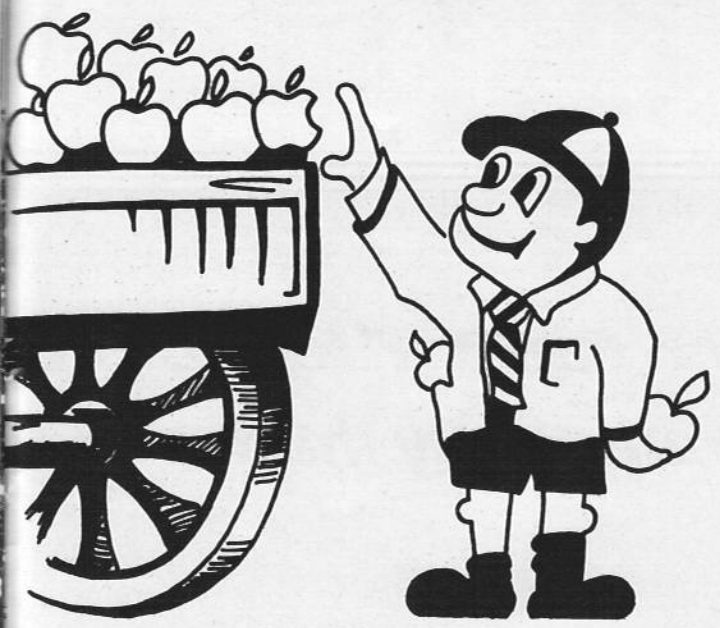

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Monthly review of
Apple in education

Super Piloting a way through lecture room snags

By MAX YOUNG

AT last Apple SuperPilot has arrived in this country and with it comes an end to the few, but important, problems that were associated with Apple Pilot.

The main problems lay in recording student answers and recovering them, the impossibility of printing out a lesson while it was running, the somewhat slow speed of execution of the program – especially if the student answers were being recorded – and the inability to write coloured text on coloured background.

SuperPilot besides overcoming these problems also offers many other enhancements which make the use of Apple SuperPilot easier and enable the author to be more creative.

I will deal with the major improvements in two sections, the editors and the language.

The Graphics Editor has been greatly improved. Firstly, the graphic is drawn more quickly on the screen and secondly editing of the graphic is made much easier. Admittedly I have little experience in using the Graphics Editor, my own work being done mainly using the Text Editor, but those people interested in using the Graphics Editor will now find it much easier to use.

The Lesson Text Editor now displays both uppercase and lowercase on the editor screen, instead of the previous normal and reverse video. This will certainly make things much easier for the new user, but those who are used to the old system might find it a little confusing to start with. One other major improvement is that the number of blocks available to store a single lesson has been increased from 18 to 22.

The utility programs have also been improved. Initialisation is now quicker and, more importantly, any number of discs can be initialised without the need to replace the author disc each time. Further, three types of disc can now be initialised – lesson, resource and Syslog.

The main advantage of the last two types is that because they do not contain any of the SuperPilot system files they have twice the space available to store student responses. In practice most authors will probably only make use of the Syslog disc, since it is specifically designed to record student answers.

One final improvement to the utility programs is that it is now possible to copy over only selected files from one disc to another rather than, as previously, having to copy the whole disc.

One completely new instruction is Type Specify – TS: Seventeen different commands can be given with this instruction.

The text window (viewport) is now set using the TS:V1,r,t,b instead of the previous G:V1,r,t,b instruction. However the old G: instruction is still retained so that programs previously written using G: will run without modification. Needless to say those used to G: are still free to use it when programming in SuperPilot.

The size and thickness of text characters can now be altered using the two commands TS:Sn and TS:Tn where TS:Sn gives either regular-size or double-size characters and TS:Tn gives either normal or boldface type.

The command TS:P now overcomes the problem of not being able to print a lesson while it is being run. TS:P sends all text simultaneously to the screen and to the printer. The command TS:Q turns off the printer. All characters printed appear in the printer's standard set regardless of whatever TS:

* *Max Young is Senior Lecturer in Law at Coventry (Lanchester) Polytechnic.*

'The beginner can write simple
by using literally only half a do

command is being used. Further, graphics are only available on the Apple Silentype printer.

Background and foreground colours can now be selected using the commands TS:Bn and TS:Fn, where TS:Bn sets the background colour and TS:Fn the foreground. Twenty one colours are available for both foreground and background, but only experiment will reveal which combinations are suitable. Many (most?) are ghastly.

Inverse colours are now provided by TS:I. Inverse is turned off by TS:N. The remaining TS: commands are:

TS:Gx,y moves the text cursor to the specified x and y co-ordinates relative to the text viewport.

TS:Xn sends to the screen at the text cursor position the character whose Ascii number is n. This command together with the previous one obviates the necessity of having to string Ascii commands.

TS:Ln provides multiple line spacing.

TS:An$, TS:W1,r,u,d and **TS:Dn** enable characters (created in the Character Set Editor) to be animated.

TS:ESn erases the entire screen in graphics colour n.

TS:Mn deals with the way in which one character is typed over an existing character.

Another new feature of SuperPilot is the Keep (K:) instruction. This to a large extent removes the need for the previous FIX:, FOX:, FI: and FO: although they are retained in SuperPilot and may still be used. The K: instruction and the KS: (Keep Save) command together with the Syslog disc or

Bug can cause crashes

SINCE writing this article I have discovered a "bug" in SuperPilot. I hesitate to call it a bug outright because it is partly poor programming. The fault is as follows:

Assume two lessons, 1 and 2. Lesson 1 ends:

```
*last
........
........
........
l:Lesson2
```

Lesson 2 begins:

```
pr:gu
j:a1
........
........
........
*a1
*b1
```

If the above format is run in Pilot there will be no problem. The Link instruction will be encountered in Lesson 1, it will Link to the beginning of Lesson 2 and will then Jump to Label *a1.

If, however, the same format is run in SuperPilot label *a1 will not be found, an error message will appear on the screen and when the spacebar is hit to continue with execution of the program the lesson will be ended (crash). It makes no difference if Lesson 1 ends with the instruction:

```
l:Lesson,a1
```

... the same problem will be encountered.

The most simple solution seems to be to separate the two label lines by a blank line, so Lesson 2 should appear thus:

```
r:gu
j:a1
........
........
........
*a1

*b1
```

For those purists who would never encounter such problems good luck to you, but to us mere teachers (I nearly said mortals) be aware of the problem, especially if you are converting Pilot programs to SuperPilot. You will find that programs that ran perfectly well under Pilot will crash under SuperPilot.

...but worthy programs ...zen commands'

the system.log file now provide all that is necessary to record and retrieve student answers. True, it was possible to create files in Apple Pilot and read them in Apple Pascal, but this involved more than a simple knowledge of programming, and the "philosophy" of Pilot was to make programming easy for the non-expert.

All that is now necessary in order to record student answers is to accept the student's answer in a string and then to keep it or keep and save it.

A:x Place the student's answer in x$.

K:x Store x$ in the Apple II's memory buffer.

At this stage x$ is not written to the disc. All the K: instructions stored in the memory buffer are only written to disc when the buffer is full or a Link (L:) instruction is encountered. This might result in answers not being recorded if, for example, a student switches off the Apple II before either of the two previous conditions is satisfied. To surmount this problem Keep Save (KS:) may be used.

KS:x Store x$ in the Apple II's memory buffer and then immediately write it to the disc. It will then be automatically saved under the system.log file. As far as the Language Reference Manual is concerned it stops with the writing of the answers to the system.log file and leaves you to buy as an extra Apple SuperPilot Log.

However, if all you want to do is read or printout a student's answers, then this is easily done using SuperPilot, since system.log stores the answers as a SuperPilot program.

All that is therefore necessary is to edit system.log using the Text Editor if you just wish to read the answers, or if you wish to print the answers all you need do is, while in the Text Editor, Print lesson system.log! You will then be provided with a hard copy of your student's answers and in the order in which he answered them, thus indicating which route he took through the lesson. This is indeed a very helpful feature.

Potentially the most exciting new instruction is V:. This is intended to control almost any peripheral device such as a videotape or videodisc. The idea is to enable more complete teaching packages to be made available to a student.

Lectures could be presented on videotape and understanding of the topic could be immediately tested on the computer. If the computer test demonstrated lack of understanding then the tape could be moved to another section to give remedial tuition. Understanding of the topic could then be re-tested.

The potential of such a system is vast, but unfortunately V: involves more cost in the purchase of the SuperPilot Technical Support Package. Unfortunately I have not yet been able to test it.

Another addition to provided is an immediate execution mode. This can be utilised either from within the Lesson Text Editor or while running the lesson in Author Mode. This is a very useful addition and should prove most helpful to the author in developing lessons.

A further addition to the graphics commands now means that relative graphics (turtlegraphics) are now available.

Minor but helpful additions to the language include a doubling of space available for variables and strings, and the ability to include multiple commands such as Dimension and Compute on one line, for example:

```
D:a$(10);b$(20);c$(80)
C:a$="at";b$="last"
```

Apart from four minor changes, three of them graphics instructions, lessons written in Pilot will run under SuperPilot. All that needs to be done is to initialise a SuperPilot lesson disc and transfer the old lesson files to the new disc. You then have your new SuperPilot lesson.

While SuperPilot will run old programs without any modification, you will find it advantageous to convert, if you have such things, your old file recording routines to the new K: and KS: instructions. This will noticeably speed up the running of the lesson. If a printer is to be used to record the lesson as it runs it is preferable to use one with its own memory buffer otherwise the lesson speed will be slowed.

I honestly cannot think of any disadvantages of SuperPilot save the fact that a 16k language card is needed and I haven't got one for my Apple at home *(all donations gratefully received!)*. Admittedly, I have only had, at the time of writing, SuperPilot for less than a week, but the main problems that existed with Pilot have been more than rectified.

As far as the newcomer to SuperPilot is concerned, he might find that the language and editors seem dauntingly long and complex. This is true if he tries to master everything in one go. However the philosophy of the simple language still exists, in that the beginner can write simple but worthy programs by using literally only half a dozen commands. As his skill grows there is a powerful and creative fully-developed language awaiting him.

In addition to the previous Pilot requirements, all that is needed is a 16k language card.

One warning: The author discs I have based this review on are not write protected. This is probably a fault in the manufacture, and you would be well advised to write protect the discs yourself, especially if a newcomer to computing.

Apple SuperPilot costs about £150. For that you get two author discs, a sample lesson disc which demonstrates what is possible using the new language and the new features and their use, and two Co-Pilot discs which teach you how to use the main instructions. With these five discs you have two excellent manuals.

Conclusion: With the introduction of SuperPilot Apple have provided a powerful and creative tool which should provide the CAL author with everything he needs.

I think SuperPilot will establish itself as the standard to be followed by other forms of Pilot and CAL languages in general.

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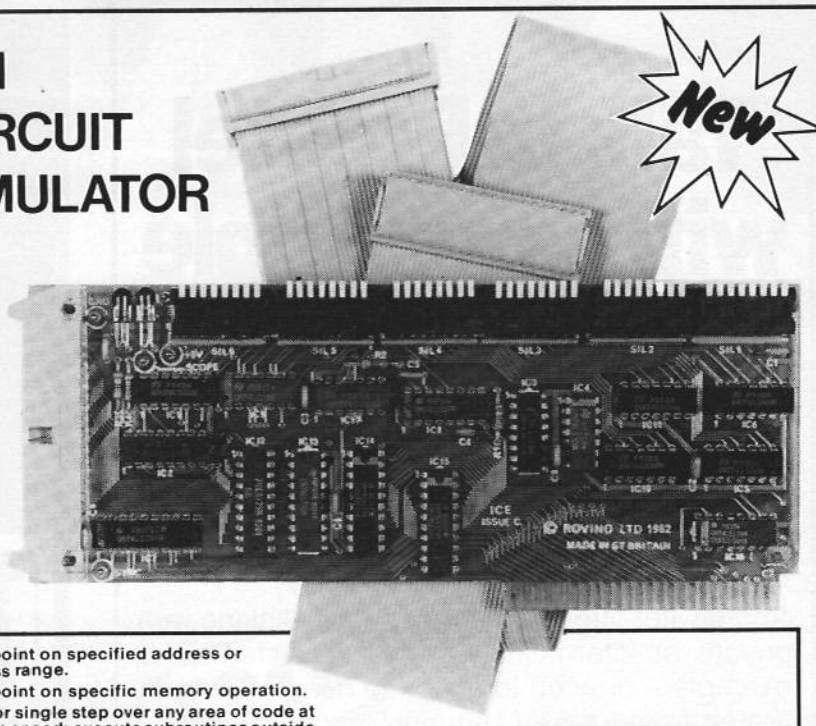

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WHEN accessing disc files from within a Pascal program it is often important to know the names of files currently available on the disc in use. This program by TERRY THOMPSON gives you this facility together with error handling routines. The listing is a superb example of a well documented program, and it clearly illustrates the function of each routine.

DISC DIRECTORY

```
(*$L PRINTER:*)
(*****************************************************************************
*                                                                           *
*       LISTDIRECTORY                                                       *
*       By T.N.Thompson                                                     *
*       from a basic idea of Dr K.D.Indge.                                  *
*                                                                           *
*       This program prints the Disk Directory on screen,                   *
*       from inside a program and should be useful when                     *
*       entering file names from within that program.                       *
*                                                                           *
*       In order to get a full directory on one screen                      *
*       (a maximum of 77 entries) and leave room for                        *
*       other prompts, the CP/M format has been adopted,                    *
*       and uses the full 80 column screen width.                           *
*       If you are using a standard Apple, the extra                        *
*       40 columns can be displayed by typing Ctrl-A.                       *
*                                                                           *
*****************************************************************************)

Program CATALOG;

(*****************************************************************************
*                                                                           *
*       DIRECTORY - Global                                                  *
*                                                                           *
*       The global procedure. All other procedures                          *
*       and variables used are contained inside it.                         *
*                                                                           *
*       This means that it can use whatever variables it                    *
*       needs and, once completed, they are discarded.                      *
*                                                                           *
*****************************************************************************)

procedure DIRECTORY;

(*****************************************************************************
*       Procedure Global Variables                                          *
*       --------------------------                                          *
*       BUFFER                                                              *
*       Holds the Directory sector in use.                                  *
*                                                                           *
*       Procedure Local Variables                                           *
*       -------------------------                                           *
*       CH is used in the DIRECTORY Procedure to check for                  *
*       keyboard input.                                                     *
```

```
      if (ERROR in [5,9]) then
        begin
          writeln('Sorry, either that drive is malfunctioning,');
          writeln('or it is no longer on line. ');
          writeln;
        end;     (* if *)
      if (ERROR = 64) then
        begin
          writeln('The disk in that drive has a crashed sector. ');
          writeln;
        end;     (* if *)
    end          (* if then *)
  else
    begin
      writeln('ERROR # ',ERROR,' There is an indeterminate error');
      writeln('Check the Pascal Language Manual for exact nature');
      writeln;
    end;         (* else *)
end;             (* procedure *)

(*****************************************************************************
*                                                                           *
*       READSECTOR - Local                                                  *
*                                                                           *
*       Reads the Directory sectors into the buffer                         *
*       and checks if it has been completed.                                *
*       If so, carry on; otherwise print error message                      *
*       and exit to Drive select for another try.                           *
*                                                                           *
*       After an I/O operation, the built in function                       *
*       IORESULT contains a non zero result if there was                    *
*       an error. This can only be accessed ONCE. It is                     *
*       therefore stored in a local variable to be oper-                    *
*       ated on.                                                            *
*                                                                           *
*****************************************************************************)

procedure READSECTOR(DRIVE,BLOCK : INTEGER);

var IOERROR : INTEGER;

(*$I-*)

begin
  UNITREAD(DRIVE,BUFFER[1],527,BLOCK);
  IOERROR := IORESULT;
```

```
(* Globals *)

var     BUFFER  :  PACKED ARRAY[1..527] of CHAR;

(* Locals *)

        CH      :  CHAR;

(*************************************************************************
*                                                                        *
*       Procedure forward references.                                    *
*                                                                        *
*       There is only the one forward reference.                         *
*                                                                        *
*************************************************************************)


function WRITEDIRECTORY(DRIVE,BLOCK : INTEGER) : BOOLEAN; FORWARD;


(*************************************************************************
*                                                                        *
*       FILETYPE - Local                                                 *
*                                                                        *
*       Adds the file type to the end of the file name                   *
*                                                                        *
*************************************************************************)

procedure FILETYPE(J : INTEGER);

begin
  case ORD(BUFFER[J-2]) of
    2 : write(' COM ');
    3 : write(' TXT ');
    5 : write(' DAT ');
  end;              (* case *)
end;                (* Local procedure *)

(*************************************************************************
*                                                                        *
*       PRINTERROR - Local                                               *
*                                                                        *
*       Prints the relevant error message for READSECTOR                 *
*                                                                        *
*************************************************************************)

procedure PRINTERROR(ERROR : INTEGER);

begin
  writeln;
  writeln;
  if (ERROR in [2,3,5,9,64]) then
    begin
      if (ERROR in [2,3]) then
        begin
          writeln('Sorry, you have tried to access an illegal
          device') writeln;
        end;    (* if *)
```

```
      PRINTERROR(IOERROR);
      exit(WRITEDIRECTORY);
    end;            (* if *)
end;                (* Local procedure *)
(*$I+*)


(*************************************************************************
*                                                                        *
*       WRITEDIRECTORY - Local                                           *
*                                                                        *
*       Does the donkey work of writing the Directory                    *
*                                                                        *
*       If you are using an 80 column terminal, you can                  *
*       delete all references to the variable ITERATIONS                 *
*       from this local procedure.                                       *
*                                                                        *
*       It has been included to take account of the FEATURE              *
*       of the standard 40 column Apple screen, which                    *
*       prevents Pascal from knowing how wide the screen is.             *
*       The 80 column terminal automatically inserts a                   *
*       carriage return after the 80th column has been                   *
*       filled, so that the writeln is not required.                     *
*                                                                        *
*       Delete ITERATIONS from the Var list; delete the                  *
*       first line of the procedure (after begin); and                   *
*       from ITERATIONS := to end;                                       *
*                                                                        *
*************************************************************************)

function WRITEDIRECTORY;

var     FILENUMBER,
        ITERATIONS,
        TEMP1,
        TEMP2,
        TEMP3,
        NAMELENGTH      :  INTEGER;

begin
  ITERATIONS := 0;
  READSECTOR(DRIVE,BLOCK);
  page(OUTPUT);
  TEMP1 := 33;
  FILENUMBER := ORD(BUFFER[17]);
  writeln;
  writeln;
  for TEMP3 := 1 to FILENUMBER do
   begin
     NAMELENGTH := ORD(BUFFER[TEMP1]);
     for TEMP2 := 1 to NAMELENGTH do
       write(BUFFER[TEMP1 + TEMP2]);
     for TEMP2 := 1 to (15 - NAMELENGTH) do
       write(' ');
     FILETYPE(TEMP1);
     ITERATIONS := ITERATIONS + 1;
```

```
      if ITERATIONS = 4 then
        begin
          writeln;
          ITERATIONS := 0;
        end;  (* if *)
      TEMP1 := TEMP1 + 26;
      if TEMP1 > 512 then
        begin
          TEMP1 := TEMP1 - 512;
          BLOCK := BLOCK + 1;
          READSECTOR(DRIVE,BLOCK);
        end;       (* if *)
    end;          (* for loop *)
  writeln;
  WRITEDIRECTORY := TRUE;
end;              (* Local procedure *)


(*************************************************************************
*                                                                        *
*       SELECT - Local                                                   *
*                                                                        *
*       This procedure simply allows you to select the                   *
*       drive to be listed.                                              *
*                                                                        *
*       If your system has a different number of drives,                 *
*       then enter, or delete lines for the drive numbers.               *
*       Don't forget to enter the correct VOLUME number                  *
*       in the statements, and to alter the 'while'                      *
*       statement.                                                       *
*                                                                        *
*************************************************************************)

procedure SELECT;

var     DRIVE,
        ITERATIONS,
        BLOCK   :   INTEGER;

        DRIVESTR : CHAR;

begin
  ITERATIONS := 0;
  repeat
    begin
      DRIVE := 0;
      DRIVESTR := ' ';
      ITERATIONS := ITERATIONS + 1;
      writeln;
      writeln;
      writeln('1)...Drive 1 ');
      writeln('2)...Drive 2 ');
      writeln('3)...Drive 3 ');
      write('Which ? ');
      while NOT (DRIVESTR in ['1','2','3']) do
        readln(DRIVESTR);
      case DRIVESTR of
        '1' : DRIVE := 4;
        '2' : DRIVE := 5;
        '3' : DRIVE := 11
      end; (* case *)
      BLOCK := 2;
    end;          (* repeat *)
  until ((WRITEDIRECTORY(DRIVE,BLOCK)) or (ITERATIONS = 3));
END;              (* Local procedure *)

(*************************************************************************
*                                                                        *
*       DIRECTORY - Global                                               *
*                                                                        *
*       This procedure asks if you need the Directory                    *
*       at all. If not it exits the program. This exit                   *
*       can be altered to wherever you want in your                      *
*       program.                                                         *
*                                                                        *
*       If you elect to display the Directory, the screen                *
*       will be cleared, and you will be asked for the                   *
*       drive number. Once given a correct number, the                   *
*       Directory will be displayed, and the Procedure                   *
*       exited, leaving the whole Directory on screen                    *
*       such that your program prompt can be displayed                   *
*       beneath it.                                                      *
*                                                                        *
*************************************************************************)

begin
  page(OUTPUT);
  CH := ' ';
  write(' Do you want the directory ? (Y/N)  --> ');
  while NOT (CH in ['Y','y','N','n']) do
    read(KEYBOARD,CH);
  case CH of
    'Y','y' : SELECT;
    'N','n' : exit(DIRECTORY)
  end;            (* case *)
end;              (* Global procedure *)

(*************************************************************************
*                                                                        *
*       Main program                                                     *
*                                                                        *
*       When incorporating this routine in your program,                 *
*       delete this section and the program heading.                     *
*                                                                        *
*       It's been included here so that the procedure can                *
*       be operated on its own, outside your program.                    *
*                                                                        *
*************************************************************************)

begin
  DIRECTORY;
end. (* program *)
```

Following the outstanding success of apple '83 we're putting the Apple on show at all Britain's major business-to-business exhibitions

apple village

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The first Apple Village will form part of the largest business show in the South East – the Kent Industry and Commerce Exhibition, to be held at the Stour Centre, Ashford, from Sunday, September 18, to Wednesday, September 12.

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Additional tickets can be obtained free of charge by sending a stamped addressed envelope to: Apple Village, Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY.

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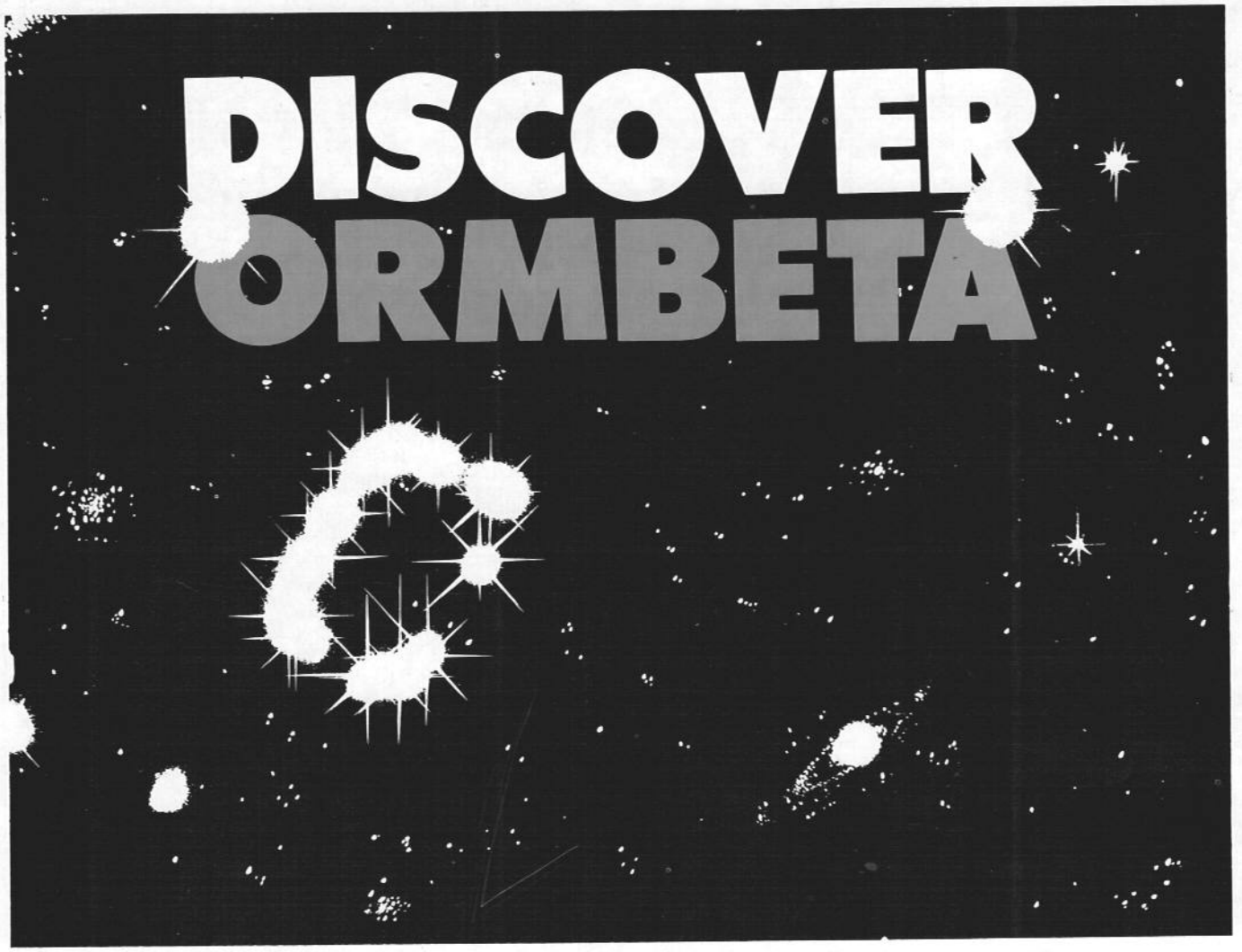

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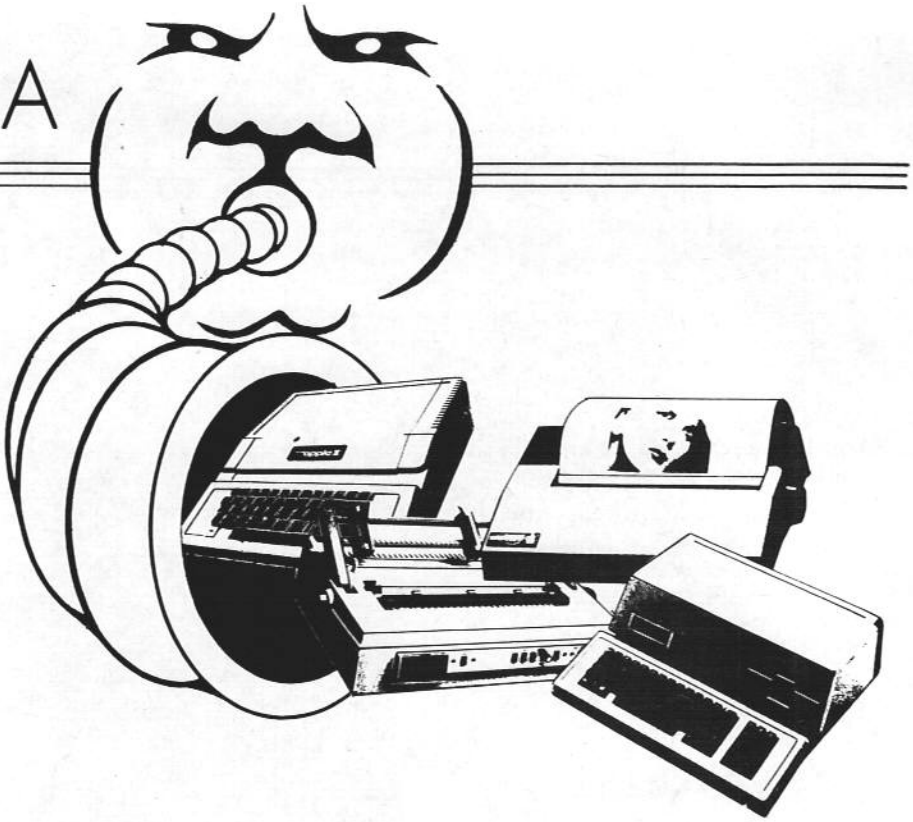


1mbyte of core memory for Apple II and III

IMAGINE upgrading your 48k Apple II, or 64k IIe or 256k III so that it has 1mbyte or more of core memory!

That is now possible with a new RAM card announced in the US by Legend Industries.

The S card is compatible with the III and the whole of the II range. It can be installed in any slot – and only the number of available slots limits the number of cards that can be installed.

Existing software written for the company's 64KC and 128KDE cards will work with the S card, and new software is being written to take advantage of its added capacity.

The card is designed to grow with a user's needs. He can buy the basic unit and add chips when he wants to increase memory.

Tel: (0101) 313-674 0953.

Information protection

AN 18k static RAM card for the Apple II, II+ and IIe computers contains a battery backup to allow memory retention after power-down.

The card from Legend Industries, draws very low power and can be used in any slot. A write-enable / write-protect switch allows the user to protect the information in the card or alter the data at will.

This is handy for those monitor routines that are not alterable in the ROM on the motherboard, such as Captest.

One other application is to relocate DOS into the card and instal a special boot routine that would automatically instal DOS into the machine upon boot up.

Tel: (0101) 313-674 0953

Amdek's 3in disc drive system is compatible with the Apple II

Drive goes ultra-small

A COMPACT 3in micro disc drive system with up to 286k of formatted storage capacity has been introduced in the US by Amdek Corporation.

The recording format, data transfer rate and disc rotation speed are compatible with Apple II standard 5¼in drives.

The single-sided double-density Amdisk-1 drive is contained in a compact

→

case measuring 3.74 x 1.77 x 6.02in and is interfaced via a 20 pin flat cable connector.

It uses 3in cartridges which have a hard plastic case, a hinged cover, and write protect mechanism. Amdek describe it as "a modestly priced add-on to the primary Apple II disc drive". It costs $299.

Tel: (0101) 312-364 1180.

Disc data gets toolkit

A TOOLKIT for manipulating, repairing, and protecting data stored on disc comes from Rainbow Computing in Disc Fixer.

The full screen editor allows examination and change of any part of a disc. The directories may be alphabetised for easier location of desired files.

Display and search capabilities show where specific hex or Ascii data is located and the user can modify any data, including binary files.

Disc Fixer can also be used to resurrect a deleted file if it has not been written over. The program is written in machine code for fast operation and easy access to the Disc II subsystem at the sector level.

It requires Apple II 48k or Apple IIe, Applesoft ROM, and one disc drive. The price is $49.95.

Tel: (0101) 213-349 0300

Single-Winnie link-up

APPLE users with more than one machine can now link them into a single Winchester disc drive with HAL Computers' Shared Resource System, launched at Apple '83.

The system allows multiple remote Apples to be linked to a central Winchester sub-system.

Using low-cost ribbon connectors, the machines can be networked in a star formation at up to 20 metres from the Winchester unit, so bringing easily expandable shared resource solutions to the small business user.

Currently available for any mix of Apple models II, IIe and III, the system is based on enhanced versions of HAL's Aquarius 2, 15 mbyte to 5.25in mini Winchester sub-system with 20mbyte cartridge back-up and Capricorn 2, 5.25in Winchester sub-system.

A typical system to run three Apples, comprising 10mbyte Winchester drive and multiplexing circuitry will be available for £2,750.

Tel: 0252-517175

Mediaguard from DNCS

Data stays fireproof

APPLES destroyed in a fire can be replaced quickly and easily (no supply problems with this hardware . . .) but that isn't the case with data stored on discs.

Now DNCS has released a firesafe which it says gives complete protection in a fire to up to 100 floppy discs.

Mediaguard is manufactured in the UK and has a "one-hour fire specification". It can be locked and also protects discs from external magnetic fields. It costs £279.

Tel: 061-653 0777.

Catalist in Apple livery

THE remarkable Catalyst package from Quark Engineering is now being marketed in the UK under Apple's own livery.

That, and the fact that Apple has also dropped the price of a 256k Apple III to £2,395 including a Monitor III, indicates that the company is starting to take very seriously what it describes as its own "serious business micro".

Catalyst allows all applications software that is compatible with SOS – such as Visicalc, Applewriter and Business Graphics – to be transferred to the Profile hard disc instead of being held on a floppy disc.

The programs are then presented on a master menu and can be selected at the press of a number option. This eliminates the time wasted in switching between various applications as with the conventional disc swapping method.

Catalyst and Profile will support Basic, Pascal, Cobol and machine code applications. All can be transferred to Profile with the built-in copy procedure included in the Catalyst menu.

A user can move from a program written in one language, via a menu option, to an application written in any other language without restarting the Apple. Once the Catalyst disc is used to start the Apple at the beginning of the day, no more disc swapping is required.

The package runs on a 256k Apple III with a profile hard disc. It costs £128 from dealers.

CP/M Plus for II and IIe

DUE for UK release for the Apple this month is version 3.0 of the CP/M Plus operating system. It can be run on any 64k Apple II or IIe using the new CP/M card from Advanced Logic Systems.

The card uses a Z-80B processor, runs at 6mHz and incorporates an extra 64k memory.

The package, which will cost around £300, includes the card and the CP/M Plus operating system, CBasic and GSX-80, all from Digital Research. Additional menu-driven utilities are also available.

Distributor Scope Systems says that CP/M Plus runs two to three times faster than any other implementation of CP/M.

Features of the combined card/operating system package include automatic bank switching and cache memory, a new "Help" facility, and password protection of files. It follows standard Apple protocols for direct memory access and interrupts.

The CP/M Card does not interfere with other interface cards.

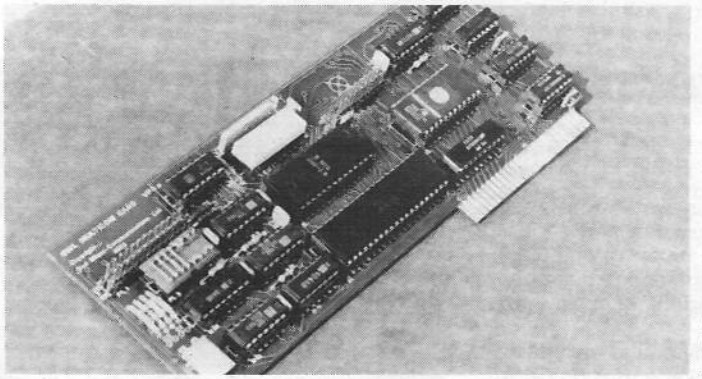
Tel: 01969 9365.

Card for communicators

A MULTI-function communications interface card developed by Owl Micro-Communications turns the Apple into a versatile communications device, with applications ranging from electronic mail to IBM terminal emulation.

The Multicom card, which is available for the Apple II, IIe and III, provides all the standard communications interfaces – a V24 (RS232) serial interface for synchronous and asynchronous communications, a parallel printer interface and clock/timing functions – from a single slot.

It allows the Apple to communicate directly with acoustic couplers, line drivers and high speed synchronous modems. At the same time the parallel printer interface will drive Epson, IDS, Anadex, Apple DMP and other printers which use the Centronics standard.



The Owl Multicom card for the Apple

When used with appropriate software and modems, an Apple fitted with the Multicom card can be used as a terminal to an electronic mail system or for online database searching.

It can also operate as an IBM 3270-type VDU terminal with an IBM mainframe or as a VT100 terminal with a minicomputer.

Owl says the serial communications interface can be used to communicate with serial peripherals such as plotters, and interrupts can be generated by any of the printer, communications or timing functions. It costs £190.

Tel: 0279 723848.

→

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SEIKOSHA GP80A tractor feed dot matrix printer, 80 column enlarged and standard print C/W. Apple II or IIe interface card G.W.O. but crack in plastic, sound proof cover (no problem) £150. Also an Apple "Disc II" disc drive with controller card nearly new £290. 051-733 1906.

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SATURN 32K ramcard software, manual, boxed. £95. 0494 33333 Ext. 165. Even 02814 2972.

CP/M stats package

AN interactive statistics system designed for use in business, research and education allows users to create and manipulate datasets, to plot them, and to analyse them with a wide variety of frequently used statistical tests.

Statflow is menu driven and includes a "Help" facility. The package runs on CP/M with 56k or more of memory.

Features include add, change or delete items in existing datasets; print out or display datasets, input data from files created by other programs; create new datasets from existing ones on the basis of addition, subtraction, multiplication, division, absolute value, square root, sign, log base e, rank; plot a scatter diagram of two or more datasets and print out basic descriptive statistics – mean, median, range, standard deviation, standard error.

The package costs £185 from Great Northern Computers.

Tel: 0532-589980.

A 'first' for forecasting

A MANAGEMENT software package, The Forecaster is described by authors MPD as the first expert micro forecasting system. It uses mathematical techniques to forecast the future behaviour of a series of numbers from its past history.

This could be monthly sales figures, the price of raw materials or a quarterly fuel bill. MPD says the user doesn't need to know anything about mathematical forecasting. All he or she has to do is type in the past values of the series to be forecast and how far into the future to look.

The Forecaster selects the best mathematical model to fit the data and produces forecasts based on this "best-fit" mathematical model. It costs £320 from Gate Microsystems.

Data handling

MULTIchannel chromatography data can be acquired, analysed and reported using the Adalab Chromatochart and an Apple II.

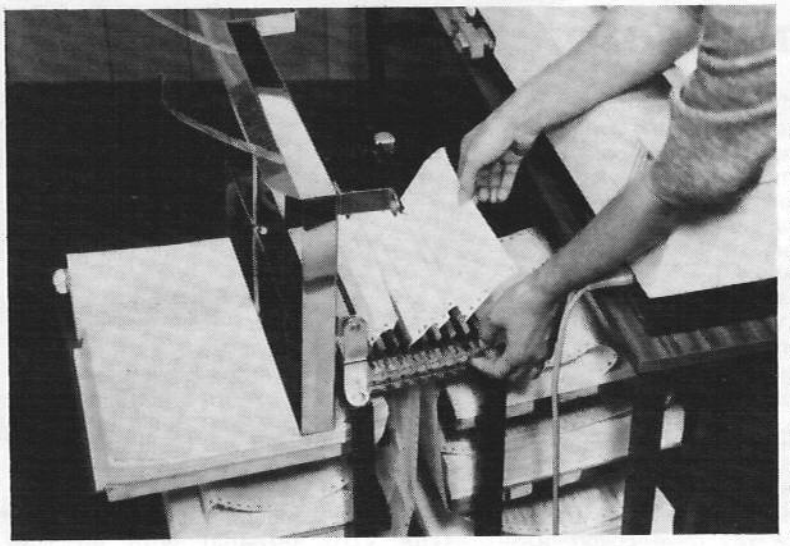
This software package is said to provide everything needed to automate chromatographic data handling, while notably improving the speed, ease, and accuracy of reporting.

Data can be acquired from capillary and packed column GCs, HPLC's gel scanners, TLC densitometers and amino acid analysers.

The system is claimed to cost less than many dedicated integrators, and, of course, the Apple can be used to calculate and graph experimental results, handle word processing and index a literature data base.

Complete turnkey chromatography systems are now available through Heyden Datasystems.

Tel: 01-203 5171.



"Easy Feed" – a close-up of the dispenser head which grips up to eight types of continuous stationery ready for feeding into and out of the printer. The integral stacking tray folds down to receive the printout.

Feeding comes easier

IF feeding paper into and out of a printer is a problem, a solution may lie with Easy Feed.

T & G Marketing claims the system eliminates paper snagging and double feeding and will put an end to fetching and carrying, ruined printouts through back feeding, and 'bird's nests' at the printer.

The unit stores up to eight stacks of different types of continuous stationery and holds the ends available for immediate use.

It is a simple system, consisting of a trolley with eight trays, split four and four. The eight sizes or types of paper are fed upwards through the centre.

At the top of the trolley the ends of the paper are gripped in the slots of a dispenser head from which any one can easily be released to facilitate printer feeding.

The trolley, pre-loaded with paper away from the printer, is pushed into position and the specific paper required is released and loaded. During operation the printout is automatically deposited into an integral stacking tray.

Tel: 07535 60627.

Join the fly boys

MOUNTAIN Pilot and Precision Approach Radar, available from Instant Software, simulate mountain flight and air traffic control in two separate programs on one disc.

The first is a flight simulation through a treacherous mountain pass on a mission.

Precision Approach Radar guides in planes in dense fog. Five different sizes of aircraft range from a Piper Tri-Pacer to a UFO.

The pack, price $19.95, requires Applesoft in ROM, 32k of memory, one disc drive and game paddles.

Tel: (0101) 603-924 9471

Epson simplified

A SIMPLE method of using the facilities of an Epson printer is provided by Finger Print, a small circuit board that plugs into the printer. It enables the user to select special print modes (compressed or

emphasised print, for example) simply by tapping the printer panel buttons (on-line, FF, LF) in a special sequence.

Finger Print will work in all Epson MX-80, MX-80 F/T, MX-100 printers including those with Graftrax-80 or Graftrax-Plus without interfering in any way with the normal operation of the printer.

Once installed, simply tap the printer's panel buttons to instantly select compressed, double wide, emphasised, double-strike printing or combinations, and, with Graftrax-Plus, Italics and Fine Print printing can be added.

It costs £49.50 from Northamber.
Tel: 0372-62071.

Maths help for the young

TWENTY programs designed for use in schools and in the home have been released by Micro Applecations.

They cater for young children, remedial work, and CSE, O and A level studies, with subjects ranging from simple addition to polynomial multiplication.

The programs run on a II or IIe with one disc drive and two discs are supplied. The Program Master presents a screen of textual information about each program and this is complemented by a simple instruction manual. A user selects his choice from a menu.

The actual programs are stored on the Posimaths disc. Topics for younger users and remedial teaching include times table, number addition, maths exercises, logic and sporting. There are six programs for CSE/O level study, and seven for A level. The package costs £19.

Tel: 0785-43414.

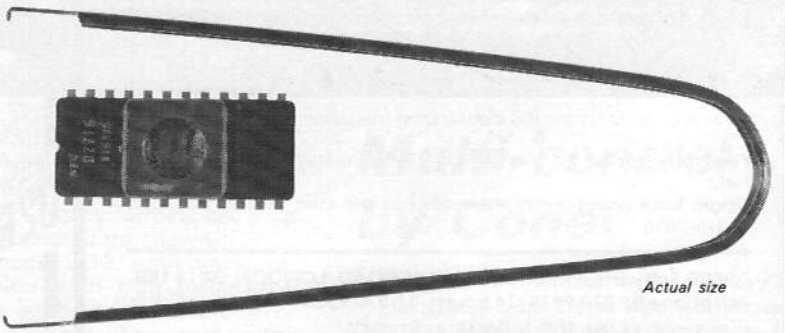
Apple III budget bundles

APPLE UK is now selling its reduced price 256k Apple III in a variety of bundles.

The basic system with Monitor III and system software, costs £2,395. For an extra £600 you get a dot matrix printer and universal parallel card plus Applewriter III, Visicalc III and related product training packs. At the top end of the scale is a III with two Profile hard discs for £4,950.

Two software bundles are also available – one incorporating Catalyst software which allows Apple Writer, Quickfile, Visicalc and business graphics programs to be stored together on the Profile on an integrated menu system.

Enhance your word processing with our lower case generator



Actual size

One of the plus points about the new Apple IIe is its ability to display upper and lower case characters on the screen – something that has usually not been possible on the Apple II without an expensive modification.

A special offer for Windfall readers is a lower case generator that will enable you to have this valuable enhancement for just £25.

And that price includes a useful pair of chip extraction tongs (to ensure you don't bend any of the pins), installation and instructions and a small Basic full listing, plus copies of helpful articles on the subject from previous issues of Windfall.

The generator is compatible with the revision 7 and revision 8 Apples only.

(Users of the older Applewriter I should note that a modification is needed before the program can use the generator. We can do this for you if you send a COPY of your program, together with the additional sum of £2.50.)

Enhance YOUR Apple screen with the Windfall lower case generator – but don't delay sending in your order.

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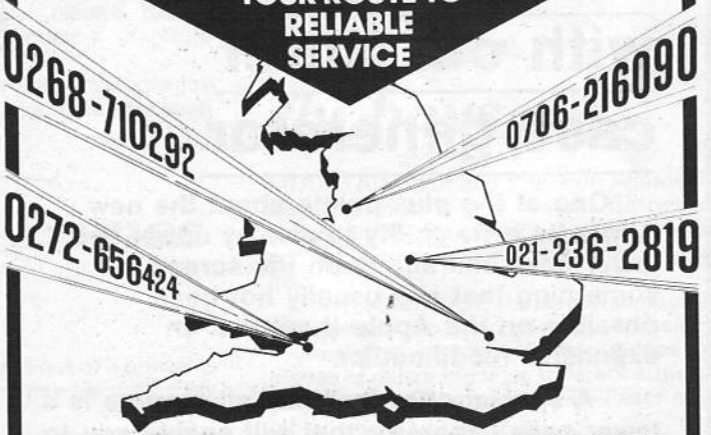

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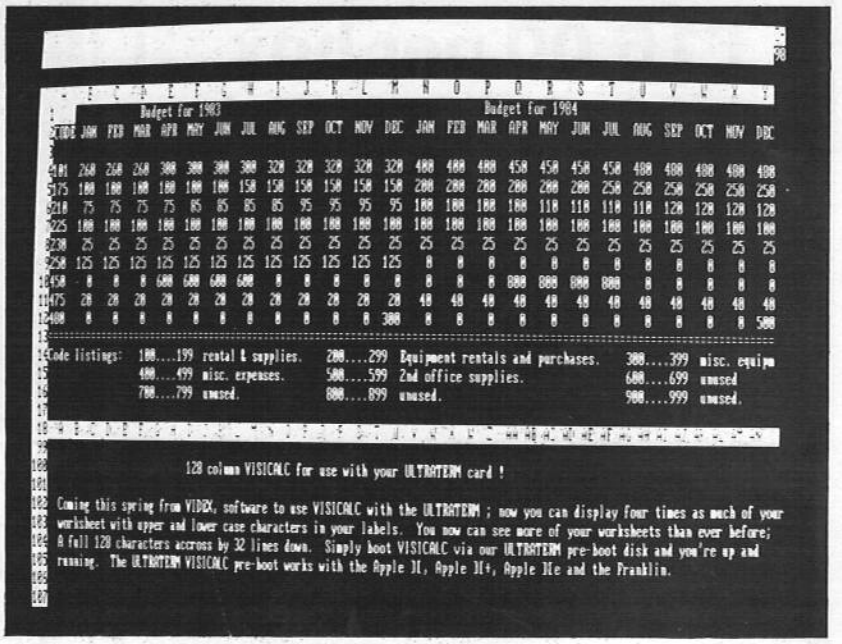

The Videx display

Compatible 88Card

THE 88Card for Apple computers from Personal Computer Products is plug compatible with Apple II, II plus, IIe, and compatible micros.

The 88Card comes standard with 64k of on-board memory. Add this to a 64k Apple II and the 16 bit 8088 microprocessor can address 128k.

"The primary function of the 88Card is as a developer's tool", said Ed Saverese, president of PCPI. "With over 750,000 Apple computers in the market today, our 88Card opens the door to allow developers to use their Apple computers to write application software under MS-DOS for the IBM PC."

The 88Card comes with MS-DOS and MBasic and will retail for $595. CP/M-86 will be an option.

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Spectrometer link-up

A NEW video display card is described as setting "new standards for versatility" by manufacturers Videx.

The UltraTerm, which is compatible with the Apple II, IIe and III, delivers an 8x12 dot character dot matrix with stable, flicker-free display. Nine software-selectable video display formats allow up to 4096 characters to be shown.

Interlace mode (512 scan lines) requires a monitor with high persistence phospher, such as the Apple Monitor III or Amdek 300 Monitor. The card costs $379.

Tel: (0101) 503 758 0521

Slides in seconds

A COMPUTER graphics camera from Lang Systems produces slides or SX70 prints for presentations or records from the Apple II screen in seconds.

The Videoslide camera can be used with any colour graphics terminal or computer with raster graphics capability.

It uses standard 35mm slide films and produces slides in the universal slide format.

Distributors Techex claim the Videoslide 35 camera is more convenient, flexible and economical than overhead projector transparencies.

It is supplied with an RGB interface and all necessary cabling.

Tel: (0202) 571181.

Multi-control by Conet

A DIFFERENT approach to the industrial Apple comes from Datex Applied Micros. The idea behind its Ionet system is to remove the Apple to somewhere safe – perhaps the office – and connect industrial devices to a single cable and then the Apple.

Datex say this decentralisation lets the Apple II control many more devices safely and securely. *Tel: 0903-67 084.*

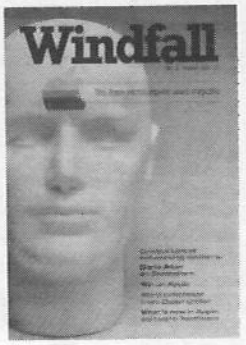
Tackling the tangles

TANGLED printer paper can be a problem. If the paper isn't "hung" correctly it frequently misfeeds, and the stack is often tripped over or generally gets in the way.

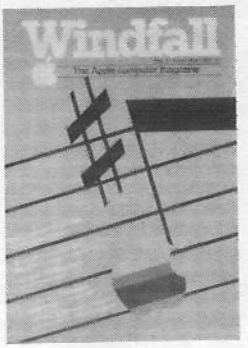
One solution is the LCC Printer Stand and Output Tray from Leicester Computer Centre.

It is designed to take the Epson 80 range of printers or similar sized machines, positioning it at a convenient height, collecting the output and generally tidying up the printer station. Price: £28.50. *Tel: 0533 556268.*

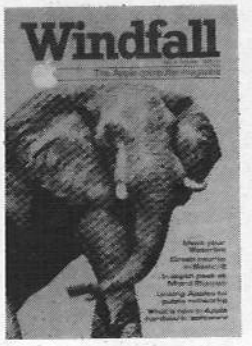
July 1981
MicroModeller: crystal ball of the 80s? – Surround game (listing) – Bach and the Byte (review of Mountain Hardware's music system) – Apple programs that help the handicapped – Computers in primary schools – Why psychologists plump for the Apple – Use of Apple's unique EXEC files – Format 80 word processor review – The man behind Apple's UK success story – Analysis of CIS Cobol and its flexible file handling facilities. PLUS two pages of Compucopia and 11 Appletips.



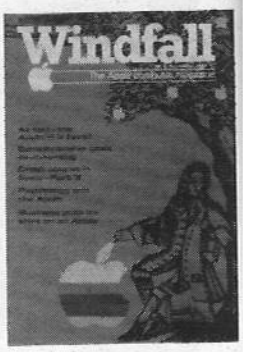
August 1981
Networking systems (Constellation, Cluster One, Omninet) – Date validation routine – The Limits of My World (mathematical languages) – Textmaster WP review – Getting started with machine code – Running a preparatory school on an Apple – Software swop shop – Synthesiser as teaching aid – Integer to Applesoft Basic conversion – Apple machine language review – Apple user profile: Hill Samuel – The Market for MicroModeller. PLUS two pages of Compucopia and five Appletips.



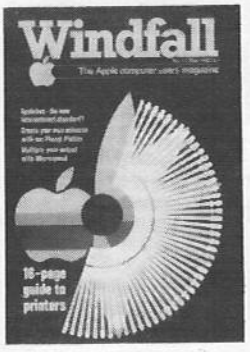
September 1981
Consumers' guide to Apple music, Part I – Games review (Starmines, Creature Venture, Hi-res Soccer) – Ski-run game (listing) – Speed restrictions with variables – Non-linear curve fitting – Machine code techniques, Part II (text insertion) – Crash course in Basic, Part I – Dot matrix printer review – Apples in networks (modems, Prestel) – CAL explosion coming – Computer games for physically handicapped – Apple user profile: SEGAS. PLUS three pages of Compucopia and five Appletips.



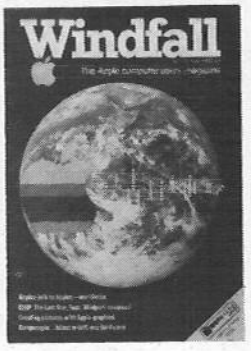
October 1981
Micro Planner review – Games review (Computer Bismark, Battle of Waterlook, Raster Blaster) – Letter square puzzle – Machine code techniques, Part III (dumping screens to printers) – Bulletin boards and personal computer database systems – Teletype terminal program – Crash course in Basic, Part II – Consumer's guide to Apple Music, Part II – Apple user profile: SEGAS, Part II – Apples in South African schools – Programs for primary schools. PLUS two pages of Compucopia and four Appletips.



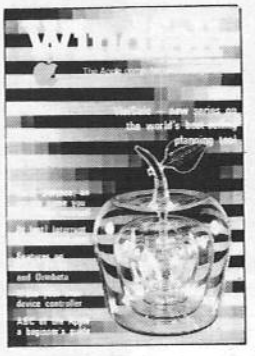
November 1981
First review of the new Apple III – Games review (Temple of Apshai, Hellfire Warrior, Apple Panic) – Hayden Compiler review – BCPL, a fast language for the Apple – Psychological assessment by the Apple – Beneath Apple DOS book review – New software from the USA – Crash course in Basic, Part III – The role of speech synthesisers in schools – Historical review of computer literacy – Apple user profile: clothing manufacturing. PLUS three pages of Compucopia and six Appletips.



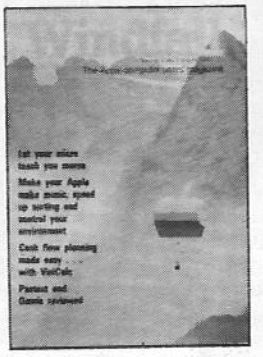
May 1982
A case for Applebus as a new international standard – Games review – Flight Simulator – Hi-res Planet Plotting – Microspeed review – Mathemagic review – Update on Printers (special 16-page printer section) – The Stationery Revolution – Understanding Microcomputers (Part IV) – Simulations Enhance Classroom Work – Computers in Business Education Studies – Speedy Way to Handle Histograms. PLUS four pages of Compucopia and four Appletips.



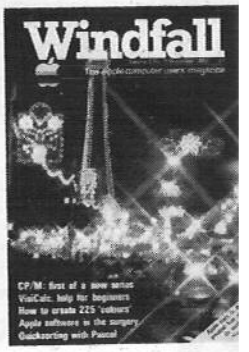
June 1982
New ways of linking Apples to the outside world – Introduction to Forth, Part I – Games review (The Prisoner, Pinball) – Apples in Medicine – Tasc Compiler review – Micros in process control – Building pictures with machine code – High-speed Apple links to mainframes – Wildport cards review – The Last One and CORP program generators reviewed – Book review (Apple II User's Guide) – Teacher's Toolkit and suite of primary school programs reviewed. PLUS four pages of Compucopia and six Appletips.



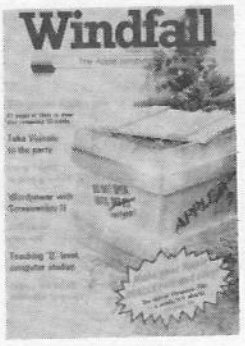
July 1982
Games review (Pursuit of the Graf Spee) – Elements of the Apple, Part IV – Apple '82 reviewed – Introduction to Forth, Part II – Making the most of VisiCalc's capabilities – CBasic and MBasic analysed – Ormbeta database reviewed – Crossword Magic reviewed – Make your own user port, Part I – Earth Defence game and listing – Asynchronous data transfer, Part I – School application of Cesil – Computers as an aid to concentration – PLUS four pages of Compucopia and three Appletips.



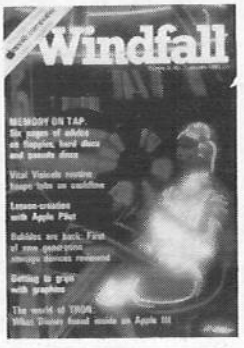
August 1982
Games review (Bandits, Suicide, Swashbuckler, Fly Wars) – Instruction file editor – Teach yourself Morse, Part I – VisiCalc section – Pastext II review – Asynchronous data transfer, Part II – Omnis review – A melody from your micro – Summary of 10 utilities – Make your own user port, Part II – Mah Jong – Number sorting – Elements of the Apple, Part V – Guidelines for buying a school Apple – Educational programs reviewed – PLUS four pages of Compucopia and two Appletips.



September 1982
Use of CP/M COPY and PI programs – Games review (Odyssey, Choplifter) – DOS ai to VisiCalc – The VisiCal phenomenon – Wordscor game (listing) – Tasc compile review – Med-res graphics, Pa I – Snapshot review – Learnin Morse, Part II – Button for mu tiple choice testing – Asyn hronous data transfer, Part III Bag of Tricks review – G-WHI review – Medic review – Sortin with Pascal – Memory te program (listing). PLUS fo pages of Compucopia and s Appletips.



December 1982
Think Tank – Doing the impossible in Pascal (listing) – Interactive editor-assembler, Part I – Take Visicalc to the Christmas party – Games reviews (Space Kadet, Crazy Mazy, Mars Cars, Star Maze, Deadline, Musicomp, Electric Duet, Time Zone) and listings (Humpty Dumpty, Christmas Card, Scram) – reviews of 'O' Level Aids, Tic Tac Show and Screenwriter II – Beginners guide to PEEKs and POKEs, part II – Z80 cards compared – PLUS four pages of Compucopia and six Appletips.

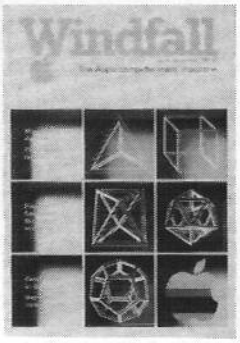


January 1983
Think Tank – Book reviews (Apple Graphics and Arcade Game Design) – Games reviews (Wizard and Princess, Transylvania) – Six-page guide to memory storage (guide to disc drives, new bubble memory, 128k RAM cards, disc back-up, mini-Winchester drives, new Apple drives) – Walt Disney's TRON – Graphmagic review – Installing Wordstar – Business cash flow with Visicalc – Pilot review – Interactive editor-assembler, Part II. PLUS four pages of Compucopia and eight Appletips.

February 1983
Think Tank – Interactive editor-assembler, Part III – Development of Scrabble on the Apple – Visicalc's storage command DIF – Games reviews (Escape from Rungistan, County Fair, Snake Byte, Snack Attack) – Software reviews (Structured Basic, GraForth, Visischeduler and Lisa and the IIe – Pascal Pointers – Network analysis – Handling interrupts – Makeweight grading system – Date-stamping DOS – Educational game (listing) – Formatted Applesoft. PLUS four pages of Compucopia and seven Appletips.

March 1983
Darts game listing – Think Tank – Beginner's look at System Master – Games reviews (Blade of Blackpoole), Banner Magic, Free Fall, Computer Scrabble) – Lower case displays in Basic – Buying a financial spreadsheet – Reviews of Multiplan; Applewriter III; Geometry and Measurement, Drill and Practice; CLIP – News about Lisa and the IIe – Applesoft error handling – Interactive editor-assembler, Part IV – Apple on a pig farm – Fickle Finger proofing, Part I. PLUS four pages of Compucopia and four Appletips.

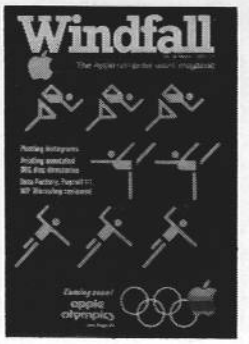
April 1983
Games reviews (Type Attac Microwave, Tubeway) – Wo Processing (Supertext, Exec tive Secretary, Wordstar, Wo Handler) – economics of usi electronic worksheets – Fishi (game listing) – Apples in t pet foods and film slides i dustries – Anatomy of the IIe Beginner's programming Reviews (Omnis, Strobe 1 Plotter, Hilderbay Bookkeep Turnkey CP/M) – Programmi for the classroom – Fickle Fing Proofing Part II. PLUS fo pages of Compucopia and Appletips.



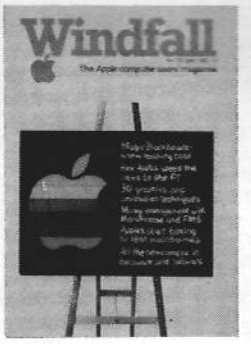
December 1981
Regain Step/Trace in Autostart Apples – Games listings (Apple Casino, Avoid, Calendar) – Games review (German Whist, Wizardry, Galactic Attack, Pool 1.5,) – Sinta Shape Manager review – Machine code techniques, Part IV (sorting arrays) – A/D converter review – Colour systems – Financial Controller review – Wordstar review – Crash course in Basic, Part IV – Debugging the Fortran Compiler – Care of discs – Electronic atlas – Pascal explored. PLUS four pages of Compucopia and seven Appletips.

January 1982
Apple scoop on Tomorrow's World – 1982: The Year of the Apple? – Games review (Wizardry) – Simultaneous equations without tears – Boosting machine code technique – Program Writer/Reporter review – Crash course in Basic, Part V – Machine code techniques, Part V (flagged bubble sorts) – Apple graphics, Part I (Apple's memory map) – Orbit accounting system review – Cost effective terminal computer – Moving hi-res graphics. PLUS four pages of Compucopia and seven Appletips.

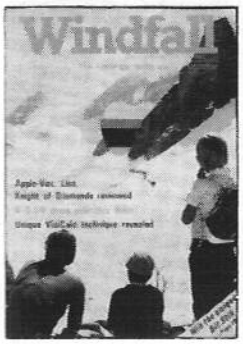
February 1982
Games review (Olympic Decathlon, Dragons Eye) – CP/M: passport to exciting new world – Pascal file conversion program – Machine code techniques, Part VI (EVALuate a new function) – Crash course in Basic, Part VI – Elements of the Apple, Part I – Apple Graphics, Part II (high resolution graph drawing) – Making programs more user friendly – Getting round the memory map muddle – Apple user profile: Sea Fish Authority. PLUS three pages of Compucopia and seven Appletips.



March 1982
Games review (Crush, Crumble and Chomp) – Apple Medical Forum – Data Factory review – Apple Graphics, Part III (displaying histograms) – Printing an annotated DOS disc directory – Crash course in Basic, Part 7 – Start training for the Apple Olympics – Elements of the Apple, Part II – Payroll package for the Apple III – Six educational programs reviewed – DOS 3.3 to 3.2 software switch – Workshop/Wordstar tuition course reviewed. PLUS three pages of Compucopia and four Appletips.



April 1982
Apple speeds the news – Games review (Castle Wolfenstein, Threshold, President Elect) – DOS Toolkit problems – Linking Apples to IBM – Home-grown boards boom – Micro-Finesse review – Basketball match analysis – Elements of the Apple, Part III – FMS accounting system review – DOS disc directory, Part II – Apple graphics, Part IV (3D animation graphics) – Apple '82 Education Forum – A structured approach to teaching. PLUS four pages of Compucopia and five Appletips.



October 1982
Games reviews Knight of Diamonds (the second wizardry scenario) and Pig Pen – Think Tank (with listings) – Med-res graphics, Part II (filling in shapes) – Lisa assembler language review – Magic of VisiCalc – VisiCalc Business Forecasting Model review – Cross reference listing program – Apple-vox speech synthesiser review – Morse Code, Part III – Computerised flash card for schools – French Verb program review. PLUS four pages of Compucopia and seven Appletips.

November 1982
A beginner's guide to PEEKs and POKEs, Part I – Games review (Galactic Wars, Night Mission Pinball, Raster Blaster, David's Midnight Magic and three Quick Spins) – Think Tank (with listings) – Three 80 column cards evaluated – Visicalc: Brush up your algebra – Bit Stik graphic system reviewed – Pitfalls in producing educational software – Treasure Islands educational game reviewed – Med-res graphics, Part III (Ampersand routine). PLUS four pages of Compucopia and six Appletips.

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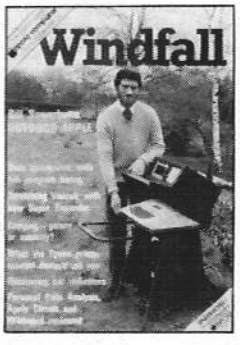
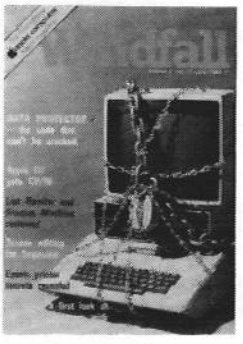
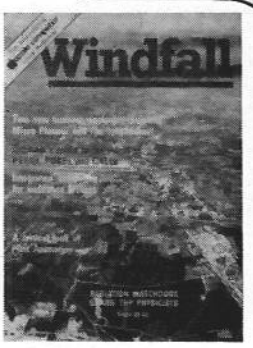


May 1983
Think Tank (Visicalc Magic, Appledarts sound, hi-res routines) – Games reviews (Spy's Demise, Teleport, Beer Run, Prism, Bug Attack) – Moans about manuals – To copy or not to copy – The outdoor Apple – Reviews (Wildword, Apple Circuit, Personal Data Analysis) – Date conversion – Understand the Epson Part I – Visicalc Review of Vergecourt 128k RAMcard and Cdex Visicalc training course – Graphics (generating bar indicators with listing) – Standing Wave Plotter. PLUS Five pages of Compucopia and seven Apple tips.



June 1983
Think Tank – Games reviews (Pie Man, Asteroid Field, Star Thief, Cyclotron, Star Blaster, Warp Destroyer) – Security with Data Encryption – Product reviews (Routine Machine, List Handler, Apple III CP/M Softcard, Savvy, Apple Project Manager and Micronet) – Apple '83 preview – Screen editing for beginners – Understanding the Epson Part II – Book review (Create Word Puzzles with Your Micro) – More Apple Pilot facilities. PLUS five pages of Compucopia and eight Apple tips.



July 1983
Apple '83 review – Think Tank – Games reviews (Zork I,II and III, Hitch-hiker's Guide to the Galaxy, Wavy Navy, Shuffleboard) – Using a printer with DOS – Reviews (Micro Planner and The Spreadsheet) – Visicalc potpourri – Beginners' PEEKs, POKEs and CALLs – Creating a turnkey system – Atomic research Apples – File organisation methods – Insurance broking with an Apple – Pilot Animation – Tip for using both sides of a disc. PLUS five pages of Compucopia and seven Appletips.

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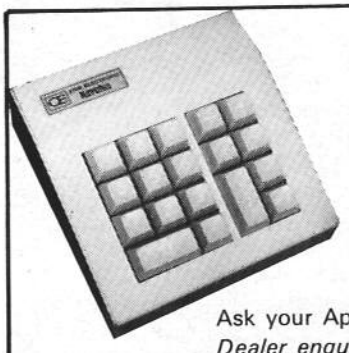

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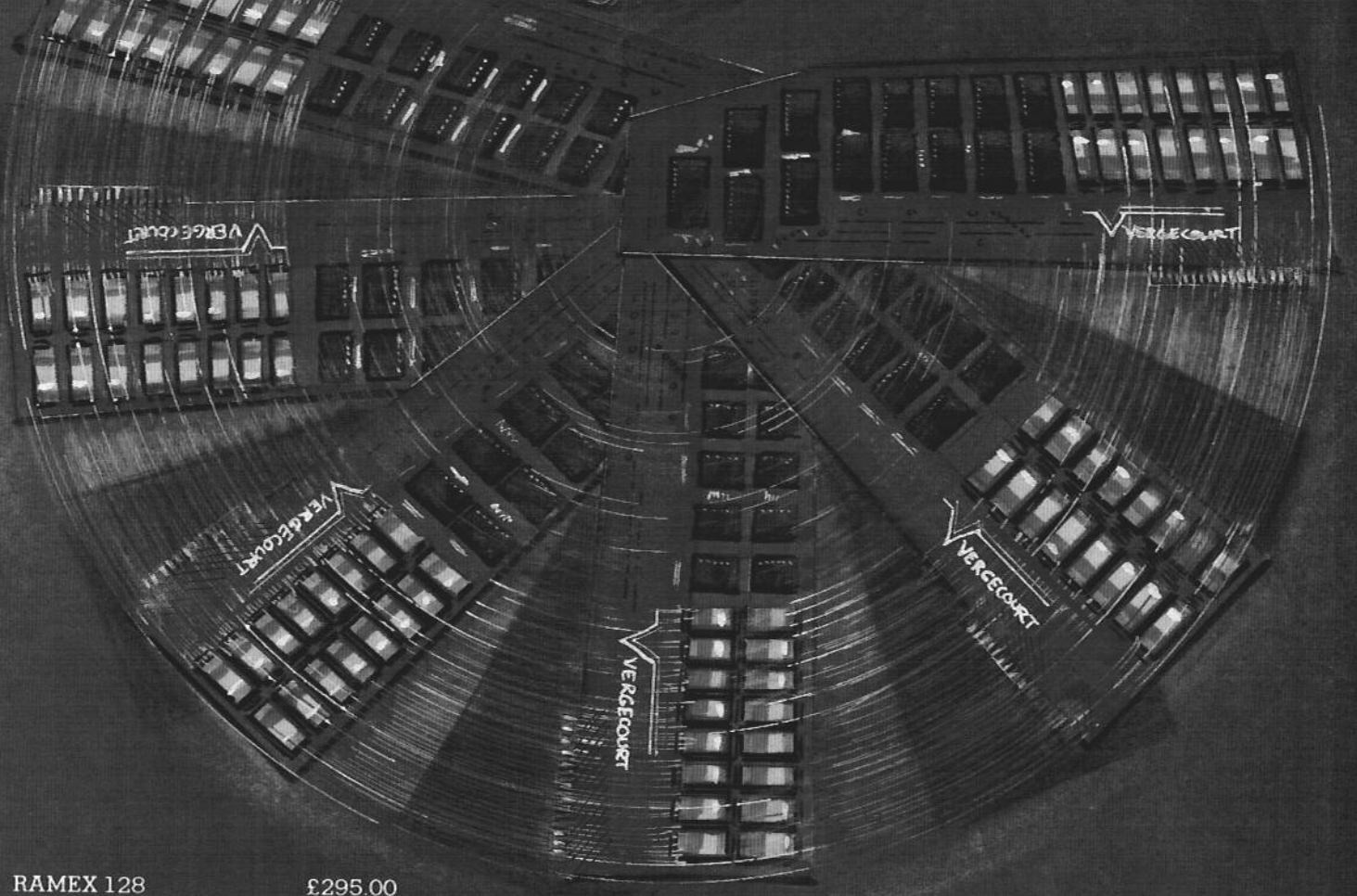

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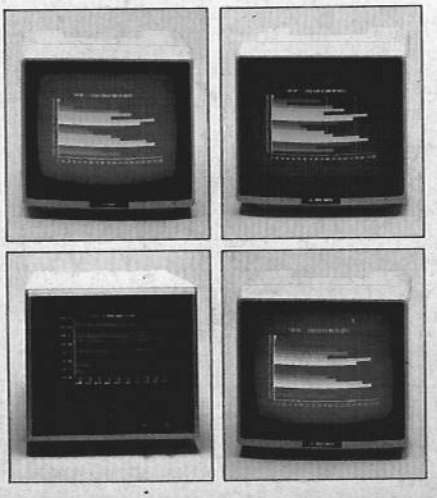

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