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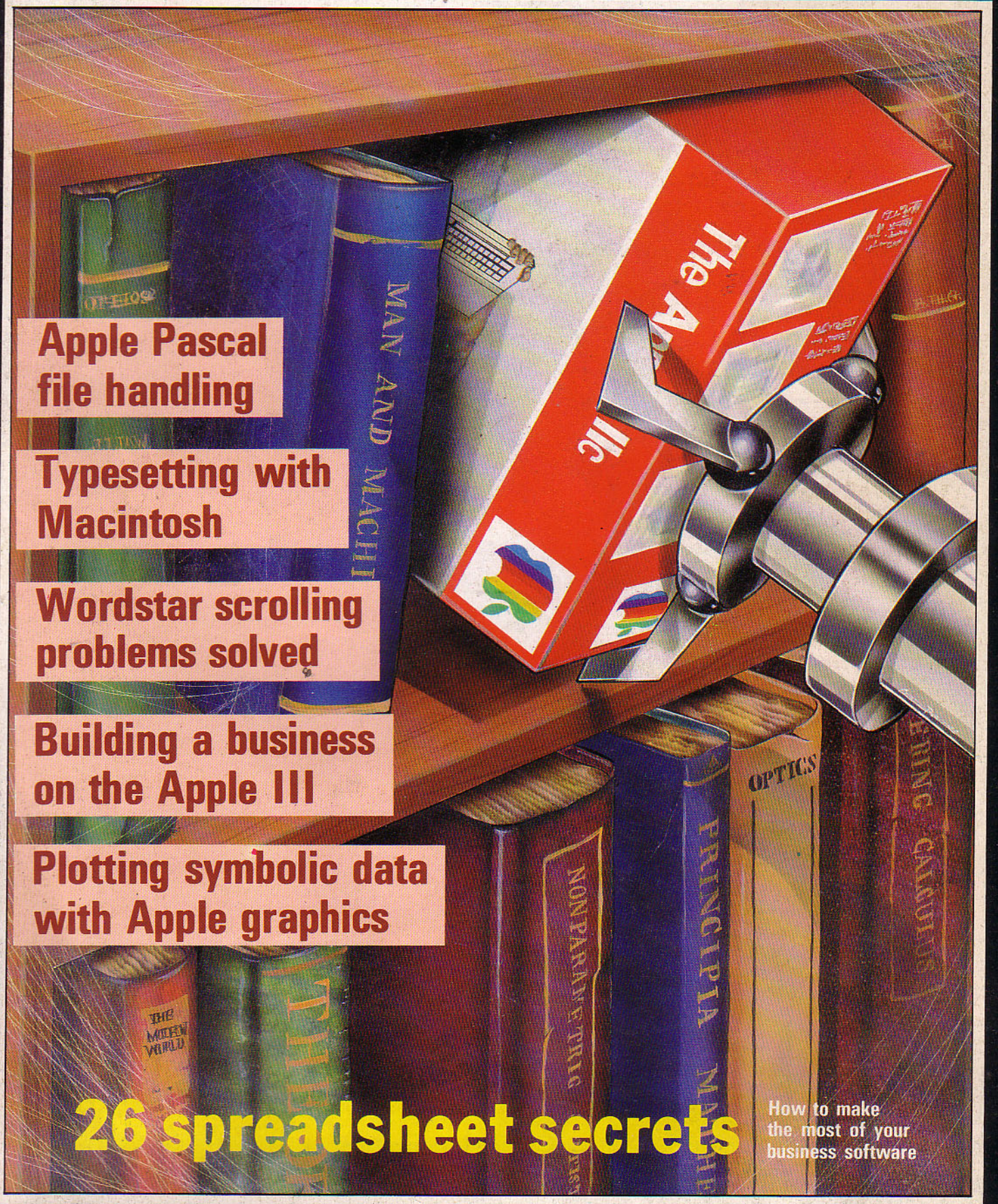


Apple Pascal file handling

Typesetting with Macintosh

Wordstar scrolling problems solved

Building a business on the Apple III

Plotting symbolic data with Apple graphics

26 spreadsheet secrets

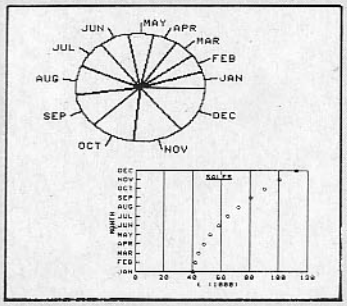
How to make the most of your business software

apple user
Volume 5
Number 8
August 1985

News

● Apple back behind the II family, handling the holiday rush, solar powered IIc, plus Workstation 2000 winners and more. 5

Graphics

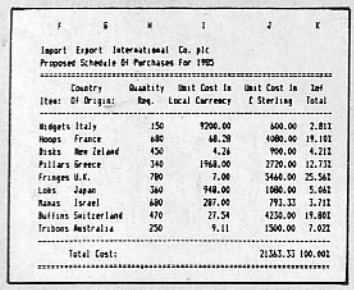


● In Part XV of the Apple User Graphics Library, Peter Gorry completes the automatic annotation routines. 9

Application

● Apple IIIs provide the power behind a successful computer bureau. 18

Spreadsheet

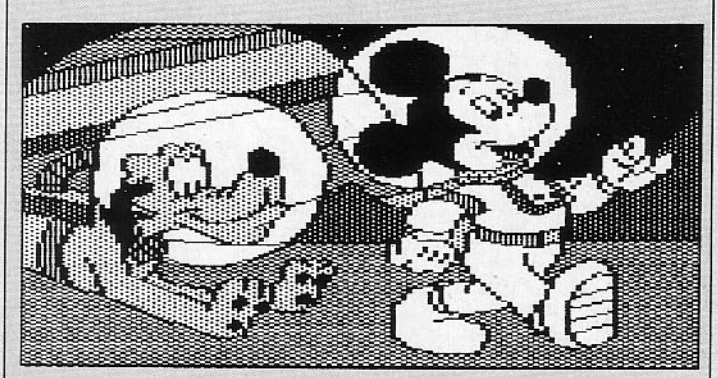


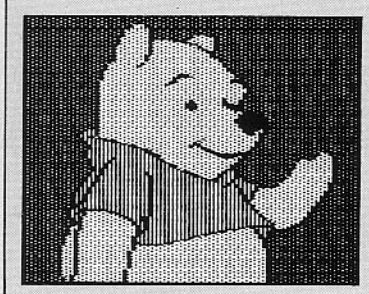
Import Export International Co. plc
Proposed Schedule Of Purchases For 1985

Item:	Country Of Origin:	Quantity Req.	Unit Cost In Local Currency	Unit Cost In £ Sterling	Inf Total
Widgets	Italy	150	9200.00	600.00	2.81%
Hoops	France	680	60.20	4080.00	19.10%
Disks	New Zeland	450	4.24	900.00	4.21%
Pillars	Greece	340	1968.00	2720.00	12.73%
Fringes	U.K.	780	7.00	5460.00	25.56%
Loks	Japan	360	948.00	1080.00	5.06%
Nanas	Israel	680	287.00	793.33	3.71%
Buttons	Switzerland	470	27.54	4230.00	19.80%
Tribons	Australia	250	9.11	1500.00	7.02%
Total Cost:				21363.33	100.00%

● Geoff Wood shares some secrets of successful spreadsheet use. 21

Fun & Games





● The old hands take a look at Winnie The Pooh, Mickey Mouse and the award-winning Hitchhiker while our youngest ever reviewer looks at Print Shop. 42

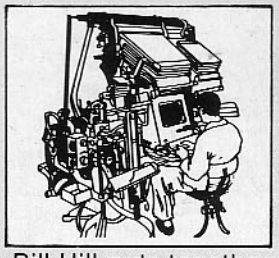
Wordstar

● Horace Tong solves the Wordstar screen scrolling problem and provides Apple User with its first chance to publish Z80 code. 26

Programming

● Generate programs with the aid of K.P.Yu's Descartes program. 29

Publishing



● Bill Hill puts together the pieces of a jigsaw which looks set to turn the publishing industry upside down. 33

Pascal

● Random access files get the Stuart Bell treatment in this month's tutorial. 35

Macintosh

● Steve Hughes reviews MicroPlanner for the Macintosh and likes what he sees. 39

Utility

● Steve Franks shows how to access DATA lines in any order. 47

New Products

● All the latest ideas on how to spend your money. 52

Feedback

● Double-res difficulties, how to blow up the video circuitry, two pages of readers' letters. 55

Classifieds

● Bargain offers from your fellow Apple users. 56

Order form

● Subscriptions, back issues, binders to keep them in. 58

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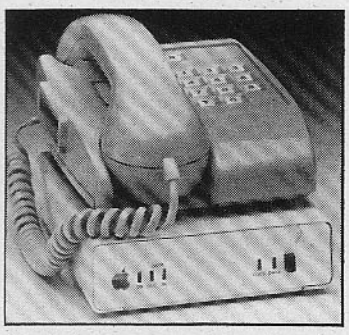


Apple's new modem for the Macintosh and Apple II family.

Modem's price rapped

A STRAW poll of dealers being offered the new Apple modem for the Apple II and the Macintosh has shown that most feel that the £295 price is too high.

Conducted by *Apple User,* it revealed that 90 per cent believed it will find difficulty in being competitive in the market.

The remaining 10 per cent thought it would sell anyway, just because it carried the Apple badge.

Dealers contacted claimed that several modems already on the market for the Apple appeared to be better value, despite some additional features incorporated in the new machine.

Top of their list was the Pace Nightingale at £119, and the Miracle Technology WS2000 at £129.95, followed by the Tandata TM200 at £173.

The launch of Apple's new modem means that the company has now officially jumped aboard the fast-moving communications bandwagon.

Operating at 300 baud and 1200/75 baud, it has British Telecom approval and built in auto-dial, auto-answer features using the Hayes protocol.

However, industry experts interviewed tended to agree with the dealers polled that, despite these attractions, the Apple modem may well be overpriced.

For, apart from the basic price tag it will still be necessary to buy communications software at around £70.

Apple pledges support for the II range

APPLE has acted to quell fears that the Apple II range is taking a back seat to the Macintosh in the company's future plans.

There will be no let-up in support and development of the machines and projects intended to make them even more powerful are well in hand, says Apple UK chief executive David Hancock.

He told *Apple User:* "The personal computer market was really founded on the Apple II and even now, eight years later, it forms a major part of our business.

"With a world base of around three million Apple IIs, we are obviously always looking at ways to enhance the product.

"You will certainly see the Apple II developing into a more powerful product. "Future developments will bring the IIe into line with the IIc so that powerful mouse-driven software will work on both computers.

"Simultaneous with the enhancements to the IIe, an upgrade kit for existing users will be made available.

"In line with our policy of continually increasing the power of the IIe and IIc, more-powerful peripheral products are being developed".

Hancock's promise to Apple II owners follows a recent interview in which he said: "If there has been one mistake we have made, it is that we haven't spent enough time appreciating the people who buy Apple products.

"We have 150,000 users in this country and we haven't been as sympathetic as we could have been to their needs.

"We mustn't lose the Apple culture, we must not lose that personality.

"We are actually going back to saying that the reason Apple became successful was because it worked with its consumers and they felt they were being looked after as special types of people".

Rolling Stone's co-star is a IIe

AN Apple IIe turns out to be the co-star along with Rolling Stone Bill Wyman in a new 75 minute video from MGM/UA.

"Digital Dreams" is a semi-autobiographical look at the world famous bass guitarist's life – from his childhood playing on the slagheaps of Nottingham to his current role as a computer obsessed squire of a 600-year-old Suffolk manor.

And it is the Apple that tends to steal the spotlight.

Even Wyman's glamorous wife Astrid finds herself in the film – as in real life – coming off second best to her husband's micro.

The Rolling Stone is revealed as a computer fanatic, unable to tear himself away from the keyboard or monitor.

Dinner time at the manor is a constant battle as the lovely Astrid turns on the charm in an attempt to persuade Bill to pay some attention to her rather than his computer. However the Apple of his eye once again turns out to be the machine at his side.

The film – which started out as a possible television documentary – is Wyman's first venture into the movie business.

It cost $300,000 to produce and has a somewhat eccentric cast hand picked by the Rolling Stone. This includes Stanley Unwin, the professor of gobbledegook, astronomer Patrick Moore and Sunday Times cartoonist Gerald Scarfe.

But it was the fact that he was able to feature his beloved computer that has given Wyman most satisfaction.

Currently he is using it to write the definitive history of the Rolling Stones and has 30 floppy discs full of background information to date.

However the Apple IIe apparently has not always been beneficial to the life of Bill Wyman. Since the video was made he and "computer widow" wife Astrid have split up.

WORKSTATION 2000 WINNERS

READING the responses to the Workstation 2000 competition which we set in the April issue, it's clear that voice input is something you're all looking forward to.

Most people also predicted the growing importance of communications links, which is good news for our sister publication, TeleLink.

The five winners, who each receive a set of 12 Sams Software packages, are J.H. Brennan, Co. Kildare; David Finch, Aylesbury; S. Hayward, London; Philip Blenkinsop, Royston; M.J. Dennis, Aberdeen.

Thanks to the continuing generosity of Pitman Publishing who market Sams Software in the UK, we are also able to award runner-up prizes to the following people: Lee Harris, Sonning; A. Edgecliffe-Johnson, Harrow; Julian Stewart, Manchester; E. Peach, Burgess Hill; Christopher Walsh, Poole; S.R. Parekh, London; Christopher Brunner, Belgium; Mohammed Chaudhry, Southall; J. Brooks-Wiley, Streatham; Hayder Hassan, New Malden.

Packs powered Everest Apples

ONE of the unsung successes of mountaineer Chris Bonington's Apple-assisted ascent of Everest in the spring was the portable power supply which fuelled his team's computers.

The logistics of the climb were planned and monitored on a pair of Apple IIc machines.

In addition, Bonington used the computers to write letters home and compose his articles for the Observer newspaper.

None of this would have been possible but for the special battery packs designed and produced by peripherals manufacturer Gerry Taylor.

He had been working for some time on a device to allow the IIc to operate away from a mains socket when Apple asked him to produce six special battery packs for the Everest expedition.

Taylor soon came up with the required devices, but there remained the problem of charging them. He learned that the Norwegian members of the expedition were taking along a 28 volt Honda generator which meant he had to design and build an interface to work with it.

Despite the fact that time was slipping away fast, Taylor accomplished this task. What puzzled him was why Bonington didn't want to use solar panels to recharge the packs.

When he finally got to talk to the climber he found the answer – Bonington had been told by Apple that it wasn't possible, "which, of course, was totally incorrect", says Taylor.

"I had a suitable fold-up panel flown in from Germany and took it over to Chris complete with small interface pack on the Wednesday before he left".

Added Taylor: "During the time he was away Chris wrote me a number of letters to report that all systems were working well – except the Norwegians' generator. It seems they never got it going!

"So for the entire trip the only charging method was the solar panel. At those altitudes the ultra violet radiation is so high the batteries were fully charged in an afternoon".

A fascinated Sherpa watches Chris Bonington operate his Apple IIc. The PowerWedge can be seen under Bonington's left hand and the solar panel at the base of the rock.

A lifeline for Jo...

JO AUSTEN is spastic, she is prone to bursts of spasms and cannot speak, walk or perform simple tasks.

In her early years, to communicate by writing was very tiring and laborious, even short sentences leaving her feeling drained.

Many people tended to treat Jo as if she was deaf – or, worse, an idiot. And without putting pen to paper it was difficult for her to prove just how intelligent and articulate she was.

The advent of the electric typewriter, lightwriter, then computer proved a boon, opening up a new world of communications, says Jo, now 39, married and living in Birmingham.

But where she could only chat with her lightwriter because of its small screen and memory, she can do some "heavy talking" on her Apple II.

In the old days, letter-writing was kept to a minimum. When it took an hour to type and edit one page, correspondence had to be brief.

Now, with the aid of the computer, disc drive, Applewriter and printer package, Jo can spend time producing one long chatty letter on screen.

She can then edit and reprint letters in personalised form for each friend. Extras that a particular friend would be interested in can be added or deleted at the touch of a few keys.

Jo, the wife of the Rev. John Austen, has also used the Apple to become more actively involved in the church.

She used it to preach a sermon – written, edited and stored on disc beforehand. At the service, she relayed it on to two screens while a member of the congregation read her words out loud.

Handling enquiries in the Nestar network at Hart Press

LAN polishes off holiday queries

AS predictable as migrating birds, the British public has no sooner polished off the Christmas pudding before it starts clamouring for summer holiday information.

And this means that January is the busiest month of the year for Bill Hart, managing director of Hart Press, which handles the distribution of brochures for 10 leading travel firms.

At peak times this means answering 15,000 enquiries a day.

To handle them Hart has installed a local area network of 12 Apples linked to a 40mbyte hard disc. Extra machines are hired when necessary to cope with the additional workload.

Incoming telephone enquiries are taken live by a staff of telephonists or go onto a bank of answering machines.

These are then entered onto the company's Nestar system at a rate of about 150 names and addresses per terminal per hour.

They are sorted overnight and arranged according to the type of brochure required and their postal grouping. This information is than printed on labels and the brochures dispatched.

All the data is transmitted via modem to the travel companies who use the response figures to fine tune their advertising programme on a day-to-day basis.

Before computerisation this would have entailed a delay of a couple of weeks while results were analysed manually.

"The total database of names and addresses exceeds one million entries, so we are kept busy during the non-peak times during the rest of the year cleaning the database of duplication, incorrect addresses and people who have moved", said Bill Hart.

"There is considerable safety in using a LAN that was not immediately apparent to us when we started using it. Our alternative route for computerisation would have been stand-alone micros each with its own floppy disc drive.

"This would have resulted in a large number of floppy discs being used and a major headache ensuring that back-up copies were regularly taken.

"With the centralised storage on the system's hard disc it is a simple matter of making a back-up tape from it every day. We once had some fierce thunderstorms which caused the computers to go down despite having a surge protection on the mains.

"Thanks to the back-up tape it only took us 20 minutes to reset all the data and become operational again".

Better fortunes

APPLE has jumped 65 places to number 234 in the Fortune 500 list of the largest American companies.

The survey also revealed that the company had generated the greatest sales and assets per employee of any office equipment firm.

Moreover, Apple produced the highest increase in sales – 54 per cent – of any company in the 500, and produced a higher total return to investors than former favourites IBM, Wang, Hewlett Packard, Honeywell, Controldata, Amdahl, Sperry, NCR and Texas Instruments.

Apple moves counter slump

APPLE has embarked on a reorganisation plan aimed at streamlining the company.

And although it entails a smaller workforce the "consolidation" will result in a loss for the third fiscal quarter of this year, says the company.

"We expect these steps to significantly reduce the break-even point of the company", says John Sculley, president of Apple.

The firm is being reorganised along functional instead of product lines and will halve its manufacturing facilities to three plants only.

The highly automated factory in Fremont, California, is to be Apple's primary manufacturing site, building the Macintosh and Apple IIc.

The Apple IIe will continue to be built in Singapore and the factory in Cork, Ireland, will still support the European market.

"The slump in the personal computer industry is significant, and Apple has taken aggressive steps to bring its organisation in line with these conditions", said Sculley.

Apple UK managing director David Hancock said: "This is an extremely positive move forward and can only benefit the international division which is already run along functional lines.

"International is currently responsible for 20 to 30 per cent of Apple's income and we are currently in a market with great potential, even though the US market today is soft.

"This potential will become even more apparent in the UK with the launch of major new software such as Jazz and Microsoft's Excel.

"We are, for instance, already ahead of forecast for this quarter, particularly with the Macintosh 512k, which is achieving record sales".

Setting orienteers on the right lines

WITH the help of a few Apple II computers, runner John Dyson has been changing the traditional image of the blazered official with a stopwatch so familiar to athletics.

A self-taught programmer, Dyson decided some time ago that running events could be much more efficiently handled by computers than by people, and he set about writing software to do the job.

As his own favourite brand of running, orienteering, is just about the most complicated event to coordinate, he decided to concentrate on that.

He explained: "Results have to be exactly right and produced very quickly. In orienteering it can be a nightmare.

"In the British orienteering championships there can be 2,500 competitors, and the collation of results across sections presents as big a challenge to the organisers as the courses do to the runners".

After Dyson had successfully produced the results for the national women's cross country event last year, athletics organisers began to sit up and take notice.

The British orienteering championship earlier this year was his biggest challenge to date. For this he used four Apple II+s, three printers and a Winchester hard disc.

Says Dyson: "I think in the beginning I was probably quite amateurish in my programming. Now a lot of my Basic programs have been rewritten and I'm becoming more professional.

"When I started it soon became obvious that the information had to be handled quickly. This meant I had to achieve quick entry of data with the minimum of button depressions and fast processing of data.

"On the Apple with two floppy disc drives it took longer to merge files and produce results. With the hard disc connected to four Apple IIs my problems are over".

No link with the Oracle

PACE Micro Technology has been forced to change the name of one of its communications products because it was confusing some Apple users.

The Teletext Colour Pallette for the Apple II+ and IIe is now to be known as the Prestel Colour Pallette.

"We've had to do this because some people were under the somewhat strange impression that it would enable them to get Ceefax and Oracle", explained Pace director Barry Rubery. "These seem to be the names that most people identify with teletext".

"And it is really a communications package which provides the only means of obtaining true, full colour teletext graphics on an Apple".

The newly-named Prestel Colour Pallette has a dedicated chip to generate the mosaic-like graphics used by leading viewdata systems.

Datasoft games for Apple II

AMERICAN publisher Datasoft is releasing three games for the Apple II to be distributed and marketed in Britain by US Gold.

Alternate Reality is a fantasy role-playing game. The City is the first in a series of seven programs and the only one that must be purchased to play the others – The Dungeon, The Arena, The Palace, The Wilderness, Revelation and Destiny.

Play is controlled by a combination of keyboard and joystick and the game will be available at £19.95.

Datasoft has also acquired the rights to Steven Spielberg's latest blockbuster film, "The Goonies", and will produce an action/strategy version of the game for £14.95.

The legendary character Zorro will also feature in a program with 15 screens of increasing difficulty and costing £14.95.

Wizard drops in

ROBERT Woodhead, co-author of the best-selling Wizardry games, dropped in to *Apple User* recently to show off his latest project.

Wizardry is soon to be released on the Macintosh, and Robert demonstrated the beta-test version to great effect.

Initially only the first Wizardry scenario – Proving Ground of the Mad Overlord – will be available in Mac format, but the other two may well follow.

Biggest bite

INDEPENDENT research has shown that Apple is the biggest seller of the business PC in the USA.

A survey taken over a one-month period gave Apple 47 per cent of the market – almost double IBM's 24 per cent.

Macintosh accounted for 20 per cent of sales, Apple IIc 14 per cent and Apple IIe 13 per cent.

Apple UK managing director David Hancock said: "With the new software becoming available we expect to see similar figures in the British market".

Happy day

THE Apple IIc celebrated its first birthday with worldwide sales totalling more than 400,000.

Sleight of hand and symbolic data

Part XV of the Apple User Graphics Library completes the automatic annotation routines

THIS month's column finishes off the task of providing automatic graph annotation routines for the *Apple User* graphics library.

Last month was devoted to routines for handling numerical data and providing a variety of graph layout options. This time we shall extend the facilities to include symbolic or nominal data.

By symbolic data I mean quantities such as days of the week, types of fish or eye colours. It is more common in business applications to have such symbolic data as one of the variables than it is to have two sets of numbers, and indeed the library already has one routine for handling such quantities, the Pie Chart routine.

Unfortunately the rest of the library routines all expect numbers for both the X and Y axes, since this is the only way that the screen mappings can be calculated.

In order to handle symbolic data we must perform some sleight of hand manipulations behind the scenes and assign numerical values to the different symbols or labels. Once this has been achieved the ordinary routines can be used to produce graphs in the normal way.

Before going on to the routines themselves I want to outline the limitations imposed on the user when using symbolic data. Firstly, the data must consist of one set of numbers and one set of symbols or labels. For instance, we might have SALES by MONTHS, or WINE-CONSUMPTION by COUNTRY. In each case there is a numerical quantity to be plotted for each label.

It is *not* possible to plot two sets of symbolic data against each other using these routines.

The strategy adopted here is simple, but it must be strictly adhered to. The numerical values must always be put into the ZY( ) array and the labels must be placed in the ZP$( ) array.

This is exactly the same format as used by the Pie Chart routine and it is arranged this way so that the same data can be used to create ordinary charts or pies without any change.

For those who want a little more detail, the automatic annotation routines assign a number to each label and place it in the ZX( ) array.

Thus if we have the labels BLUE, GREEN, YELLOW and RED in the ZP$( ) array these will be given the values 1, 2, 3, 4 in the ZX( ) array. The annotation routines then create mappings using the ZX( ) and ZY( ) values as before.

Since one may not want to have the symbols along the horizontal axis and the numbers along the vertical, the routines provide a SWAP option to provide the alternative format.

Whichever style of graph you want you must always present the routines with the numbers in the ZY( ) array – leave them to perform any SWAPing required.

The only flies in the ointment to this are the histogram routines. They were presented back in the March 1984 *Apple User* and they allow data to be plotted with and without gaps, in multi-bar groups, horizontally and vertically.

The annotation routines presented here will accommodate all these options, but the histogram routines themselves require slight modification. For the moment, the sections for annotating histograms should not be used. I will give the modifications required next time.

Those who have a complete library of routines will find a problem this month – the library is now too large to fit in memory above hi-res page 1, let alone page 2.

There are several solutions to this problem. The best is to move DOS onto the language card and so free up 12k of memory. This requires that you have a utility to do this since, unfortunately, there is no quick method of doing it.

Alternatively you can delete the routines you don't intend using in any one program. Finally you can also regain considerable space by taking out the extensive REMs at the beginning of each routine.

In order to be able to deal with numbers last month and symbols this month I had to present a slightly simplified listing last month. A few changes are necessary to link in the new routines. These modifications/additions are given in Listing I.

We now come to the new routines, which should be typed in after the previous ones as usual.

```
48085  IF ZU(1) = 1 THEN  RETURN
     :


48324  IF Z0 = 0 THEN  GOTO 48330

48325 ZS$ = ZP$(Z1): IF Z2 > 0 THEN
     ZS$ =  LEFT$ (ZS$,Z2)
48326  RETURN :


48630 Z0 = 0: IF ZU(1) = 1 THEN Z
     0 = 1
48720 ZX =  FN UXCN(XP): GOSUB 43
     460:Z5 =  FN XCN(Z4) + Z6 +
     4
48750 Z0 = 0: IF ZV(1) = 1 THEN Z
     0 = 1
48770  IF ZM(1) * ZM(2) < 0 THEN
     XP =  FN XCN(0)
48780 Z7 = XP:Z2 = ZV(10): REM  R
     IGHT HAND SIDE
48860  REM  TITLES
48870  GOSUB 49000: REM  TITLES
48880  RETURN :
```

Listing I: Modifications and additions to last month's routines.

Title Routine puts the X axis title, Y axis title and main title on the graph. It is called internally by last month's labelling routine.

In automatic mode it ensures that all the titles are centered correctly and that the axis titles don't overwrite any of the numbers/labels along the axes.

However the coordinates of each of the titles can be set by the user if preferred. This option is controlled by the ZG(7) value. A value of 0 provides automatic positioning for all three titles. The numbers 1, 2 and 4 are used to switch off automatic control for the main title, the X axis title and the Y axis title respectively.

The total found by adding each option controls the layout. Thus a value of 3, will utilize user supplied coordinates for the main title and the X axis title.

The titles themselves are kept in the ZG$( ) array in the order main, X, Y. If user coordinates are to be supplied they must be put in ZG(9), ZG(10) for the main title, ZU(8), ZU(9) for the X title and ZV(8), ZV(9) for the Y title.

The X and Y titles will be written in the currently set style but the main title style can be chosen separately via ZG(8). A value of 0 uses the current style; 1, underline; 2, inverse; 3, underline+inverse.

The default graph setting routine sets up default values for the physical size of the graph.

It also sets the plotting colour to WHITE, the hi-res page to 1 and clears the screen, sets full/mixed graphics and text, and

default values of SCALE=1 and ROT=0 by calling the routine at 40000.

Its only parameter is ZF=0, mixed text/graphics, and ZF=1, full graphics.

This routine is for convenience only and saves having to issue these common settings every time. You can alter the values in 49430 and 49440 if you prefer a different default size.

The symbolic data range routine is entirely analogous to the one presented last month for numbers and uses the ZG( ) array in exactly the same way. In fact it calls the number routine (47600) internally once it has set up the ZX( ) array.

The routine works in three modes defined in the variable ZG.

ZG=0 labels along the X axis, numbers up the Y axis.

ZG=–1 labels up the Y axis, numbers along the X axis.

ZG=1 is histogram mode.

Remember that all modes require the numbers in ZY( ) and the labels in ZP$( ). The titles, data and labels must be set before calling the routine. The first two modes also require that ZN be set to the number of data points. The third option will be explained fully in the next article, but adopts the usual histogram settings.

One difference from the numerical settings is that a value put into ZU(10) will force the labels, but not titles, to be printed out with that number of letters only.

This is useful if the labels are so long that many of them are omitted by the labelling routine to stop them overwriting each other. Thus ZU(10)=3 would cause FEBRUARY to be printed as FEB.

Swap X<–>Y swaps the X and Y information over for plotting graphs the other way round. It is called internally by the symbolic range routine.

The routine can be called separately if required, but it is up to the user to ensure that ZN/histogram settings are correct and that the graph ranges have already been set. The routine swaps over the arrays ZX/ZY and ZU/ZV. It also alters ZG( ), ZG$( ) and ZM( ) where necessary.

The example program illustrates the use of the symbolic routines to create different types of output from the same data.

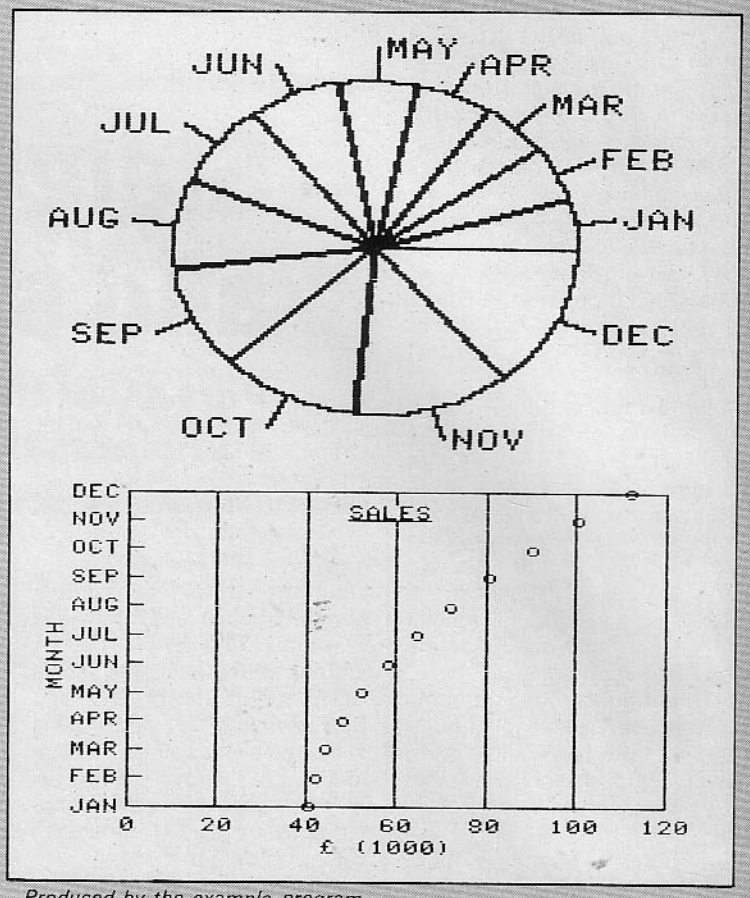
Lines 110-130 load in the shape tables, set up some sales data, month labels and graph titles.

Line 140 sets the graph size/page and line 150 draws and labels the graph completely automatically.

Line 160 uses the function routines to plot a curve of the data.

Lines 180-210 repeat the process for SWAPped axes and sets a few of the special options. Line 220 plots the data as circles.

Lines 240-270 swap the data back to its original form, clear the page and draw a labelled pie chart. It's as simple as that.



Produced by the example program

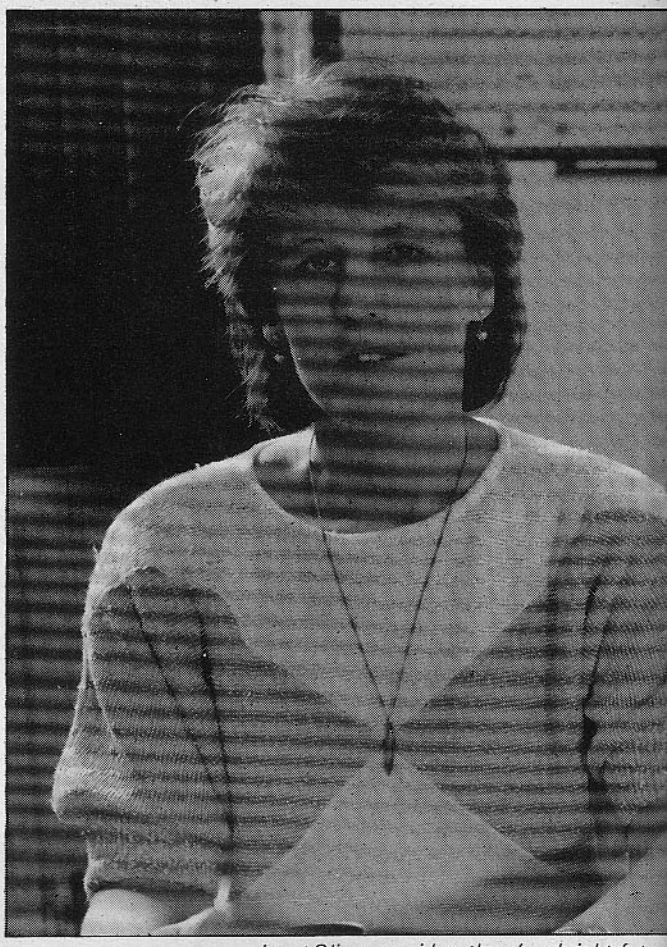
```
80  DIM ZX(12),ZY(12),ZP$(12),ZU(
    12)
100  REM

EXAMPLE PROGRAM

110  GOSUB 42400: REM  SHAPE TABL
    E LOADER
120 ZN = 12: GOSUB 600: REM  SET
    UP DATA
130 ZG$(1) = "SALES":ZG$(2) = "MO
    NTH":ZG$(3) = "£ (1000)": REM
     SET LABELS
140 ZF = 1: GOSUB 49400: REM  DEF
    AULT GRAPH/PAGE

150 ZG(0) = 2: GOSUB 500: REM  AL
    L DEFAULTS
160 ZF(1) = 2:ZF(2) = 1:ZA(1) = 4
    0:ZA(3) = .5: GOSUB 43800: REM
     PLOT FUNCTION
170  GET A$: IF A$ <  > " " THEN
     GOTO 170
180 ZG =  - 1: REM  SWAP X(->)Y
190 ZG(8) = 1: REM  UNDERLINED TI
    TLE
200 ZG(3) = 1:ZG(4) = 2: REM  BOR
    DER+ LINES
210  GOSUB 500
220 ZT = 1: GOSUB 42600: REM  PLO
    T POINTS
230  GET A$: IF A$ <  > " " THEN
     GOTO 230
240  GOSUB 49800: REM  SWAP BACK
250  GOSUB 40000: REM  CLEAR PAGE

260 ZP(1) = (ZM(1) + ZM(2)) / 2:Z
    P(2) = (ZM(3) + ZM(4)) / 2:Z
    P(3) = (ZM(2) - ZM(1)) / 4: REM
     PIE CENTRE AND SIZE
270 ZP(10) = 1: GOSUB 46100: REM
     LABELLED PIE
280  END :

500  REM   CLEAR PAGE,SET RANGE,D
    RAW AND LABEL
510  GOSUB 40000: GOSUB 49500: GOSUB
    48600
520  RETURN :

600  REM  DATA ROUTINE
610  FOR I = 1 TO ZN: READ ZP$(I)
    :ZY(I) = I * I / 2 + 40: NEXT
620  RETURN
630  DATA  "JAN","FEB","MAR","APR
    ","MAY","JUN","JUL","AUG","S
    EP","OCT","NOV","DEC"
49000  REM

TITLES ROUTINE

49010  REM  USES AUTOMATIC OR USE
    R SUPPLIED POSITIONS
49020  REM  CONTROLLED BY THE ZG
    ARRAY
49030  REM  ZG(7) -AUTO POSITIONI
    NG, 0=ALL, 1=T,2=X,4=Y USES
    SUPPLIED VALUES FOR T+X+Y
49040  REM  ZG(8) SET TITLE STYLE
    ,0=DEFAULT, 1=UNDERLINE, 2=
    INVERSE, 3=INV+UND
49050  REM  ZG(9),ZG(10) USER COO
    RDINATES FOR TITLE
49060  REM  ZU(8),ZU(9) USER COOR
    DINATES FOR X AXIS LABEL
49070  REM  ZV(8),ZV(9) USER COOR
    DINATES FOR Y AXIS LABEL
49080  REM  TITLE AND LABELS ARE
    HELD IN ARRAY ZG$()
49090  REM  Y AXIS
49100  IF ZG(7) < 4 THEN  GOTO 49
    120
49110 ZX = ZV(8):ZY = ZV(9): GOTO
    49150
49120 XP = Z9 - 10:ZX =  FN UXCN(
    YP)
49130 YP = ZM(7) - ZM(8):YP = YP -
    LEN (ZG$(3)) * 7
49140 YP = ZM(7) - YP / 2:ZY =  FN
    UYCN(YP)
49150 ZS$ = ZG$(3):Z1 = ZS(1):ZS(
    1) = 3: GOSUB 43460:ZS(1) =
    Z1
49160  REM  X AXIS
49170  IF ZG(7) < 2 OR ZG(7) = 4 OR
    ZG(7) = 5 THEN  GOTO 49190
49180 ZX = ZU(8):ZY = ZU(9): GOTO
    49240
49190 YP = ZM(7) + 20: IF ZU(5) <
    > - 1 THEN  GOTO 49210
49200  IF ZM(3) * ZM(4) < 0 THEN
    YP =  FN YCN(0) + 20
49210 ZY =  FN UYCN(YP)
49220 XP = ZM(6) - ZM(5):XP = XP -
    LEN (ZG$(2)) * 7
49230 XP = ZM(5) + XP / 2:ZX =  FN
    UXCN(XP)
49240 ZS$ = ZG$(2):Z1 = ZS(1):ZS(
    1) = 0: GOSUB 43460:ZS(1) =
    Z1
```

Listing II: Example program and new routines

```
49250  REM  TITLE
49260  IF  INT (ZG(7) / 2) * 2 =
     ZG(7) THEN  GOTO 49280
49270 ZX = ZG(9):ZY = ZG(10): GOTO
     49310
49280 ZY =  FN UYCN(ZM(8) + 10):X
     P = ZM(6) - ZM(5)
49290 XP = XP -  LEN (ZG$(1)) * 7
     :XP = ZM(5) + XP / 2
49300 ZX =  FN UXCN(XP)
49310 ZS$ = ZG$(1):Z1 = ZS(1):ZS(
     1) = 0
49320 Z2 = ZS(2):Z6 = ZS(6)
49330  IF ZG(8) = 1 OR ZG(8) = 3 THEN
     ZS(6) =  - 1
49340  IF ZG(8) >  = 2 THEN ZS(2)
      = 1
49350  GOSUB 43460:ZS(1) = Z1:ZS(
     2) = Z2:ZS(6) = Z6
49360  RETURN :
49400  REM

DEFAULT GRAPH SETTING

49410  REM  ZF=0 TEXT/GRAPHICS, Z
     F=1 GRAPHICS ONLY
49420 ZP = 1:ZC = 3: REM  PAGE ON
     E, WHITE
49430 ZM(5) = 40:ZM(6) = 265: REM
      X SCREEN VALUES
49440 ZM(8) = 6:ZM(7) = 132: IF Z
     F = 1 THEN ZM(7) = 165: REM
      Y SCREEN VALUES
49450  GOSUB 40000: REM  SET UP P
     AGE
49460  RETURN :

49500  REM

SYMBOLIC DATA RANGES

49510  REM  ZG=0 ORDINARY, 1=HIS
     TOGRAM, -1=ORDINARY+SWAP
49520  REM  ZN AND/OR HISTOGRAM V
     ALUES MUST BE SET FIRST
49530  REM  ZG ARRAY SET AS FOR 4
     7600
49540 ZQ = ZU(10):ZU(1) = 1: IF Z
     G = 1 THEN  GOTO 49590
49550  FOR ZI = 1 TO ZN:ZX(ZI) =
     ZI: NEXT
49555 ZM(1) = 1:ZM(2) = ZN: REM
     DUMMY VALUES
49560  GOSUB 47600: REM  SET Y RA
     NGE
49570 ZM(1) = 1:ZM(2) = ZN:ZU(2) =
     1:ZU(3) = ZN:ZU(4) = 1: REM
      FORCE X RANGE
49580  GOTO 49730
49590  IF ZH(1) = 0 THEN  GOTO 49
     670
49600  FOR ZI = 1 TO ZH(1):ZX(ZI)
      = ZI: NEXT
49610 ZN = ZH(1) * ZH(2): REM  Y
     DATA VALUES
49615 ZM(1) = 1:ZM(2) = ZN: REM D
     UMMY VALUES
49620  GOSUB 47600: REM  SET Y VA
     LUES
49630 ZM(1) = ZH(2) / (2 * (ZH(2)
     + 1))
49640 ZM(2) = ZM(1) + ZH(1) + 1 /
     (ZH(2) + 1)
49650 ZU(2) = 1:ZU(3) = ZH(1):ZU(
     4) = 1
49660  GOTO 49730
49670  REM  SPECIAL CASE ZH(1)=0
49680  FOR ZI = 1 TO ZH(2):ZX(ZI)
      = ZI: NEXT

49690 ZN = ZH(2): REM  Y DATA VAL
     UES
49695 ZM(1) = 1:ZM(2) = ZN: REM
     DUMMY VALUES
49700  GOSUB 47600: REM  SET Y VA
     LUES
49710 ZM(1) = .5:ZM(2) = ZH(2) +
     .5
49720 ZU(2) = 1:ZU(3) = ZH(2):ZU(
     4) = 1
49730 ZG(1) = ZU(3) - 1:ZU(10) =
     ZQ:
49740  IF ZG < 0 OR ZH(8) = 1 THEN
      GOSUB 49800: REM  SWAP
49750  GOSUB 48100: RETURN
49800  REM

SWAP X<->Y

49810  REM  ZN/HISTOGRAM DATA AND
      GRAPH RANGES MUST BE SET FI
     RST
49820  IF ZG = 0 OR ZG =  - 1 THEN
     Z2 = ZN: GOTO 49850
49830  IF ZH(1) = 0 THEN Z2 = ZH(
     2): GOTO 49850
49840 Z2 = ZH(1) * ZH(2)
49850  FOR ZI = 1 TO Z2:Z1 = ZX(Z
     I):ZX(ZI) = ZY(ZI):ZY(ZI) =
     Z1: NEXT : REM  SWAP DATA
49860  FOR ZI = 1 TO 10:Z1 = ZU(Z
     I):ZU(ZI) = ZV(ZI):ZV(ZI) =
     Z1: NEXT
49870 ZS$ = ZG$(2):ZG$(2) = ZG$(3
     ):ZG$(3) = ZS$: REM  AXIS LA
     BELS
49880 Z1 = ZM(1):Z2 = ZM(2):ZM(1)
      = ZM(3):ZM(2) = ZM(4):ZM(3)
      = Z1:ZM(4) = Z2: REM  RANGE
     S
49890 Z1 = ZG(1):ZG(1) = ZG(2):ZG
     (2) = Z1
49900  GOSUB 40200: RETURN :
```

All shipshape and in fashion at Bristol...

WALTER STANTON reports on the remarkable success of a computer bureau service to small and medium sized firms



Janet Oliver considers there's a bright futur

WHATEVER problems and industrial havoc the depression may have fostered, it appears also to have spawned a complementary benefit specifically for the computer bureau sector.

At least this looks to be the case in the Bristol area, and in particular to Janet Oliver, who runs her own computer bureau service – Oliver & Co. – at Clifton.

Launching into this field 18 months ago, business developed so well that she had to stop advertising her company's services and start planning for expansion.

Janet specialises in computer bureau services and secretarial services to the small and medium-sized business sectors. She says that executives have suddenly appreciated the need for swiftly produced accounting regimes and cashflow reports that will enable them to control and operate their businesses much more efficiently and profitably.

At present Oliver & Co. has a client list of 20 which includes a national record distribution company and a range of High Street enterprises, together with a number of builders, contract cleaners and a finance house.

All this started when Janet was employed by a private company as an accounts office supervisor. Although working very hard, nobody seemed to appreciate or even care about the workload she was carrying, which led rapidly to job dissatisfaction and a desire to get out and run her own show.

An astute person, she readily appreciated she would not get very far without some level of formal training and advice on how to enter and stay in business.

At the same time there happened to be a government-sponsored business enterprise course being structured at the London Business School and she applied for a place.

From the 500 who applied Janet plus 16 others were selected to receive the four months training.

Setting up the business subsequently was relatively easy she admits, but it soon became clear that she needed to do something about generating clients – and quickly, for funds weren't all that strong.

Structuring her own promotional campaign that included local press advertising, direct mail drops and face to face interviews with local business people, her action soon began to bear fruit and so she took on an assistant.

The bureau services Oliver & Co provide include bookkeeping and accounting to monthly profit and loss and balance sheet stages, credit control, VAT, cashflow forecasting, sales invoicing and payroll.

As the client base began to develop Janet experienced her first major setback. Admitting inexperience of this particular aspect she had unwisely invested in untested bookkeeping software for use with an Apple III borrowed from her husband, and soon found things going awfully wrong.

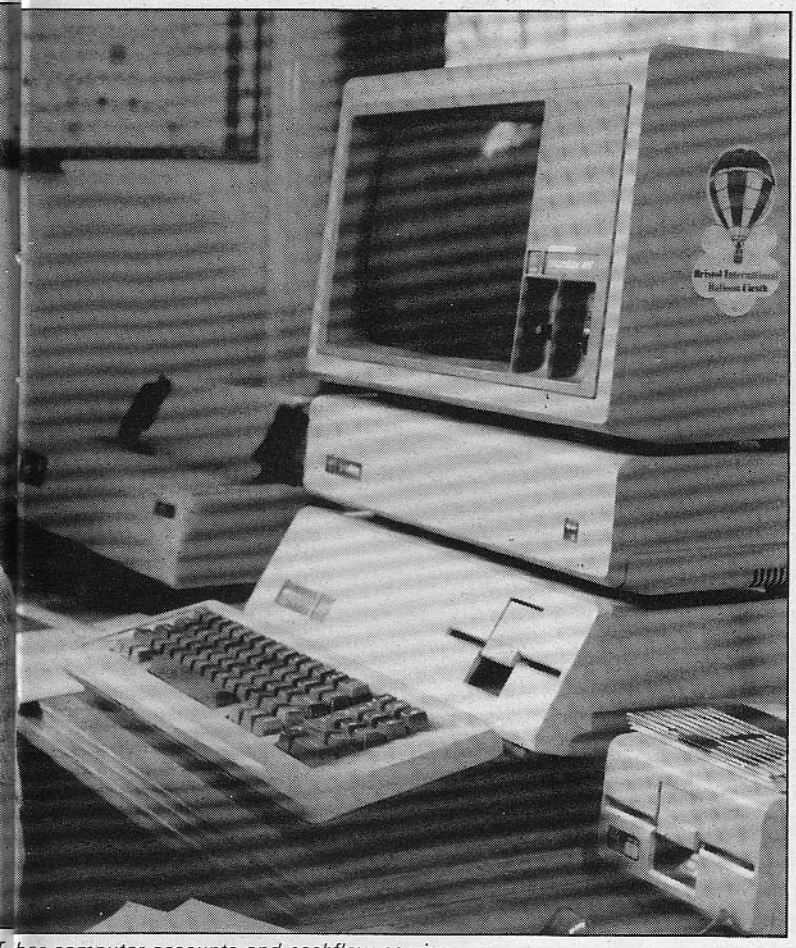
Visiting the Apple exhibition in London she happened to meet David Jarman, and learning of the software products his company Jarman Systems of Tring had designed and being impressed with what she saw in demonstration with the Apple III, Janet returned to Bristol and contacted David Baker of Wessex Computer Services, a local computer dealer and consultant.

Following an appraisal of her clients' particular needs, Baker – a graduate with 20 years computer industry experience – recommended that the company should re-equip with Jarman accounting modules which he advised embodied the flexibility that would match the client files.

With the bureau operation functioning more effectively, trade began to develop more quickly as satisfied clients became Janet's best form of promotion.

At this stage an office assistant was engaged, followed shortly after by the purchase of another Apple III and hard disc system, together with a fast printer.

However the business was now beginning to dominate



her computer accounts and cashflow service

Janet's life, with an 18 hour day becoming commonplace as demand for her services grew.

In July last year therefore she decided to cancel all press advertising and other promotional action and additionally refrained from accepting further commitments.

Since that time, although the appointment of a further member of staff has eased the problem, the strategy is for an early company move into larger premises so that Oliver & Co. can continue again to accommodate incoming enquiries.

"There's a good future for the bureau operation in Bristol now that business men have become more computer-orientated and I foresee a tremendous opportunity for both scope and growth in the future", says Janet.

"It is a tremendously fulfilling occupation, and so stimulating to receive praise from clients who are obviously pleased with the service we are giving enabling them to make decisions and keep their businesses on the right track.

"It isn't all my doing though", she confesses, "for without the right tools of my trade – the excellent software and the hardware I use, together with the backup from my staff and David Baker, I don't think I could have developed my business so swiftly in just 18 months".

What Janet always tries to maintain is the quality of service she provides, and that inevitably includes having to do "the cardboard box job" now and then.

She explains that this means somebody has literally delivered a box of invoices and other assorted material for sorting and recording, leading to the production of a statement of accounts that will determine whether or not that business is still in business.

"We've sometimes thought of using a slogan that reads 'Emergencies a Speciality'," she said, "but we do understand the difficulties that some companies are experiencing to-day, and it's really great to be able to be of service, for that's what the bureau business is all about".

appletips

The use of superscripts and subscripts can be a problem with some dot matrix printers used in conjunction with Wordstar.

The problem arises because the patch areas given for **ROLUP:** and **ROLDOW:** are not generally large enough for many modern printer control strings.

One way round this problem is to install the printer as a "half line-feed" rather than "teletype with backspace" and to make **PSINIT:** a string which will set the line feed pitch to half the normal value, that is generally to one-twelfth of an inch.

With an Epson this is accomplished by the sequence, in hexadecimal **3,1B,41,6.** The string to finish printing, **PSFINI:** is then set to **2,1B,2.**

For Apple's Imagewriter **PSINIT:** becomes **4,1B,54,31,32** and **PSFINI:** becomes **2,1B,41.**

Max Parrott

It is sometimes useful to find the name of the boot file on a DOS 3.3 disc. The relocatable program given here will, when BRUN, clear the screen and wait for a keypress.

Pressing Return will read and display the boot filename from the disc in the currently logged drive.

Pressing any other key will exit to Basic. As many discs as required may be read. An error will beep the speaker and display ERR, but the program will continue.

```
2000- 20 58 FC 20 8E FD 20 0C
2008- FD C9 8D F0 03 4C D0 03
2010- 20 E3 03 84 E7 85 E8 A9
2018- 01 A0 0C 91 E7 A9 00 A0
2020- 08 91 E7 C8 A9 02 91 E7
2028- A9 00 A0 03 91 E7 C8 A9
2030- 01 91 E7 C8 A9 09 91 E7
2038- 20 E3 03 20 D9 03 90 05
2040- 20 2D FF B0 BE A2 75 BD
2048- 00 02 20 ED FD E8 E0 93
2050- D0 F5 F0 AF 00 00 00 00
```

Dave Russell

Having already written about the use of DOS 3.3's VERIFY command in conjunction with ONERR and OPEN to determine whether a text file already exists on disc or not, I have come up with a simple solution for those programmers who wish only to access existing files, configurations etc, under both DOS 3.3 and ProDOS BASIC.SYSTEM environments.

The answer is to disable the OPEN command's ability to create a new file, if one is not found, so that you will always get an error if you try to open a non-existent file.

This method avoids having to VERIFY the file's integrity first which, under DOS 3.3, can take time with large files.

This is accomplished by changing the OPEN command's entry in the command valid keyword table. The following list gives the changes necessary to accomplish this.

To disable file creation by the OPEN command under DOS 3.3 **POKE 43299,34** and similarly under ProDOS **POKE 47505,37.**

DOS 3.3 and ProDOS BASIC.SYSTEM return the errors FILE NOT FOUND and PATH NOT FOUND respectively if attempts are made to OPEN non-existent files with this modification.

Allan Ogg

Operating System	Location to change	Disable file creation	Enable file creation
DOS 3.3	43299 ($A923)	34 ($22)	35 ($23)
ProDOS	47505 ($B991)	37 ($25)	45 ($2D)

SPREADSHEETS are among the most popular types of programs for micros. Since the advent of Visicalc in 1979, every self respecting software house has produced a spreadsheet program to rival the original, so now we have Flashcalc, Magicalc, Multiplan, Practicalc, Supercalc and integrated programs such as Appleworks. Although most users soon grasp the essential features and functions, many people do not progress beyond the stage of designing and using quite simple worksheets.

This article is not for newcomers to spreadsheets. It is intended for those with a modicum of experience who want to get more out of their spreadsheet program. Although it is written mainly in the context of Visicalc, much of the advice applies also to other spreadsheet programs.

It consists of hints and tips that help to reduce errors or to save time or to make better use of computer memory.

Some of them can be found in the spreadsheet manuals but they are overlooked even by those who have read the manual serveral times. Others are not in the manuals but have been devised by ingenious users.

Spreadsheet tips

GEOFF WOOD shows how to use your package, be it Visicalc or whatever, more efficiently

Adding blank spaces into @SUM cells

THE @SUM command is very useful for adding up columns or rows of figures but what happens if you want to include another row or column?

If the formula in, say, cell C32 is @SUM(C20 . . . C30) and an extra row is then inserted at the top or bottom of the set, the extra figures are not added into the total.

But if an extra row is inserted anywhere between rows 20 and 30, it will be included in the new formula.

However, if the cells in rows 19 and 31 are blank or if they contain only labels, you can use the formula @SUM(C19 . . . C31) so that when extra rows are added at the top or bottom of the set, they will be added into the totals.

The same technique can be used on columns but it is rarer to find that you have blank columns at the left and right hand side.

The technique also works with other commands such as @AVERAGE, @CHOOSE, @LOOKUP, @MAX, @MIN, and @NPV.

Avoiding error messages

SOMETIMES the answer to a formula shows up as the word ERROR instead of a number. Often this is because the formula is trying to divide by zero.

To avoid these ERROR words showing up on the screen or on a printout, you can use the @IF and @ISERROR functions.

For example, if the formula +C5/C6 shows ERROR because C6 is zero, amend the formula to read @IF (@ISERROR(C5/C6), 0,C5/C6).

What this means is, "If the answer to C5/C6 is ERROR, print a zero; if not, print the answer".

Then if C6 is a blank cell, or if you delete row 6, the answer will still be zero, whereas the original formula would have shown the word ERROR.

If your spreadsheet does not have the @ISERROR function, you can use an alternative formula reading @IF(C6=0,0, C5/C6).

However, this method does not trap all forms of error whereas the @ISERROR function does.

Blanking large areas

IF you need to blank out several rows and/or columns of data, don't waste time with the Blank command, /B, which blanks out only one cell at a time. Instead, locate the cursor in any blank cell and use the Replicate command, /R, to clear one row or column.

Then use /R again to replicate the blank row or column into any other columns or rows you wish to blank out.

Entering figures as labels

WHEN you enter data Visicalc reads the first character you press and "knows" whether it is a label or a value.

If you want to use figures as labels, or start a label with any character which is not a letter of the alphabet, the Visicalc manual tells you to press the " key first.

Another way to achieve the same effect is to press any letter key followed by the Esc key. This causes the word "label" to appear above the edit strip, so any entry will be treated as a label.

Entering row headings

WITH earlier versions of Visicalc all the columns must be the same width, so you may need to use two or more columns for labelling the rows. It is a good idea to type the full description in column A, even though only part of it will be displayed on the screen.

This has three advantages. First, if you later widen the columns you don't have to amend column A.

Second, if you create a DIF file you can delete column B, assuming it contains only labels, and thus avoid problems when transferring data to Visiplot and other programs.

Third, if you print out the file format using the command /SS,S1 – Storage Save, Slot 1 – the full titles will be easy to identify. However, long labels use more memory than short ones, so you may need to economise.

Hiding the contents of a cell

SOME spreadsheet programs offer a facility to "hide" the contents of a cell, although you may be able to see the contents

〉

in the status display section when the cursor is located in that cell.

However, if your spreadsheet program does not offer a hide facility, do not despair. Cells which contain numbers less than 1 can be made to appear blank with the command /F* – format bar graph.

If you want to hide larger numbers enter them in the normal way followed by /100 or a larger power of 10.

Another technique can be used to prevent casual observers from seeing confidential data. By using the @IF function you can make the display in any cell depend on a number concealed in another cell.

For example, if you hide the number .1 in a column to the right of your worksheet, say cell K1, in other cells you can use the formula @IF(K1<1,10^10,V), where V is a number or a formula whose answer you want to hide.

The result is that all such cells will show 1E10 – or >>>>>> if the cell is formatted integer or dollars. When you change cell K1 to a number more than 1, the correct answers will be displayed in the other cells.

Pre-defining the bottom right cell

WHEN building up a large worksheet delays may occur as you add more rows or columns. This is because Visicalc takes some time to re-define the bottom right hand corner.

At an early stage in building the worksheet move the cursor to a cell beyond where you think the bottom right hand corner will be, and enter a label or value.

Before saving the worksheet don't forget to blank out this cell, thus saving disc space and memory when you reload.

Pre-formatting worksheets

IF you want to display many cells in a special format, for example, /FI, /F$, /FL, /FR, don't do them one at a time after entering the values or labels. Instead, format one blank cell with the appropriate command and replicate this format into other cells.

The appearance of the blank cells will not change, but when you enter labels and values they will appear in the correct format.

However don't format too many rows or columns because when you save the worksheet you may be wasting space on the disc.

If you have formatted some cells outside the finished worksheet area re-format them with the Format Default and Replicate commands, /FD, and, /R, before saving the worksheet.

Rounding off numbers

NUMBERS, especially the answers to formulae, can be rounded off for display purposes with /FI or /F$. Some spreadsheets allow you to specify the number of decimal places from 1 upwards. However the rounding is for display purposes only. Any subsequent calculations are done with the full number of significant figures.

So if you add up a column of displayed figures in your head the answer you get may be different from the displayed answer. To avoid this you can use the @INT function to round off the numbers for calculations as well as for display.

To round off to two decimal places enter @INT(V*100+.5)/100, where V is the formula you wish to round off.

For three decimal places substitute the number 1000 for the number 100 in the formula.

For negative answers you must also substitute the number –.5 for +.5. Some spreadsheets offer the @ROUND function which is easier to use than @INT.

Seeing that formula

IF a cell contains a long formula you may find that when the cursor is in the cell the formula is too long to fit in the status display.

To see the formula use the Edit command, /E. The formula will then appear in the edit line. If it is too long to fit in the edit line use the right arrow key to scroll across the edit line.

At any stage you can press Return to accept the whole formula, but don't press the Esc key unless you want to edit out part of the formula.

Seeing that number

IF you narrow down the width of the columns you may lose some of the significant figures. The numbers can be seen temporarily by using the command /GCW12 – global column width 12 characters – to widen the display. You can then use a similar command to narrow the columns down to the previous width.

If you want to see the contents of only one cell just move the cursor to that cell, press the # key, and the full number will appear in the edit strip.

However if the cell contains a formula, do not press the Return key because this will substitute the number for the formula.

Instead press Ctrl-C or use the Esc key to back out.

Similarly, if you have used /FI – format integer – or /F$ – format 2-decimal places – to round off numbers in a display, you can use the # key to see the full number in the edit strip.

Again, don't forget to use Ctrl-C or the Esc key, rather than Return, to back out of the command.

F G H I J K L

Import Export International Co. plc
Proposed Schedule Of Purchases For 1985

Item:	Country Of Origin:	Quantity Req.	Unit Cost In Local Currency	Unit Cost In £ Sterling	%of Total
Widgets	Italy	150	9200.00	600.00	2.81%
Hoops	France	680	68.28	4080.00	19.10%
Disks	New Zeland	450	4.26	900.00	4.21%
Pillars	Greece	340	1968.00	2720.00	12.73%
Fringes	U.K.	780	7.00	5460.00	25.56%
Lobs	Japan	360	948.00	1080.00	5.06%
Manas	Israel	680	287.00	793.33	3.71%
Buffins	Switzerland	470	27.54	4230.00	19.80%
Tribons	Australia	250	9.11	1500.00	7.02%
	Total Cost:			21363.33	100.00%

Converting formulae to numbers

THE contents of a cell containing a formula can be converted into the answer to the formula by pressing the # key followed by Return. To convert a row or column, it may be quicker to save the cells as a DIF file and then load it back in.

However if the cells were formatted with /FI or /F$ and the DIF file is loaded into a different location, the new display may show more significant figures because the DIF process does not save the format.

To avoid this use @INT or @ROUND (see above) to round off both the display and the calculation before transferring.

Multiplan does not offer the facility, but a similar effect can be achieved by first "naming" the cell or cells you wish to convert then saving the worksheet to the disc.

You can then eXternally Copy the named cell(s) into the original cell(s), or other cell(s) but you must specify an Unlinked rather than a Linked copy.

Speeding up entries

IF a worksheet takes more than a split second to recalculate the answers when you add or change figures, use the command /GRM – global recalculation manual – to prevent the delay.

If you wish to see all the answers occasionally just press the exclamation mark key to recalculate. If you wish to see only one or two answers locate the cursor in the cell, use the Edit command, /E, and press Return.

Speeding up the replication process

REPLICATING a lengthy formula into many other cells involves pressing the R key – for Relative – or N key – for No Change – many times for each item in the formula.

Provided that the procedure does not involve a mixture of Rs and Ns, you can save time by

holding down the R key or the N key – and also the Repeat key if necessary.

Don't worry if it repeats too long and you then find a string of RRRRRs or NNNNNs in the cell where the cursor is located. Just hold down the esc key, and Repeat key if necessary, to wipe out the unwelcome RRRRRs or NNNNNs and restore the former contents to the cell.

Using Ctrl-C and the Esc key

MANY users forget that you can use Ctrl-C to cancel an entry or to cancel the process of scanning through the names of files on the disc. This is much faster than using the Esc key to cancel the characters one by one.

Ctrl-C can also be used to cancel the loading, saving and printing operations.

Using the top left cell

MAKE better use of the cell in the top left hand corner by using it to record the file name and other useful information. The file name need not necessarily show up on the worksheet.

You can use the cell to display a general heading and then add the file name, unless it is the same as the general heading.

If space permits, you can also enter the coordinates of the bottom right hand cell. This information is very useful when it comes to printing out the worksheet.

When you want to save the worksheet or see the information for other purposes, move the cursor into cell A1 and all will be revealed in the status section.

Using /X as a command

DON'T search the Visicalc manual for the command /X, for you won't find it. /X enables you to bring any cell to the top left hand corner of the screen or current window.

Normally if the cursor is located in cell A1 and you issue the command >T100, you will find cell T100 in the bottom right hand corner of the screen or window. But if you use /X followed by >T100, the cell T100 will appear in the top left hand corner of the screen or window.

Devising worksheet names

TRY to give each worksheet a full, descriptive name, such as CASH FLOW BUDGET rather than abbreviations like CFB.

This makes it easier to remember the function of each worksheet when you scan through the titles. It also reduces the chance of accidentally using a wrong name when re-saving a file.

If you use a wrong name when saving you may wipe out another worksheet that you did not want to lose – though you should always have another copy on a back-up disc.

When loading and re-saving files it is often quicker and certainly more reliable to use the right arrow to call up the file names after issuing the Load and Save commands, /SL, and /SS. When the correct file name is displayed just press the return key to load or save the file.

Saving several versions of a worksheet

IF you know that you will need to save several versions of a worksheet, start with an empty worksheet and save the general name on to the disc.

When you are ready to save the first version use the Save command, /SS, and the right arrow key to call up the file name into the edit strip. Then add an appropriate suffix and press Return to save the file.

Use the same procedure to save other versions, using a different suffix for each version.

Tidying up worksheet discs

IF you have several worksheets on one disc and you keep adding to them, you may experience problems in re-loading some of the worksheets, especially if the disc is nearly full.

This is because, when you first save a worksheet the disc operating system puts all the information on one track of the disc, and adjacent tracks if necessary.

The next new worksheet will be saved on the nearest empty track or part track, and so on. But when you add to a worksheet and re-save it the extra information may be scattered over several other tracks. Thus when you re-load, the read-write head in the disc drive has to hop about to find the data.

The answer is to start with a blank initialised disc, then load the worksheets one at a time off the old disc and save them on to the new one. Finally make a back-up copy of the new disc on to the old disc.

Saving a back-up copy

ALWAYS save every worksheet on two separate discs. Each time you save a worksheet repeat the operation but change discs between. If you have two disc drives you can save the worksheet on alternate drives by adding a suffix after the file name.

This process may take longer than copying the worksheet disc at the end of a day's work, but it is better to be safe than sorry. You never know when a disc will let you down, or when someone might spill coffee on your precious data.

The cost of a disc is far less than the cost of the time you have spent putting the data on it.

Using DOS to format discs

YOU can format a disc for Visicalc worksheets in two ways. One is to use the Visicalc Initialise command, but this does not put the disc operating system on the disc, so you cannot boot up from this disc in order to catalog it or rename files.

However you can boot up from another disc and catalog the disc formatted by Visicalc.

The other way is to format your discs by the normal DOS command. You can then add Visicalc files to the disc and later boot this disc to catalog it.

The drawback is that such discs offer slightly less storage space than those formatted by Visicalc, but this may be less important than the ability to boot the disc.

Saving memory with DIF files

AS you try to build a very large worksheet you may run out of memory in your computer – the letter M starts to flash in the right hand corner of the status area.

You may be able to recover some memory by deleting blank rows or by blanking out cells with labels that are not vital, especially rows of dashes and other demarcation lines.

Alternatively, or in addition, you may be able to recover space by saving part of your worksheet with the DIF Save command, /S#S, then loading the DIF file back into the worksheet with the DIF Load command /S#L. First, just as a precaution, save your worksheet with the normal /SS command.

DIF files do not save formulae, only the answers, so they take up less space in the memory. If this does not give enough memory try the same technique with another area.

Clearing the printer

WITH some printers when you first switch on and print a worksheet you may find that the top row is out of alignment with subsequent rows.

This is because the printer has, in effect, printed some blank spaces at the beginning of the top row. To prevent this, leave row 1 of the worksheet blank but print from cell A1.

However this technique may be unacceptable if you have several rows of horizontal titles locked into place.

Alternatively, when you are ready to print move the cursor to an empty space on the worksheet and issue a print command. This will "purge" the printer and you can then move the cursor back to the top left hand cell ready for printing.

Saving printing time

SAVE printing time by not using rows of - - - - - or = = = = = to define breaks between rows of figures or to underline titles. Instead, use blank rows to demarcate sections in a worksheet. In any case, excessive use of- - - - - and other symbols can lead to rapid wear of the character on a plastic daisy wheel.

Re-reading the manual

NO matter how well you think you know your spreadsheet program, try re-reading the manual at least once a year. You may be surprised to discover features you had overlooked or forgotten.

WORDSTAR:

Read on for the next instalment

HORACE TONG solves that screen scrolling problem by the use of insert and delete line patches

WORDSTAR is the most powerful editor I have used on the Apple II so far. However, I find it quite irritating when it scrolls the screen in Help level 3.

It redraws the whole edit window whenever it scrolls up or down. The same is true when it scrolls down, no matter which help level it is in.

Though it accepts input when it is scrolling, it is sometimes very confusing when only a portion of the edit window has been scrolled.

In Help level 0, when the screen is scrolled upwards, the status and the ruler lines are overwritten by the text beneath them. And the two lines are then redrawn to overwrite the text.

It doesn't look very nice, does it?

To overcome this problem I consulted the installation manual and found that if delete and insert line functions were available the performance would be enhanced. Then I studied the Videx Videoterm manual to see how such routines could be installed.

The 80 column screen displays about 2,000 characters, therefore 2k locations in the 64k address space must be reserved for the screen map.

Videx employed a memory paging, or banking, technique so that the 2k occupy only 512 locations in the address space.

The 2k are divided into four 512 byte pages, and all four pages have the same address in the address space.

To access or update the contents of a screen location the corresponding page must be activated and the location of the character in the activated page should then be calculated by accessing some Videoterm variables.

The Videoterm also uses a simple hardware scrolling method. As you may have discovered, the scrolling is pretty fast.

When it scrolls the screen the only thing it has to do is to

change the contents of a register in the Videoterm hardware instead of moving the contents of the 2k memory.

However this hardware scrolling method is not capable of scrolling a portion of the screen. It also makes the writing of software screen scrolling subroutines more difficult because the same location on the screen does not necessarily map to the same byte in the same page of the screen map.

Thus when software scrolling is performed the speed is relatively slower than in the absence of the hardware scrolling method.

Experimental results showed that with the insert line and delete line functions, Wordstar scrolls the edit window up to four times faster than it does without these patches. This ratio depends on the Help level and also the content of the file.

When scrolling upwards in Help level 3 or downwards in any Help level, this ratio can be up to four if the file being edited is a document file with most of the lines about the width of the screen.

Though the ratio is not as big in help levels other than 3 – still greater than 1, at least – the patch prevents Wordstar from scrolling in the ridiculous way I have been suffering for months.

To install these functions into Wordstar DDT should be used. Several changes have to be made in addition to typing in the patch shown in the program listing:

```
LINDEL: DB   1
        DB   0F
LININS: DB   1
        DB   0E
UCONO:  DB   C3; JP NEW
        DB   E0
        DB   02
```

These can also be made using INSTALL.

Readers who are not familiar with DDT should do the following to enter the code:

Format a new disc and copy on to it your version of Wordstar giving it the name WS.COM. Put this disc in drive B and a system disc containing DDT.COM into A and press C.

Type at the A> prompt DDT B:WS.COM. When the – prompt appears type S2E0. You can now enter the code, a byte at a time, pressing Return after each entry until you have entered byte 359.

Now enter a full stop and press Return. Now type S4280 and enter the second piece of code in the same way. After exiting with a full stop, check your handiwork by typing D2E0 and check the values present against the listing. Similarly check the values at 4280 onwards.

Exit DDT by pressing C then carefully type: SAVE 65 B:WS.COM

To change the values of LINDEL, LININS and UCONO use your INSTALL program *before* using the DDT method described here.

Some more simple installations can be made to enhance the performance, for example inverse display, erase end of line function. To install the inverse display function, make:

```
IVON:   DB   2
        DB   1A
        DB   33
IVOFF:  DB   2
        DB   1A
        DB   32
```

Note that with earlier versions of the Videoterm ROM the inverse function will not work properly and so are not worth installing. ROM versions of 2.4 or later appear suitable.

To install erase end of line function:

```
ERAEOL: DB   1
        DB   1D
```

The presence of the erase end of line function speeds the screen update while installing the inverse display function enhances the readability of the screen.

```
;
;            WORDSTAR INSTALLATIONS
;       INSERT LINE AND DELETE LINE PATCHES
;
;                BY Horace Tong
;
;
;          INSERT LINE = ASCII SO = 0EH
;          DELETE LINE = ASCII SI = 0FH
;

DELLINE   EQU  0FH   ; ASCII SHIFT IN  CHARACTER
INSLINE   EQU  0EH   ; ASCII SHIFT OUT CHARACTER
SCREENL   EQU  17H   ; SCREEN LENGTH - 1
SCREENW   EQU  50H   ; SCREEN WIDTH
BIT7      EQU  80H   ; INVERSE FLAG IS BIT 7
SPACE     EQU  20H   ; ASCII SPACE
FLAGS     EQU  F7FBH ; VIDEOTERM STATUS FLAGS
LINE1     EQU  F6FBH ; HARDWARE SCROLLING REGISTER
LINE2     EQU  E0B0H ; LOCATIONS FOR ACTIVATING VIDEOTERM MEMORY PAGES
LASTLN    EQU  0730H ; OFFSET OF (0,23) FROM (0,0)
SCREEN    EQU  EC00H ; START OF VIDEO RAM
CPM       EQU  0050H ; CPM BDOS ENTRY POINT

          ORG  2E0H


2E0: FE 0F        NEW     CP   DELLINE ;  DELETE LINE ?
2E2: 28 0A                JR   Z,SI

2E4: FE 0E                CP   INSLINE ;  INSERT LINE ?
2E6: 28 0D                JR   Z,SO

2E8: 0E 06                LD   C,6H ; NEITHER...
2EA: 5F                   LD   E,A  ; SET UP PARAMETERS &
2EB: C3 05 00             JP   CPM  ; JUMP TO CPM

2EE: 50           SI      LD   D,B  ; DELETE LINE ROUTINE
2EF: 59                   LD   E,C
2F0: 01 50 00             LD   BC,SCREENW
2F3: 18 06                JR   CALA

2F5: 11 30 07     SO      LD   DE,LASTLN ; INSERT LINE ROUTINE
2F8: 01 B0 FF             LD   BC,-SCREENW

2FB: E5           CALA    PUSH HL        ; DE = OFFSET OF LINE
2FC: 2A FB F6             LD   HL,(LINE1)
2FF: 26 00                LD   H,0H
301: 3E 04                LD   A,4H
303: CB 25        CAL1    SLA  L
305: CB 14                RL   H
307: 3D                   DEC  A
308: 20 F9                JR   NZ,CAL1
30A: 19                   ADD  HL,DE     ; HL = OFFSET + 16 * PAGE
30B: D1                   POP  DE

30C: 3E 17                LD   A,SCREENL
30E: 93                   SUB  E         ; A = LINE COUNT

30F: 54           SCROLL  LD   D,H       ; BC = INC, HL = DEST
310: 5D                   LD   E,L       ; A = LINE COUNT
311: 18 40                JR   SCR2
313: EB           SCR1    EX   DE,HL     ; EQUIVALENT TO
314: 09                   ADD  HL,BC     ; ADD DE,BC
315: EB                   EX   DE,HL

316: E5           CPLN    PUSH HL        ; DE = SOURCE, HL = DEST
317: D5                   PUSH DE
318: C5                   PUSH BC
319: F5                   PUSH AF
31A: 3E 05                LD   A,SCREENW/10H
31C: F5           CP1     PUSH AF
31D: CD 80 42             CALL ACCESS
```

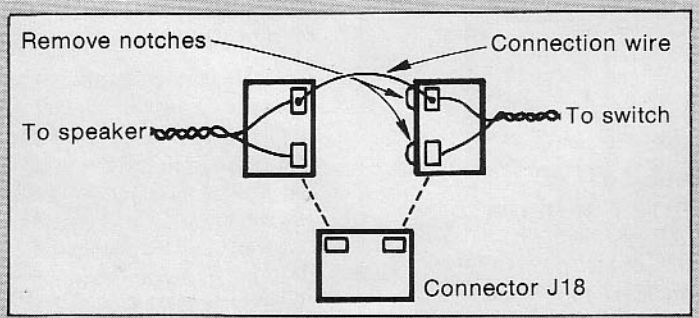
```
320: 3E 08              LD   A,8H
322: DD 46 00   CP2     LD   B,(IX+0)
325: DD 4E 01           LD   C,(IX+1)
328: C5                 PUSH BC
329: DD 23              INC  IX
32B: DD 23              INC  IX
32D: 3D                 DEC  A
32E: 20 F2              JR   NZ,CP2
330: EB                 EX   DE,HL
331: CD 80 42           CALL ACCESS
334: 3E 08              LD   A,8H
336: C1         CP3     POP  BC
337: DD 70 0E           LD   (IX+0EH),B
33A: DD 71 0F           LD   (IX+0FH),C
33D: DD 2B              DEC  IX
33F: DD 2B              DEC  IX
341: 3D                 DEC  A
342: 20 F2              JR   NZ,CP3
344: 01 10 00           LD   BC,10H
347: 09                 ADD  HL,BC
348: EB                 EX   DE,HL
349: 09                 ADD  HL,BC
34A: F1                 POP  AF
34B: 3D                 DEC  A
34C: 20 CE              JR   NZ,CP1
34E: F1                 POP  AF
34F: C1                 POP  BC
350: D1                 POP  DE
351: E1                 POP  HL

352: 09                 ADD  HL,BC
353: 3D         SCR2    DEC  A
354: F2 13 03           JP   P,SCR1
357: C3 A3 42           JP   BLANK

;
;  WHEN THE FOLLOWING ROUTINE IS CALLED
;  DE CONTAINS THE OFFSET OF THE SCREEN LOCATION
;  FROM THE FIRST LOCATION (TOP LEFT).
;  IT ACTIVATES THE CORRESPONDING PAGE.
;  UPON RETURN IX CONTAINS A POINTERS WHICH POINTS
;  TO THE MEMORY LOCATION WHICH CORRESPONDS TO
;  THE SCREEN LOCATION.
;
        ORG  4280H

4280: F5        ACCESS  PUSH AF         ; DE = OFFSET OF CHAR
4281: C5                PUSH BC
4282: D5                PUSH DE
4283: E5                PUSH HL
4284: 7A                LD   A,D
4285: E6 07             AND  7H
4287: 57                LD   D,A        ; DE = DE MOD 2048
4288: E6 FE             AND  0FEH
428A: CB 27             SLA  A
428C: 6F                LD   L,A
428D: 26 00             LD   H,0H       ; HL = PAGE * 4
428F: 01 B0 E0          LD   BC,LINE2   ; BC = LINE2
4292: 09                ADD  HL,BC      ; HL = LINE2 + PAGE * 4
4293: 7E                LD   A,(HL)     ; ACTIVATE PAGE
4294: DD 21 00 EC       LD   IX,SCREEN
4298: 7A                LD   A,D
4299: E6 01             AND  1H
429B: 57                LD   D,A
429C: DD 19             ADD  IX,DE      ; IX = SCREEN + DE MOD 512
429E: E1                POP  HL
429F: D1                POP  DE
42A0: C1                POP  BC
42A1: F1                POP  AF
42A2: C9                RET             ; IX = POINTER TO CHAR

42A3: 3A FB F7  BLANK   LD   A,(FLAGS) ; DE = OFFSET OF BLANK LINE
42A6: 1F                RRA
42A7: 1F                RRA
42A8: E6 80             AND  BIT7
42AA: F6 20             OR   SPACE
42AC: 06 05             LD   B,SCREENW/10H
42AE: 0E 08     BLNK1   LD   C,8H
42B0: CD 80 42          CALL ACCESS
42B3: DD 77 00  BLNK2   LD   (IX+0),A
42B6: DD 77 01          LD   (IX+1),A
42B9: DD 23             INC  IX
42BB: DD 23             INC  IX
42BD: 0D                DEC  C
42BE: 20 F3             JR   NZ,BLNK2
42C0: 21 10 00          LD   HL,10H
42C3: 19                ADD  HL,DE
42C4: EB                EX   HL,DE
42C5: 05                DEC  B
42C6: 20 E6             JR   NZ,BLNK1
42C8: C9                RET
```

appletip

Using your Apple IIe in the neighbourhood of other people may turn these people into less close friends than they used to be.

The reason for this is the irritating noises your speaker produces, especially when you're playing one of those noisy games.

There is an easy way to disconnect the speaker by pulling the plug out of connector J18 on the main board of the Apple IIe. But this has some disadvantages when you need your beeps to locate mistakes in your programs or less useful things.



Now there's a lovely switch on the bottom of the Apple IIe on the right hand side. I suppose it is there only to please the inhabitants of the British Isles, because it controls the display of only one character – the pound sign or hash.

So why not use it to switch the speaker off and on? This can be done without any changes in the hardware so your warranty will be unaffected.

Just pull the plugs out of connectors J18 and J19. If you want the £ sign just place a short over connector J19, otherwise leave this connector open.

Connect the plugs to connector J18 as indicated in the figure. You now can switch your speaker on and off.

Martin Keesen

Thinking about writing a program? Don't bother, let K.P. YU's

DESCARTES

work it out for you

WHAT do you think about the idea of writing a computer program that can write computer programs? Does this sound impossible to you? If so, I would like to show you how it can be done in a fairly simple way.

The following Basic program can write data processing programs. It will ask you for specifications about your desired datafile and then write the program accordingly.

The idea is to write the program into a text file and then put it into memory by EXECuting the file. Two versions of the target program are kept, one as a text file and the other as an ordinary Applesoft program.

Two techniques deserve more lengthy discussion:

- **PRINT statement.**

To include quotation marks in a PRINT statement the function CHR$(34) should be used.

To write:

```
10 PRINT "NAME"
```

into the text file we should use the following statement in the second order program:

```
100 PRINT ";Q$;"NAME";Q$
```

where Q$ is defined as CHR$(34).

- **First and second order variables.**

Suppose the user says he wants three fields for the datafile and gives three fieldnames, NAME, DEPT, POST. The target program should have three statements to print the content of the three fields of record no. I:

```
1010 PRINT "NAME = ";F1$(I)
1020 PRINT "DEPT = ";F2$(I)
1030 PRINT "POST = ";F3$(I)
```

"NAME", "DEPT", "POST" are strings in the computer written program, but they should be contained in variables in the second order program.

"I" is a variable name in the computer written program, but it should be output as a character in the second order program. The number of statements, here three, should also vary according to the user's request.

Here is the solution:

```
3740 FOR Z = 1 TO A
3750 PRINT 2220+Z*10; "PRINT
   "; Q$; F$(Z); " = "; Q$;
   "F"; Z; "$(I)"
3760 NEXT
```

where A is the number of fields. If the number of fields is A, there should be A statements corresponding to them.

As each line number should have a difference of 10, the line number can be calculated by the equation X + Z * 10 where X is the line number of the preceding statement, and Z is the number of the statement in the loop.

Q$ is CHR$(34). F$(Z) stores the field name of the field number Z. It is a variable in the second order program but a string in the object program.

Z is made part of the variable name to store field content, so that the variable names for different fields can be made different – F1$(I) in the first round of the loop, F2$(I) in the second round of the loop and so forth.

The program is named after Rene Descartes, the French philosopher and mathematician, who said: "I think, therefore I am". The ability to write a program is certainly the sign of thinking ability.

The programs produced can be improved in various ways, but I would like to leave this job to the readers.

I have tried to keep the flow of the program straight so that it can be understood without much effort, and to make it short so that it can arouse interest.

If you want to watch Descartes write the program type MONI before you run it.

```
100  REM  *
110  REM  * DESCARTES
120  REM  *: A COMPUTER
   PROGRAM
130  REM  *  THAT CAN WRITE
140  REM  *  COMPUTER PROGRAMS
150  REM  *
160  REM  * BY K. P. YU
170  REM  *: THE
   META-PROGRAMMER
180  REM  *
190  REM  * LANG: APPLESOFT
200  REM  *
210  REM  *
220 :
300  TEXT : SPEED= 255
310  GOSUB 9000: REM  SIGN ON
320  GOSUB 1000: REM  GET INFO
330  GOSUB 3000: REM  WRITE
   PROGRAM
340  GOSUB 5000: REM  RUN
   PROGRAM
990  END
999 :
1000  HOME
1010  PRINT "WHAT IS THE NAME
   OF THE PROGRAM?"
1020  INPUT "=>";M$
1030  IF  LEN (M$) < 1 THEN
   1000
1040  IF  LEN (M$) > 25 THEN
   PRINT "TOO LONG! MAKE IT
   SHORTER PLEASE.": FOR I = 1
   TO 1000: NEXT : GOTO 1000
1050  PRINT
1060  PRINT "HOW MANY FIELDS?"
1070  INPUT "=>";A
1080  IF A > 10 THEN  PRINT
   "NO MORE THAN 10 FIELDS.":
   GOTO 1050
1085  PRINT
1090  FOR I = 1 TO A
1100  PRINT "FIELDNAME #";I;
1110  INPUT " = ";F$(I)
1115  IF  LEN (F$(I)) > 9 THEN
   PRINT "NO MORE THAN 9
   CHARACTERS PLEASE.": GOTO
   1100
1120  NEXT I
1125  PRINT
1130  PRINT "IS EVERYTHING
   ALRIGHT?"
1140  INPUT R$
1150  IF  LEFT$ (R$,1) = "N"
   THEN 1085
1200  RETURN
1999 :
3000  HOME
3010  PRINT "     I AM WRITING
   THE PROGRAM. PLEASE   WAIT
   A WHILE."
3020 D$ =  CHR$ (4)
3030 Q$ =  CHR$ (34)
3035 MI$ = M$ + ".DATA"
3040  PRINT D$;"OPEN ";M$
3050  PRINT D$;"WRITE ";M$
3055  PRINT "NEW"
3060  PRINT "10 REM *"
3070  PRINT "20 REM * ";M$
3080  PRINT "30 REM * BY
   DESCARTES"
3090  PRINT "32 REM *"
3092  FOR Z = 1 TO A
3094  PRINT 34 + Z;"DIM
   F";Z;"$(50)"
3096  NEXT Z
3098  PRINT 34 + Z +
   2;"D$=CHR$(13)+CHR$(4)"
3100  PRINT "50 HOME:INVERSE"
3200  PRINT "60 HTAB "; INT
   ((40 -  LEN (M$)) / 2) - 1
```

```
3210  PRINT "70 PRINT ";Q$;
   CHR$ (32);M$; CHR$ (32);Q$
3220  PRINT "80 NORMAL:PRINT"
3230  PRINT "90 PRINT
   ";Q$;"MENU - ";Q$
3240  PRINT "100 PRINT: PRINT
   ";Q$;"1. INPUT DATA";Q$
3250  PRINT "110 PRINT
   ";Q$;"2. RETRIEVE DATA ";Q$
3255  PRINT "115 PRINT
   ";Q$;"3. QUIT ";Q$
3260  PRINT "120 PRINT: INPUT
   ";Q$;"WHICH =>";Q$;";W"
3270  PRINT "130 ON W GOSUB
   1000,2000, 200"
3280  PRINT "140 GOTO 50"
3285  PRINT "200 END"
3288  PRINT "290:"
3290  PRINT "1000 HOME"
3300  PRINT "1010 PRINT
   ";Q$;"HOW MANY DATA TO
   INPUT";Q$
3310  PRINT "1020 INPUT N"
3360  PRINT "1200 PRINT"
3370  PRINT "1210 FOR I = 1 TO
   N"
3380  FOR Z = 1 TO A
3385  PRINT 1210 + Z *
   10;"PRINT ";Q$;F$(Z);Q$;";"
3390  PRINT 1210 + Z * 10 +
   5;"INPUT ";Q$;" = ";Q$;";
   F";Z;"$(I)"
3400  NEXT Z
3405  PRINT "1340 PRINT "
3410  PRINT "1350 NEXT I"
3430  PRINT "1360 PRINT
   D$;";Q$;"OPEN ";MI$;Q$
3440  PRINT "1370 PRINT
   D$;";Q$;"WRITE ";MI$;Q$
3450  PRINT "1380 PRINT N"
3460  PRINT "1390 FOR I = 1 TO
   N"
3470  FOR Z = 1 TO A
3480  PRINT 1390 + Z *
   10;"PRINT F";Z;"$(I)"
3490  NEXT Z
3495  PRINT "1495 NEXT I"
3500  PRINT "1500 PRINT
   D$;";Q$;"CLOSE";Q$
3510  PRINT "1510 RETURN"
3520  PRINT "1520 :"
3530  PRINT "2000 HOME"
3540  PRINT "2020 PRINT "
3550  PRINT "2030 PRINT
   D$;";Q$;"OPEN ";MI$;Q$
3560  PRINT "2040 PRINT
   D$;";Q$;"READ ";MI$;Q$
3570  PRINT "2050 INPUT N"
3580  PRINT "2060 FOR I = 1 TO
   N"
3590  FOR Z = 1 TO A
3600  PRINT 2060 + Z *
   10;"INPUT F";Z;"$(I)"
3700  NEXT Z
3710  PRINT "2200 NEXT I"
3720  PRINT "2210 PRINT
   D$;";Q$;"CLOSE";Q$
3730  PRINT "2220 FOR I = 1 TO
   N"
3732  PRINT "2222 HOME"
3735  PRINT "2225 PRINT
   ";Q$;"RECORD # ";Q$;"; I"
3736  PRINT "2226 PRINT"
3740  FOR Z = 1 TO A
3750  PRINT 2220 + Z *
   10;"PRINT ";Q$;F$(Z);" =
   ";Q$;"F ";Z;"$(I)"
3760  NEXT
3770  PRINT "2400 PRINT"
3780  PRINT "2410 INPUT
   ";Q$;"PRESS <RETURN> TO
   CONTINUE";Q$;";Z9$"
3790  PRINT "2420 NEXT I"
3800  PRINT "2430 RETURN"
3810  PRINT "SAVE ";M$;".OBJ"
3990  PRINT D$;"CLOSE"
4000  RETURN
5000  PRINT
5010  PRINT "     I HAVE
   WRITTEN THE PROGRAM."
5020  PRINT "TYPE 1 TO RUN"
5030  PRINT "     2 TO LOAD"
5040  PRINT "     3 TO END"
5045  INPUT "=>";N
5050  ON N GOTO 5100,5200,5300
5060  GOTO 5010
5100  PRINT D$;"APPEND ";M$
5110  PRINT D$;"WRITE ";M$
5120  PRINT "RUN"
5130  PRINT D$;"CLOSE"
5200  PRINT D$;"EXEC ";M$
5300  HOME : VTAB 10: HTAB 16:
   PRINT "GOODBYE!"
5310  RETURN

9000  HOME
9100  VTAB 4: HTAB 12: PRINT
   "THIS IS DESCARTES"
9200  VTAB 10: HTAB 3: PRINT
   "MY PLEASURE TO WRITE
   PROGRAM FOR YOU"
9300  VTAB 16: HTAB 10: PRINT
   "I THINK THEREFORE I AM"
9400  FOR I = 1 TO 3000: NEXT
9500  RETURN
```

appletip

The top 12k of RAM in the Apple IIe or on the Apple II+ memory card is useful for storing large blocks of data.

Although this area of memory can be easily written to by a POKE instruction from Basic, it can not be directly read from within Basic.

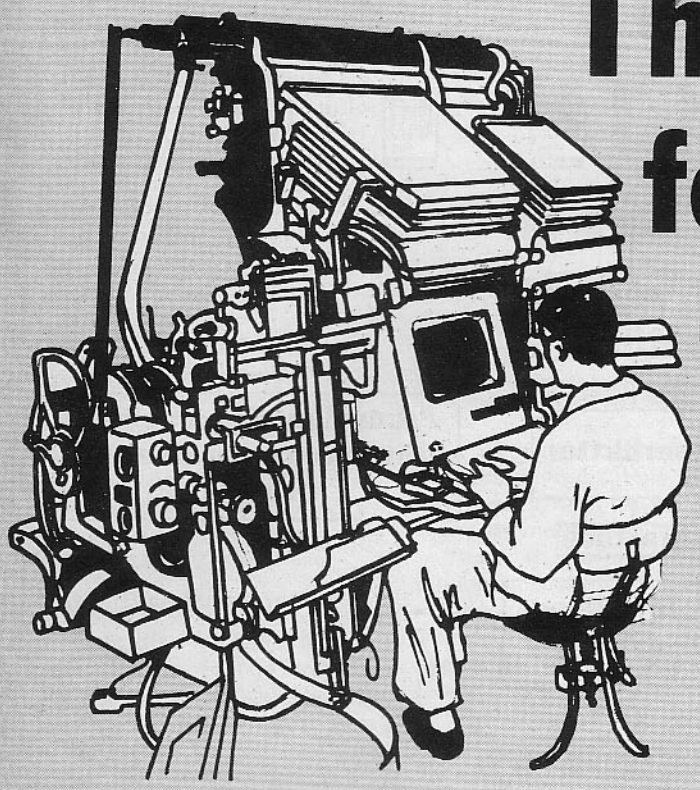
The following machine code program sets up the USR function to act as a PEEK.

After BRUNing the program a **USR (X)** will give the same result as a **PEEK(X)** and will work for the top 12k of RAM. – **R.A. Royall.**

```
----- NEXT OBJECT FILE NAME IS PEEK.OBJ0
0300:           2        ORG  $300
0300:.          3 **THIS PROGRAM IS RELOCATABLE **
0300:           4 **SETS UP USR VECTORS TO POINT TO MAIN PROGRAM**
0300:           5        JSR  $FF54
0303:BD 01 01   6        LDA  $0101,X
0306:18         7        CLC
0307:69 15      8        ADC  #$15
0309:85 0B      9        STA  $0B
030B:BD 02 01   10       LDA  $0102,X
030E:69 00      11       ADC  #$0
0310:85 0C      12       STA  $0C
0312:A9 4C      13       LDA  #$4C
0314:85 0A      14       STA  $0A
0316:60         15       RTS
0317:           16 **USR(X) WILL RETURN WITH CONTENTS OF MEMORY
                                                    LOCATION**
0317:           17 ** X CAN BE ANYWHERE IN 64K OF RAM**
0317:20 F2 EB   18       JSR  $EBF2     ;FAC TO INTEGER
031A:AD 83 C0   19       LDA  $C083     ;READ ENABLE RAM
031D:AD 83 C0   20       LDA  $C083
0320:A5 A1      21       LDA  $A1       ;SWOP A0 AND A1
0322:48         22       PHA
0323:A5 A0      23       LDA  $A0
0325:85 A1      24       STA  $A1
0327:68         25       PLA
0328:85 A0      26       STA  $A0
032A:A0 00      27       LDY  #0
032C:B1 A0      28       LDA  ($A0),Y   ;PERFORM PEEK
032E:A8         29       TAY
032F:AD 81 C0   30       LDA  $C081     ;READ ENABLE ROM
0332:AD 81 C0   31       LDA  $C081
0335:20 01 E3   32       JSR  $E301     ;ACCUMULATOR TO FAC
0338:60         33       RTS

*** SUCCESSFUL ASSEMBLY: NO ERRORS
```

MacPublishing

The quick brown fox jumps over the lively Mac



BILL HILL reports on how Macintosh is shaping up to the challenge of producing professional quality typesetting

YOU may have thought, when you were buying your Macintosh, that you were buying only a personal computer – albeit a terrific one. But hardware and software developments now taking place behind the scenes in the USA are set to turn the Mac into a professional quality typesetting and graphics terminal, hopefully by the end of this year.

The developments are set to give Apple, and the Mac in particular, a major market lead. They could well provide the company, which like the rest of the industry is currently going through lean times, with an important additional market.

As well as Apple itself, the plans involve US software and typeface houses, and the world's leading name in typesetting, Allied Linotype, all now closely linked in developing a new system which will be centred upon the Appletalk network and Laserwriter printer announced earlier this year.

Few people have as yet realised the significance of what is going on, but the work is now at an advanced stage, and the complete system is likely to be unveiled in Britain in the third quarter of this year. Much of it is already up and running in both Apple's Cupertino headquarters and at Apple UK in Hemel Hempstead.

"Few people have as yet realised the significance of what is going on"

Once completed it will allow a network of Macintosh computers, linked to a Laserwriter printer and a network FileServer – the Macintosh Office, which is expected to be released within the next few months – to provide high quality typesetting by accessing a Linotype-Paul typesetter, set up to act in just the same way as any other Apple peripheral device.

The Mac will then be able to turn out camera-ready copy to standards previously only obtainable from professional typesetting.

It is now possible to piece together the jigsaw of what the integrated system will look like.

In the first place the plans are all firmly centred on the 512k Mac. It looks more and more as if this will end up being the standard business Macintosh, since so many software packages are now appearing, including Lotus Jazz, Microsoft Excel and the early versions of the typesetting packages which will be needed for the new systems, which cannot be run with less memory.

The Appletalk network is already available, although it still lacks the high-capacity, networked data storage which the hard disc FileServer will provide.

Current versions of the Finder, including version 4.1 written for the 512k machine, are neither powerful nor fast enough to run such a large capacity system efficiently. But Apple is currently writing a new, and hopefully two or three times faster, version to run the FileServer.

The next vital link in the chain is the Laserwriter, which already has the Appletalk network built into it, allowing several Macs to use it as a common peripheral.

Allied Linotype, the world name in professional typesetting equipment, has been working on versions of its Linotron 101 and Linotronic 300 typesetters which will be fully compatible with Appletalk.

Both it and Apple have adopted a page description language known as Postscript, written by the US company Adobe Systems, which is likely to become the world standard for page composition. Post-

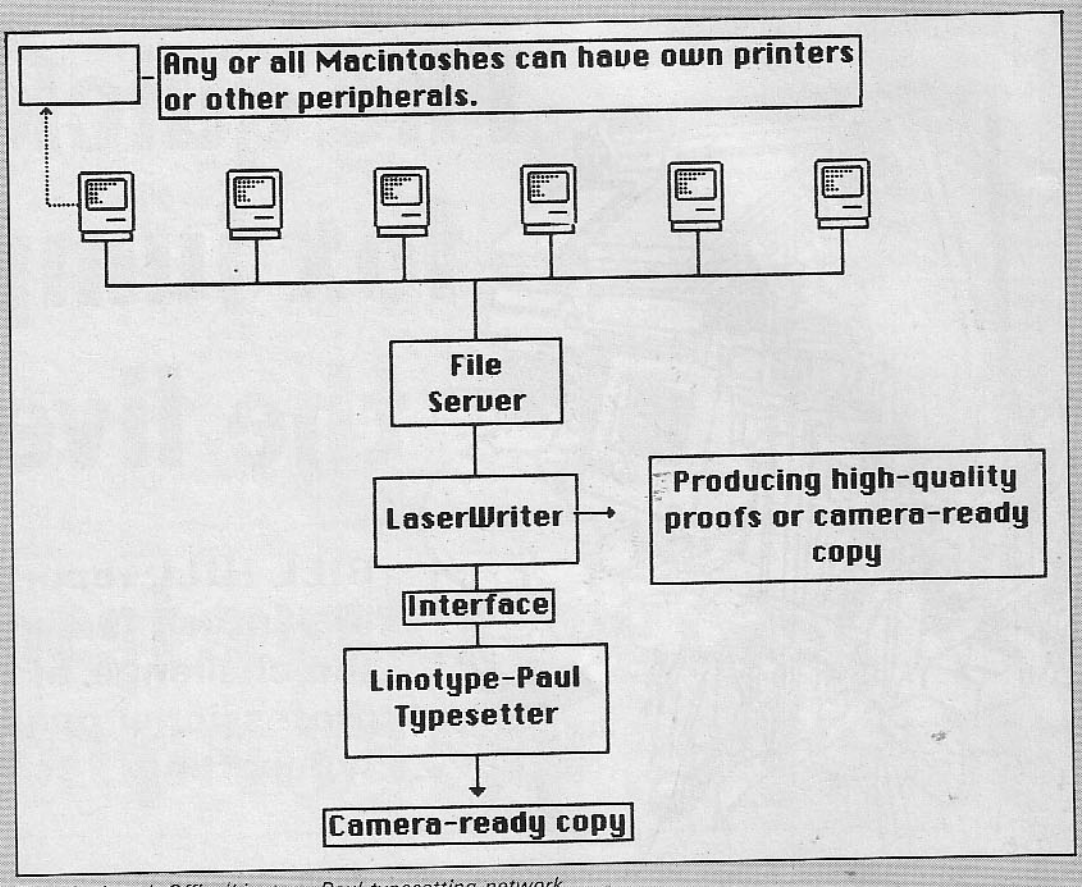
MacPublishing

script is also used by two of the major US companies which supply typefonts to the printing and publishing industries – Mergenthaler and the International Typeface Corporation.

A number of page makeup and typesetting software packages for the Macintosh have already appeared, such as MacPublisher, PageMaker and Ready Set Go.

Once all the pieces fall into place it will give Apple and its collaborators the ability to offer a typesetting and printing package of staggering sophistication

▮ It is a breakthrough likely to turn the publishing industry completely upside down ▮



The Macintosh Office/Linotype-Paul typesetting network

at far below the price of current dedicated systems – with the added advantage that it will undoubtedly be the easiest to use on the market.

The concept itself is simple. Typists or editors will type or sub-edit copy using standard Macintosh wordprocessing software such as MacWrite or Microsoft Word. Both of these WP packages are compatible with all publishing packages now available or being written.

The copy will then be "pasted" into typesetting and page makeup programs such as MacPublisher, and the individual user will be able to quickly view the results on inexpensive dot matrix printers. It will then be transmitted, through the network to the FileServer and printed out as high quality output from the Laserwriter.

For many purposes this output quality will be quite good enough. But the Linotype machines are world professional standard, in use throughout the industry by the most discerning customers of all. Once the Mac network can address them – and the interfaces are well along the development path already – it will mean that anyone who can operate a Mac, and that means just about anyone, will be able to turn out the same results as a professional typesetting operation.

It is a breakthrough which is likely to turn the printing and publishing industries, already reeling at the impact of new technology, completely upside-down.

Linotype-Paul in Britain says it is almost certain that it will unveil the new versions of the Linotron 101 and Linotronic 300 in the third quarter of this year – probably coinciding with the launch of MacOffice.

One of the most influential publications in the publishing trade in the USA is the independent "Seybold Report on Publishing Systems", produced by Mr Jonathan Seybold.

In his latest review, he concludes that the series of announcements made so far by Apple, Allied Linotype, Adobe Systems and International Typeface Corporation "will have a profound impact on the publishing world".

He continues: "Taken together, the announcements do more than anything to date to bridge the personal computer, office and graphics arts world. If you still cling to the notion that typesetting systems and products can be clearly distinguished from mass-market personal computer and office products, it is time you changed your mind".

Elsewhere in the report, he says that the Macintosh is about to live up to its promise of becoming "a truly inexpensive 'What You See Is What You Get' text and graphics composition terminal. The capabilities of the Mac-based systems will leapfrog those of most traditional low-end composition products".

"The second most important company in the personal computer field is making a major commitment to high-quality graphic output, not as an ancillary product but as a central feature of its marketing strategy, and is supported in this by the oldest and most prestigious company in the typesetting industry.

"The chances are excellent that we will soon see surprisingly low-cost networked systems with the kind of file management sophistication people in our industry have come to expect from much more expensive special-purpose systems".

All of this is good news for Apple, but more especially for Mac owners. Already, what is available means that we can produce magazines, newsletters, and any other documents, to a standard not previously possible. Next month I'll be making a comparison of some of the software packages available so far and their capabilities.

Meanwhile, it might be a good idea to start thinking about that 512k upgrade and second drive.

Seek and ye shall find random access files

aided by STUART BELL's Supercat program

IN the last article we looked at the way in which Apple Pascal allows us to have files of records. We considered the Pascal statements Reset, Rewrite, Get, Put and Close, and also looked at the use of the window variable of a file.

Now we shall consider random access files, but I suggest that you look again at last month's article before reading on.

A random access file allows us to read records from anywhere in the file, not just at the current position of the file pointer.

To achieve this Apple Pascal provides us with a Seek instruction. This has two parameters, the internal filename and the record which is to be accessed. For example, to access record 45 of the file called dets, we would use:

```
seek(dets,45);
```

Note that the Seek doesn't alter the file or its window variable, it simply alters the file pointer so that the next time that a Get or Put is done, it will act on the record specified in the Seek command.

The record number can be a variable, so to access 10 records in the middle of the file we could use:

```
for recno:=50 to 59 do
begin
  seek(dets,recno);
  get(dets);
  writeln(' NAME: ',dets^.name);
  writeln(' AGE:  ',dets^.age)
end;
```

Two points should be noted. Firstly, although the Get and Put statements increment the file pointer before accessing the file, there is no need to allow for this in the Seek statement. A Seek of a record followed by a Put or Get will always access the specified record.

Secondly, you should never do two consecutive Seeks without a Get or Put in between. If you do, the contents of the window variable may become corrupted. In any case, doing extra Seeks simply wastes time.

This single extra statement gives the user of Apple Pascal all that is needed to write programs using random access files. The syntax, or grammar, of such programs is simple, but the techniques required to write them are more complex.

There is no point having random access files if you don't know where in the file to look. Two commonly used techniques use either indexed files or sorted files.

With an indexed file we keep in memory a list of where in the file each record is. An example of this is the index of advertisers to be found at the end of this issue of Apple User.

Although advertisements are not in alphabetical order, the index is, so that we can find any advert easily.

Another technique uses a sorted file, by which we mean that all the records themselves are in the correct order. We can then search for a record by skipping through the file much in the way you use a telephone directory.

A full discussion of ways of using random access files would take a whole book.I Interested readers should consult their library. If you are very keen, your local college may be able to suggest a suitable course.

Don't think, however, that programs using random access files are always very complicated – this month's demonstration program shows that they can be quite simple.

Program supercat will produce an almost ordered list of all the Apple Pascal programs on your discs. Last month we looked at a program called makeunsort which produced an un-ordered list on disc of these files.

Sorting techniques which work well on data in memory are insufferably slow when we are using disc-based data. Remember, discs are hundreds of times slower than RAM.

To avoid this we use two files and produce a sorted file from the unsorted one. The main problem is that if we read a record into memory, where should it be written to on the new file?

Supercat solves this problem by first scanning UNSORT and producing a table which counts all the files that start with AA, then AB, AC, AD and so on to ZZ. In fact, it also works for numbers and other characters.

When the maketable procedure has done this, the array called cf will look like Table I.

To understand what happens now, imagine a file called SABELL. If the sum of all the entries in the table from AA to RZ was 259, then this would imply that the file SABELL will be the 260th file in alphabetical order.

Rather than count up the previous entries for each file, procedure transcf does the calculation once, converting array cf into a cumulative frequency table, as shown in Table II.

Procedure makesort then reads through UNSORT again. Each time it reads a filename it looks up the first two letters in the table and puts the record in that location in the SORT file.

It then increments the number in that element of the array so that the next file whose

		second letter of filename:					
		A	B	C	D	E	Z
first	A	3	1	1	0	4	0
letter of	B	1	2	0	1	1	3
filename:	C	0	0	1	5	0	1

Table I: Totals for filenames starting with 'AA', 'AB'.. 'Z'

		second letter of filename:					
		A	B	C	D	E	Z
first	A	3	4	5	5	9	21
letter of	B	22	24	24	25	26	32
filename:	C	32	32	33	38	38	45

Table II: Cumulative totals. For any location, the value is equal to the sum of the cumulative total in the previous square plus the number for this square in Table I.

name starts with those same two letters, say SATURDAY, after SABELL, will be put in the next record in the SORT file.

Finally, procedure listsort reads through the sorted file and produces a list on the printer. If you want a list on the screen, simply change the rewrite statement to refer to CONSOLE: rather than PRINTER:.

One problem is that the list is not in perfect order – SYSTEM.COMPILER might appear above SYSTEM .ASSEMBLER. However I find that it's close enough to enable me to find on which disc a particular file is.

It's a longish program, but I think that you'll find it worthwhile to type it in. There's no need to enter all the comments.

This concludes our examination of file handling under Apple Pascal. Once you get used to it, it is so much easier and faster than using Basic that writing file handling programs becomes quite painless.

Don't be afraid to try modifying supercat to make it do what you want. Changing other peoples' programs is an excellent way of learning how to do something. Really, plenty of error-handling capability should be added.

Next month, we'll start looking at Units in Apple Pascal. They provide a way of extending the language and of building libraries of frequently-used routines.

```
Program supercat;                    (* written by Stuart Bell, 1985 *)

Const   blanks = '                ';  (* used to pad out names *)

Type daterecord = packed record  month: 0..12;  day: 0..31;  year: 0..100 end;

     filetypes = (untyped,badblocks,code,text,info,data,graph,photo,dirheader);

     direntry =  record              (* like commented version in Part 1 *)
                   firstblock:integer;
                   lastblock:integer;
                   case filekind:filetypes of
                     dirheader,
                     untyped  : (volname:string[7];
                                 fl,numoffiles,numofblocks:integer;
                                 lastbooted:daterecord);
                     badblocks,code,text,info,data,
                     graph,photo : (filename:string[15];
                                    nbyteslastb:1..512;
                                    lastaccess:daterecord)
                 end;

     dirline = record  firstbit :direntry;  volume :string[7];  end;

     valet = ' '..'Z';               (* valid characters in filenames *)

Var     spos,bs,
       numfiles,
          entry:integer;
          v1,v2:valet;
     ch,ch1,ch2:char;
             p:file of char;
           vol:string[7];
        srt,uns:file of dirline;
            cf:packed array[valet,valet] of integer;
         fname:string[16];

procedure maketable;
begin
  for v1:=' ' to 'Z' do              (* first zero the frequency table   *)
    for v2:=' ' to 'Z' do
      cf[v1,v2]:=0;
  reset(uns,'#4:UNSORT');
  numfiles:=0;
  while not eof(uns) do
  begin                              (* now read from the unsorted file, *)
    numfiles:=numfiles+1;
    fname:=uns^.firstbit.filename;
    ch1:=fname[1];
    if length(fname)<2 then ch2:=' '
                       else ch2:=fname[2];
    cf[ch1,ch2]:=cf[ch1,ch2]+1;      (* updating the table as each name read *)
    get(uns)
  end
end;

procedure makesort;
begin
  rewrite(srt,'#4:SORT');
  seek(uns,0);
  for entry:=0 to numfiles-1 do
  begin
    get(uns);                        (* get record from unsorted file,       *)
    fname:=uns^.firstbit.filename;
    v1:=fname[1];
    if length(fname)<2 then v2:=' '
                       else v2:=fname[2];
    cf[v1,v2]:=cf[v1,v2] - 1;        (* decrement count, so next filename    *)
    spos:=cf[v1,v2];                 (* is put in the previous record space  *)
    seek(srt,spos);                  (* find desired location in sorted file *)
    srt^:=uns^;                      (* copy the record and write it         *)
    put(srt)
  end;
  close(srt,lock);
  close(uns,lock)
end;

procedure listsort;

  procedure printdate(rec:daterecord);
  begin
    with rec do begin
       write(p,day:3,'-');
       case month of
         1: write(p,'Jan');  2: write(p,'Feb');  3: write(p,'Mar');
         4: write(p,'Apr');  5: write(p,'May');  6: write(p,'Jun');
         7: write(p,'Jul');  8: write(p,'Aug');  9: write(p,'Sep');
        10: write(p,'Oct'); 11: write(p,'Nov'); 12: write(p,'Dec')
       end; (* of case *)
       write(p,'-',year:2,' ':2)
    end
  end;

  procedure writedirline(dln:direntry);
  begin
    with dln do
    begin
      fname:=concat(filename,copy(blanks,1,16-length(filename)));
      write(p,fname,lastblock-firstblock:4);
      printdate(lastaccess)
    end
  end;

begin                                (* listsort *)
  rewrite(p,'printer:');
  reset(srt,'#4:SORT');
  while not eof(srt) do
  begin
    writedirline(srt^.firstbit);
    writeln(p,srt^.volume:9);
    get(srt)
  end;
  close(p)
end;

procedure transcf;                   (* converts cf from a frequency table *)
begin                                (* to a cumulative frequency table.   *)
  for v1:= ' ' to 'Z' do
  begin
     v2:=' ';
     if v1 <> ' ' then cf[v1,v2] := cf[pred(v1),'Z'] + cf[v1,v2];
     for v2:= '!' to 'Z' do
        cf[v1,v2] :=cf[v1,pred(v2)] + cf[v1,v2]
  end
end;

begin                                (* main program *)
  maketable;                         (* builds the frequency table *)
  transcf;                           (* coverts it to be cumulative *)
  makesort;                          (* creates the sorted file of names *)
  listsort;                          (* lists the sorted file to the printer *)
end.
```

MacPath

Click into a plan of action

STEVE HUGHES reviews a critical path analysis package for the Macintosh

MICROPLANNER is a project management package for the 128k Macintosh with an Imagewriter printer. The latter is unfortunately a real necessity since so much of MicroPlanner revolves around the wealth of graphical reports and so on that are available.

The package comes with two microfloppies – the program disc itself and a utilities disc with facilities to control print characteristics for network diagrams and histograms plus a useful feature to transfer data via the clipboard to other Mac applications and specifically to Microsoft's Multiplan.

For those of you lucky enough to possess an optional external disc drive, both discs can be on-line at the same time, so avoiding the tedious disc swapping exercises that most single-drive users will be only too familiar with.

This situation is brought about because the authors have chosen not to make any compromises with the level of sophistication of the package at the expense of program size.

So much so that even the Apple pull-down menu only contains the control panel and a few brief words about the package.

Coming as it does from a well-respected stable that produces The Planner, PERQ Planner and Planner 20, MicroPlanner for the Mac was born out of these variants and has been re-written specifically for it by Nigel Humphreys.

It is worth noting that the original version was written by Glynn Nixon and he also wrote the manual for the Mac version.

This accounts for the superb quality of the manual both in terms of its physical similarity with the MacWrite and MacPaint manuals – full marks to Apple for quality control and co-ordination – and the content and examples within it.

There's nothing like having the program's author involved in producing the program's documentation – software developers please note.

All too often it's painfully clear that the author has little understanding of either the program's applications or its internal details, both of which are crucial to the production of good quality documentation.

The first chapter takes the form of a tutorial to get yourself acquainted with some of the main features of MicroPlanner.

The next few chapters are concerned with filling out the missing details from the first chapter, covering topics such as creating project models, allocating resources and the quite extensive reporting facilities.

The further chapters on management implications and the importance of monitoring or keeping track of projects highlight the authors' expertise on project management and the concern with issues that raise this package beyond the level of "yet another critical path analysis program".

Much as I like MacProject for instance, MicroPlanner is different by an order of magnitude in terms of sophistication.

The manual also sports a handy and yet extremely well-planned reference section in which every feature and option right down to the last bell and whistle, is "exploded" in diagrammatic form.

Then, there are three appendices. One is for the difficulties associated with joining together physically discrete pieces of print-out from the Mac's Imagewriter.

The second appendix is an example project to try out for yourself and test your grasp of MicroPlanner's facilities.

The third appendix contains instructions about using the interface to Multiplan.

Last but not least is an excellent afterthought – a glossary which not only contains explanations of technical terms from within MicroPlanner, such as Backward Pass and Base Dates, but also Mac terms such as Finder, double-click, and so on.

This reflects the overall philosophy of the documentation well – how easy it would have been to assume that all users were as familiar with Mac terminology as they were.

This does of course mean that even inexperienced Mac users can use MicroPlanner without having to dig out other manuals every time they're told to "drag this" or "click the go-away box for that".

Finally, as might be expected for software of this quality, there's an excellent Index. Throughout MicroPlanner's manual, good use is made of diagrams and in many cases actual screen dumps.

You may have guessed that I've always had a penchant for Apple-style documentation. Well, I only wish more software developers would do things to this standard.

Before we delve into details about MicroPlanner, how are you on project management? If the word "rusty" springs to mind, read on – otherwise skip this section.

Historically, project management and techniques such as Critical Path Analysis were mainly used to control large-scale projects of all kinds – often in a mini/mainframe environment. For example in engineering and building or construction industries using PERT – Product Evaluation and Review Technique.

Imagine planning the building of a new hospital for instance. There are many activities that can happen concurrently, such as ordering furniture and installing electricity, while others must happen in strict sequence – for example, building walls after bricks have been delivered.

Some activities, especially on the planning side, aren't real in the sense that they don't use resources and these are referred to as events. For example, a key event or "milestone" might be completion of foundations, many other activities being geared up to certain events in some way.

Given that each activity might tie up resources, incur costs and have a duration, we can decide how to allocate money, time and labour in the most efficient and economical way.

We can hopefully identify a so-called critical path – that is, a particular series of activities that can effectively create "bottlenecks" so that the overall success of the project may hinge upon their timely and successful completion.

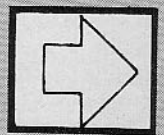
Where two parallel activities of different durations overlap, the shorter of the two has some degree of "float" – that is, it can be moved within certain limits which may have a knock-on effect for subsequent activities.

Also it is convenient to both plan and possibly budget for such projects so that we can get answers to questions such as "When will phase three be completed and at what cost?" or "Can we use seventeen joiners instead of twenty?"

Couple all of this with costing considerations and the inevitable difficulties associated with trying to predict the future and you might have some conception of what project management is all about . . .

Indeed, computerising a laborious and very time-consuming task such as this is a godsend in itself. But if you have a package to graphically handle events, activities and their inter-relations, then you can do in minutes what would take hours or even days by hand.

The importance of building a



MacPath

model of your project and keeping it up-to-date and accurate enables you to quickly appraise the impact of unforeseen events, allowing you to reschedule critical activities and assess the implications.

Really good software will allow you to test hunches and theories on your model in the safety of knowing that a Master Schedule will remain unaffected.

Many professional managers hate mountains of paperwork and in the past much of project management resulted in time being wasted in documenting what was happening, not on constructive planning work.

But it would be a mistake to assume that MicroPlanner would only benefit professional project managers.

There are many ordinary things that would benefit from a more disciplined approach. For instance, building an extension to your house.

In fact, any complex activity that can be broken down into components will yield dividends. How about trying to analyse the process of breakfasting for instance? Can you improve on it somehow to enable an extra five minutes in bed? MicroPlanner gives you all this and more.

Now for some details about MicroPlanner. Space prevents me from explaining the full range of facilities, so I'll concentrate on the more important elements.

Firstly, rather than have several circles (representing events) and arrows (the activities) on one page a la MacProject, MicroPlanner has a novel facility to centralise an event or acticvity on the screen and the rest are shuffled about accordingly.

Modifications are just as easy. Clicking an event or activity centralises it and makes the rest disappear temporarily – so avoiding confusion from cluttered screen diagrams.

Creating new events and activities on diagrams is simplicity itself. Double-click the event circle, choose its type – begin, end, key event, reverse logic or normal – and enter a description for it.

The reverse logic type isn't found on many packages at this level. It allows a way around a logical inconsistency associated with critical path network diagrams.

For instance, when two activities converge on the same event this implies that the event is conditional upon *both,* while in reality it may be dependent on either.

To create a new activity, you just click an event circle and drag away an arrow conveniently supplied complete with next event. Activities can then be named and given a duration in weeks and/or days.

You can further assign a category known as a zone to an activity. Zones are arbitrarily assigned and are used for subsequent sorting and reporting functions.

A sub-category known as a responsibility can also give an even finer analysis category.

Up to 26 different names can be predefined for both zones and responsibilities. In addition, MicroPlanner allows you to employ any one of six different preset or customised Calendars for an activity.

For instance, it is possible to set some activities for, say, weekend operation only, or alternate days, or a six-day working week instead of the normal five.

You can even blot out resources – for example, if someone is on holiday or ill.

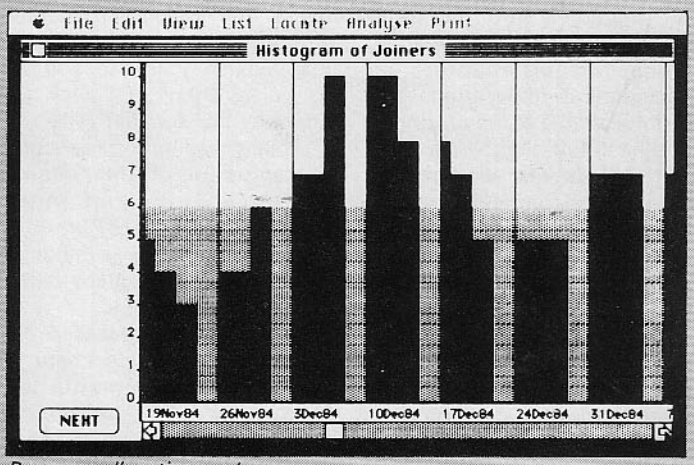
As with events, all activities must be assigned a type. These are start and finish flags for sub-activities: Dummy, Ladder, Lead, Lag, Non-Split, Hammock, Consecutive and Normal.

These give a tremendous degree of flexibility – I told you it wasn't a run-of-the-mill package – my favourite being the Hammock, which you can sling across major events to summarise detailed action or spread overhead resources/costs over specific phases of the project.

As if that wasn't sufficient, a full details menu option for both events and activities gives resource analysis dates, sort codes and progress information.

Earliest and latest start and finish dates will also be displayed on the arrow after time analysis has been performed. Deadline dates may also be set.

Because printing full network diagrams can be lengthy, most processing can be done interactively on-screen and MicroPlanner does allow you to wander around a network swinging Tarzan-like from event to event, browsing through activities.



Resource allocation made easy

There's a Locate menu to jump to a given event or activity either by unique number/designator or by substring search upon description. Dangles or loose-ends are detected upon time analysis and don't foul up the proceedings.

Allocating resources on many packages of this nature are rudimentary. Not so with MicroPlanner – distinguishing between resources used and those available is fundamental to its design.

Resources which are available every day like people are termed normal resources, as opposed to pool resources like tiles or bricks which are actually consumed over a period of time.

Sometimes, especially with machine utilisation, parts of units of use are needed, so MicroPlanner lets you allocate decimal places upon resources.

Couple this with change points – times in the project at which resource levels can vary – and the ability to appoint resources for part of an activity and you've got some pretty sophisticated facilities.

Some packages for project management update all dates, resources, and so on each time the model is modified, which can be very time-consuming for models of even moderate complexity. MicroPlanner gives you the choice to recalculate.

Apart from analyses by sort code, the main two areas of processing revolve around time analyses and resource analyses.

Time analysis uses a forward pass to calculate earliest start and finish dates for all activities and a backward pass for latest start and finish dates.

Resource analysis uses a clever resource smoothing and allocation algorithm which can be fine-tuned by the user with time-critical or resource-critical menu options.

The graphical reporting features are quite good too. Bar (Gantt) charts and histograms on resources and/or costs, key event reports, short-term schedules – they're all there should you require them.

MicroPlanner allows you to archive (store/file) models at any stage so that a copy of the Master Schedule is retained on disc to facilitate further exploratory modelling.

The extensive progress reporting feature allows you to compare performance between archived schedules and those that you currently possess.

Supercritical activity reports allow you to highlight activity paths through the model that may not be able to be met because of constraints usually in the form of deadlines.

In conclusion, I think you'll agree that these facilities put MicroPlanner very near the top of the list for micro-based project management packages. I certainly haven't encountered one better than this on any other machine.

Having a happy old time in the Hundred Acre Wood

ON more than one occasion our sanity has been saved by Winnie The Pooh. It's not that we find deep significance in his hums, it's just that the kids watch the video of the Walt Disney version, giving us valuable breathing space.

Imagine our delight when we heard that Sierra On-Line was releasing a junior adventure game based on the Pooh characters.

Mind you, we were also a little apprehensive. The kids know the dialogue by heart and we wondered whether they might not take to something a bit different. Maybe it wouldn't look like the characters they know and love.

We needn't have worried. Winnie the Pooh in the Hundred Acre Wood features superb graphics which are true to the characters. Even the tunes are reasonably accurate, which is no mean feat on an Apple.

The idea is that the blustery wind has blown everyone's possessions around the Hundred Acre Wood. It's your job to collect the different items and return them to their rightful owner.

If you can't guess to whom something belongs, the ever-loquacious Owl will give you a hint. You can only carry one item at a time, but you can drop it if you want to get something else first.

Ten objects are scattered throughout the wood, so it's necessary to keep a map. The wood is the same each time you play, but the objects can vary and will be in different locations.

Like any adventure game, there are hazards. Tigger has a habit of bouncing you to a different part of the wood and making you drop whatever you're carrying.

A thick mist can descend, and although you can keep walking, you're never sure of where you'll be when you emerge. The blustery wind may also scatter any objects which you haven't returned.

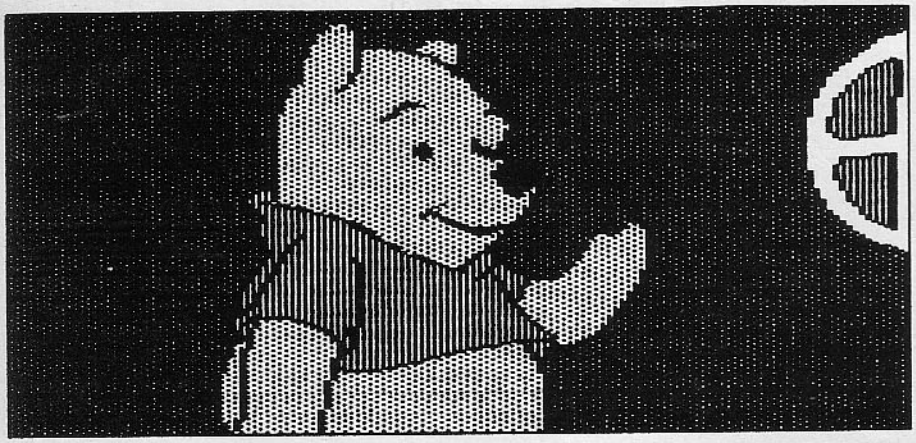
You can save one game to the actual game disc and there are a few other useful facilities. For example, you can review the most recent message if it's gone from the screen and you missed it.

You can also return to the play room from anywhere in the forest by pressing Esc. This is where you must be in order to save the game, but it's also handy as a short cut across the wood.

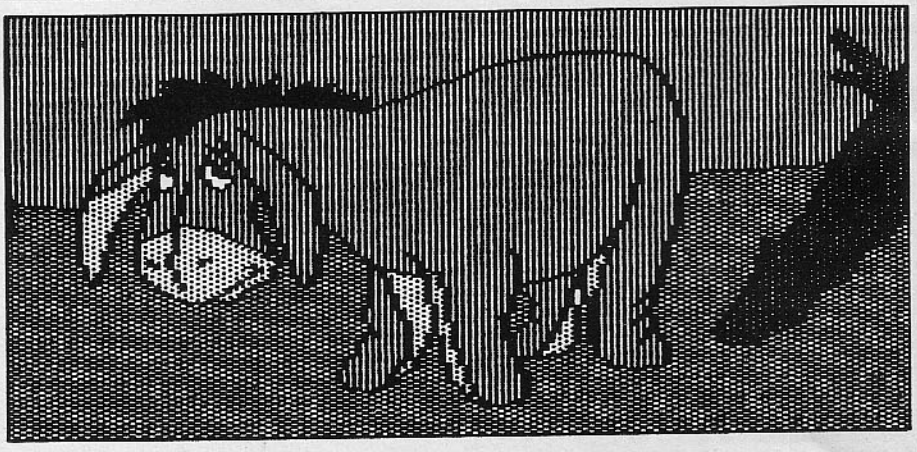
There's no typing involved because the space bar is used to cycle through the available options and the Return key is used to select the highlighted option.

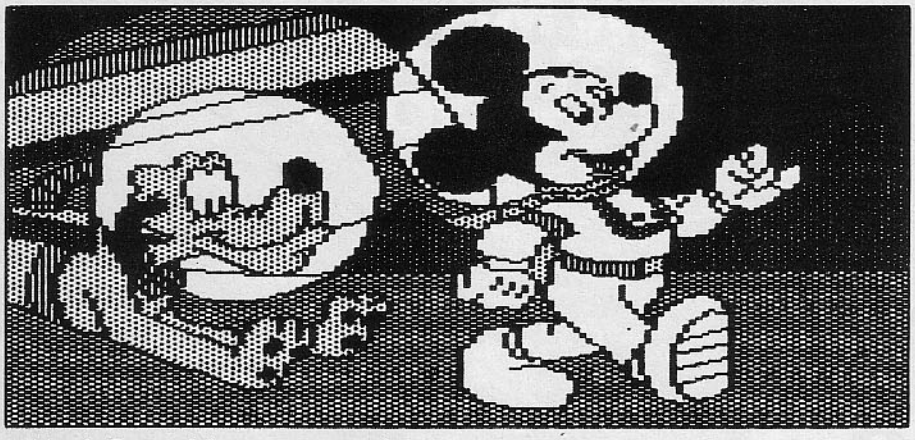
The manual is well presented, with a short story at the beginning, all the instructions you need, a glossary, and even suggestions for further activities.

All the copyright notices attribute copyright to Walt Disney Productions – funny, thought A.A. Milne had something to do with it.



The graphics are good, the characters instantly recognisable to all who majored in Winnie the Pooh





Mickey's Space Adventure . . . another for young children

Equally nice is Mickey's Space Adventure, also from Sierra. It's more of a traditional adventure, but still aimed at young children.

Mickey and Pluto find a spaceship from the planet Oron and go exploring our solar system. They have to find a series of crystals in the right order.

The ship's computer will give a hint about which planet the next crystal is on, and the homing device won't operate if you land on the wrong planet.

Along the way you learn about the solar system, gravity and quite a bit of chemistry.

Did you know, for example, that on Earth Mickey Mouse weighs 100 lb? If you take his bathroom scales along on the trip you can weigh him on each planet and see the effect of the different gravities.

Like the Pooh game, this one also uses space bar and Return, so typing errors don't spoil the game for the children. There's still a lot of reading and comprehension involved though.

The graphics are excellent, too. There's not as much music and humour as in the Pooh game, but this is compensated for by the increased information content.

The manual explains that the extraterrestrials who appear are merely figments of the authors' imaginations. However they reflect the environmental characteristics of their habitats.

There's a Save facility which requires a blank disc. Each new game requires you to get the crystals in a different order, so the game can be played many times.

There are also suggested follow-up activities, such as understanding the seasons with the aid of a skewer, an orange and a light bulb.

Both of these games aim to offer a little more than fun. The motto of the series is "Playing for fun/learning for life" and they certainly live up to the fun side of things.

As for the learning, our seven-year-old has enjoyed learning about the planets, a topic which she had previously described as boring.

Even our three-year-old can exercise her sense of direction with the Pooh game, although the packaging suggests it's appropriate for ages 7 and up.

The Pooh game is more of a fun at home type of package, but the Mickey game could easily form part of a school's software library.

There is a tendency for software houses to create a game around a famous character in the hope that the character sells the game. In the case of these games, they deserve to succeed on merit alone.

Cliff and Denise McKnight

Title: Winnie the Pooh in the Hundred Acre Wood.
Author: Al Lowe.
Publisher: Sierra On-Line.
Requirements: II+/IIe/IIc.

Title: Mickey's Space Adventure.
Author: Roberta Williams and Peter Oliphant.
Publisher: Sierra On-Line.
Requirements: 64k II+/IIe/IIc.

Do your own print thing

THE Print Shop is a new program from America, published by Broderbund Software. With a few keystrokes it allows you to turn your Apple computer into your own personal print shop.

As soon as you boot the disc a main menu is presented. From here you can take any of the six choices available but first you must specify what printer and interface card you are using.

This may be your first problem if you are using either a printer or interface card the program does not recognise. Most popular printers and interfaces are supported and I know it recognises the Blackboard interface as Epson.

Once the printer setup is saved to disc you are ready to start printing.

If you happen to make any mistakes the Esc key will return you to your previous screen, making it almost foolproof. The program is so easy to use that you need not have used a computer before in your life.

Print Shop lets you combine graphics already on the disc with eight text fonts to produce greetings cards, banners, signs, letterheads and something called screen magic, which is a system of writing text on a high resolution animated screen.

The last choice on the main menu is an interesting graphics editor which lets you use your keyboard or joystick to draw, design or even play with any of the 60 graphics already available on the disc.

You can also give yourself credit, if you choose to do a greetings card.

Once you're ready to print your work you can send as many copies to the printer as you like, but the default is 1.

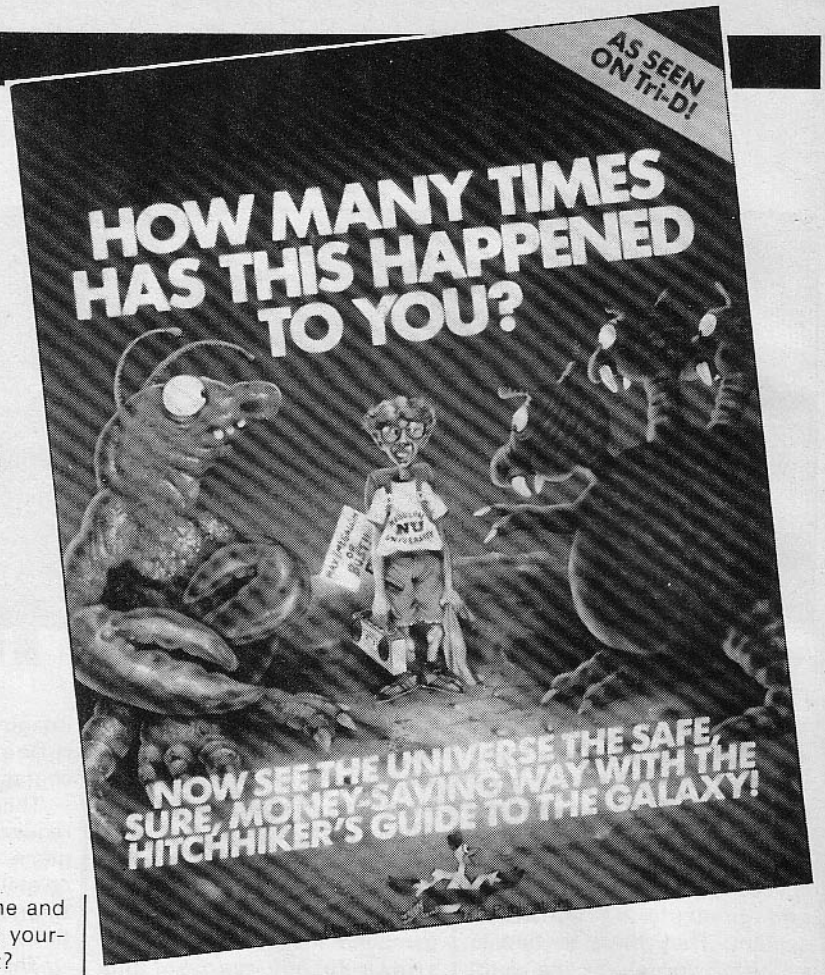
Half way through the printing stage the printer will stop to "think". Don't worry, when it has finished it will allow you to go back to the main menu.

The Print Shop is a fun and easy way to enjoy printing using your computer. I enjoy using it very much and recommend it to anybody.

Michelle Ball. (aged 12)

Title: Print Shop.
Authors: David Balsam and Martin Kahn.
Publisher: Broderbund Software.

Hitch your Apple to a star game



WHAT sort of probability factor would you give to the chances of a cult radio programme going on to become a television series, an LP record, several books, a stage show and is currently being made into a movie?

Highly improbable, right?

Well **The Hitchhiker's Guide to the Galaxy,** by Douglas Adams, has not only achieved all of that already, it has gone one step further.

The immensely successful series now features in a brilliant text adventure, written by Douglas Adams himself and programmed by those masters of artificial intelligence at Infocom.

And believe me the result is magnificent. It has already gone straight to the top of the charts and has just picked up the W.H. Smith Game of the Year award, probably the first of many such awards.

Hitchhiker looks set to be one of the all time greats.

Like all Infocom adventures, it is text only, has an immense vocabulary, an amazingly sophisticated input analyser, and screens and screens of fulsome prose.

Even if you've tasted the sweet pleasures of an Infocom adventure before, I guarantee you'll never have played one like this.

When was the last time you suddenly found yourself transformed into another character partway through the game and found yourself talking to yourself, if you catch my drift?

And that doesn't happen just once, either.

You begin the game as Arthur Dent. Your immediate concern is how to stop the local council bulldozing down your house in order to make way for a by-pass.

However that anxiety soon becomes a trifle insignificant since the Earth itself is about to be destroyed by a Vogon Constructor fleet to make way for a galactic by-pass.

If you are familiar with the books, or radio series, etc, you'll find the opening sequences ringing a few bells. But you can't rely on that knowledge for very long – you are soon confronted with many situations that are going to take more than a little lateral thinking to resolve.

Many of the characters from the series make an appearance. Ford Prefect, Zaphod Beeblebrox, Trillian and Eddie, the ever-cheerful shipboard computer. And, of course, the galaxy just wouldn't be complete without Marvin the paranoid android.

He's still as miserable as ever and his behaviour will surely make you a little paranoid, too.

There's also a host of much-loved subsidiary characters, objects and incidents. Remember the Ravenous Bugblatter Beast of Traal? He's still ravenous and dangerous but very stupid – if you can't see him, he thinks he can't see you.

The awful Vogon captain with his even more awful poetry is here, and so is the Babel fish, the obtaining of which, incidentally, presents one of the most devious but deliciously amusing, multi-layered puzzles I have ever encountered.

It's almost as if the game is out-thinking your every move.

I am not at liberty to reveal just what your ultimate goal in the game is, not that it would help you in the slightest if I did.

But there is one source of help available throughout the game and that's the guide itself.

By typing CONSULT GUIDE ABOUT something, chances are you will glean some useful, and certainly hilarious, information which may, or may not, assist you in your mission.

And even when the guide cannot provide data on the selected topic, you're still sure of a variety of witty responses.

If you really get stuck in the game, don't panic. You could do a lot worse than invest a further £7 in a copy of Infocom's Invisiclue book – concealed hints – for the game.

It is cunningly designed, entertainingly written and great fun in itself. It not only offers help where needed but provides lots of other suggestions to try out when you've finished the game, many of which might never have occurred to you.

The book really does help you to get every last ounce of enjoyment out of the adventure. Only buy it when desperate for help or when you've completed the game, as the temptation to consult the clues is overwhelming.

The game comes with a comprehensive manual and includes your very own piece of fluff, pair of peril-sensitive glasses – totally black – and a microscopic space fleet. You must supply your own towel.

Hitchhiker is zany, original, challenging and entirely and faithfully logical in its own crazy world of logic.

The chances of you finding as funny or as superb a game as this between Earth and Magrathea are two to the power of ten million and rising, so don't bother waiting – hitchhike to your nearest dealer now.

Bob Chappell

Title: The Hitchhiker's Guide to the Galaxy.
Authors: Douglas Adams and Steve Meretzky.
Publisher: Infocom.
Requirements: 48k.

Restore to any DATA line

STEVE FRANKS shows how easy it can be

THIS machine code routine allows the Applesoft programmer to RESTORE to any data line within a program. The program can use the routine to access Data lines in any order, say to print messages in an adventure game.

The machine code has been assembled in page 3 of memory, but may be relocated using the monitor move command without re-assembling as it contains no fixed jumps, only relative branches and calls to ROM routines.

The line number required is passed to the machine code routine, RESTORE#, as a parameter by the USR command, and may thus be a real or integer variable or an arithmetic expression.

The routine checks the parameter and returns a non-zero value, logical true, if it is a valid data line number, or 0 – false – if either the line doesn't exist or the first Basic token in the line is anything but Data.

The routine works by updating the pointer used by Applesoft to keep track of the data lines in the program as they are read.

In one of the example programs I read four items from the same data line. In practice the only limit is the normal Basic line length, and subsequent READs will work as normal.

The alternatives to this piece of coding are:

- A multi-dimensional array, but the size of the array must be defined to cater for the maximum number of description lines. For example, DIM NI (50), D$(50), V(50), S%(50), D$(50,3) would allow for four description lines for each location in an adventure.

  This is obviously wasteful of space where there is a great variation in numbers of description lines, as even empty array elements use memory space.
- A similar arrangement of data lines to the example, but accessing them sequentially using READ and RESTORE.

  This would obviously be slower, as the program has to skip those lines which are between the beginning of the program and the line required, READing, then discarding any unwanted data items.

This is what the routine does, but far faster than can be done in Basic because only the link bytes in unwanted lines are processed.

Line 8 converts the USR parameter into an integer, and leaves the result in LINNUM ($50).

Line 9 uses the value returned by the previous subroutine to find a Basic program line. If Carry is clear on return from this routine, the line does not exist, otherwise LOWPTR/HIPTR contain the address of the line in standard 6502 format – Low byte/High Byte.

Line 10 branches to ERROR if the line does not exist.

Lines 11 to 16 update Applesoft's data pointer to point to the fourth byte in the line, that is the first Basic token.

Carry is set when line 12 is processed, so the routine only

```
SOURCE FILE: RESTORE# SOURCE
----- NEXT OBJECT FILE NAME IS RESTORE# SOURCE.OBJ0
0300:              1          ORG  $300
E752:              2 CNVINT   EQU  $E752
D61A:              3 GETLNE   EQU  $D61A
009B:              4 LOWPTR   EQU  $9B
009C:              5 HIPTR    EQU  $9C
007D:              6 DATPTR   EQU  $7D
EB93:              7 RETINT   EQU  $EB93
0300:20 52 E7      8 RESTOR   JSR  CNVINT
0303:20 1A D6      9          JSR  GETLNE
0306:90 14        10          BCC  ERROR
0308:A5 9B        11          LDA  LOWPTR
030A:69 03        12          ADC  #$03
030C:85 7D        13          STA  DATPTR
030E:A5 9C        14          LDA  HIPTR
0310:69 00        15          ADC  #$00
0312:85 7E        16          STA  DATPTR+1
0314:A0 00        17          LDY  #$00
0316:B1 7D        18          LDA  (DATPTR),Y
0318:C9 83        19          CMP  #$83
031A:F0 02        20          BEQ  RETURN
031C:A9 00        21 ERROR    LDA  #$00
031E:4C 93 EB     22 RETURN   JMP  RETINT

*** SUCCESSFUL ASSEMBLY: NO ERRORS
```

Basic memory organisation

Basic lines are organised:
Pointer to next line ! Line number ! Tokenised program ! End of line indicator (1 byte containing zero.)
(2 bytes Low/High) ! (2 bytes Low/High) ! Up to 239 bytes !

The end of the program is indicated by three zero bytes, the end of line indicator and the pointer to the next line.

Figure 1

‘ ... access Data lines in any order... ’

needs to add 3 to the address.

Lines 18 to 20 load the Basic token addressed by DATPTR, and check that it is Data (83 hex).

Line 21 clears the accumulator, so that GIVFAC leaves a value of zero in the floating point accumulator as the USR result. This is interpreted as false when used in an IF statement, any other value, in this case $83, is interpreted as true.

```
10 D$ = CHR$ (4):AD = 768:HI
   = INT (AD / 256):LO = AD -
   HI * 256
20 FOR I = 0 TO 33: READ R:
   POKE AD + I,R: NEXT
30 POKE 10,76: POKE 11,LO:
   POKE 12,HI: REM   SET UP
   USR VECTOR 'JMP' TO START
   OF RESTORE#
40 R = 5000
50 IF NOT USR (R * 10)
   THEN 63299
100 PRINT "YOU'RE ";
110 READ NI,D$,V,S%
120 FOR I = 1 TO NI
130 READ S$: PRINT S$
140 NEXT
150 DATA
   32,82,231,32,26,214,144,
   20,1 65,155,105
160 DATA
   3,133,125,165,156,105,0,
   133,126,160,0
170 DATA
   177,125,201,131,240,2,169,0,
   76,147,235
50000 DATA 5,ON THE
   STAIRS,12,5
50001 DATA "ON A SPIRAL
   STAIRCASE, IT'S VERY"
50002 DATA "DARK BELOW, BUT
   THERE IS JUST ENOUGH"
50003 DATA LIGHT TO SEE A
   DOOR TO THE NORTH. THERE
50004 DATA ARE MURALS
   DEPICTING DEMONS ON THE
50005 DATA WALLS.
60000 DATA 3,IN THE
   GARDEN,20,10
60001 DATA STANDING IN A ROSE
   GARDEN. THE
60002 DATA "SUN IS SHINING,
   AND THE FLOWERS ARE ALL"
60003 DATA IN FULL BLOOM.
63298 END
63299 PRINT "ERROR LINE "R *
   10" DOES NOT EXIST"
```

Program I

```
10 POKE 10,76: POKE 11,0:
   POKE 12,3
20 PRINT CHR$
   (4)"BLOADRESTORE#"
30 READ NL
40 DATA 100
50 DATA MESSAGE,80
60 DATA EXAMPLE,70
70 DATA OF,50
80 DATA HANDLING,120
90 DATA IS,110
100 DATA THIS,90
110 DATA AN,60
120 DATA USING,130
130 DATA RESTORE#,140
140 DATA TO,180
150 DATA LINES,190
180 DATA READ,150
190 DATA IN,40010
200 LM = 1
210 L = USR (NL)
220 READ W$,NL
230 LW = LEN (W$): IF (LM +
   LW) > = 39 THEN PRINT
   M$:M$ = W$:LM = LW: GOTO
   210
240 M$ = M$ + " " + W$:LM = LM
   + LW + 1
250 IF NL = - 1 THEN PRINT
   M$: END
260 GOTO 210
40000 DATA ORDER,-1
40010 DATA ANY,40000
```

Program II

Lab data logging

ANSWERING the increasing demand for data logging devices, to record and monitor outputs from instruments and machinery used in research laboratories and industry, is Labpack, from Stem Computing.

Recording times range from just a few seconds up to several hours or even days at a time and may involve either continuous or intermittent reading of data.

Labpack includes hardware for converting analogue signals into digital form for storage in the computer, and software to operate and control the converter and provide a range of computational procedures for data processing and graphical presentation. Price: £590.

● *Stem Computing, 3 Blackness Avenue, Dundee DD2 1ER. Tel: 0382 65113.*

The byte collector

A UTILITY package for the Apple II family, D Code from Beagle Bros, claims to squeeze every wasted byte out of Applesoft programs, save memory space and increase efficiency.

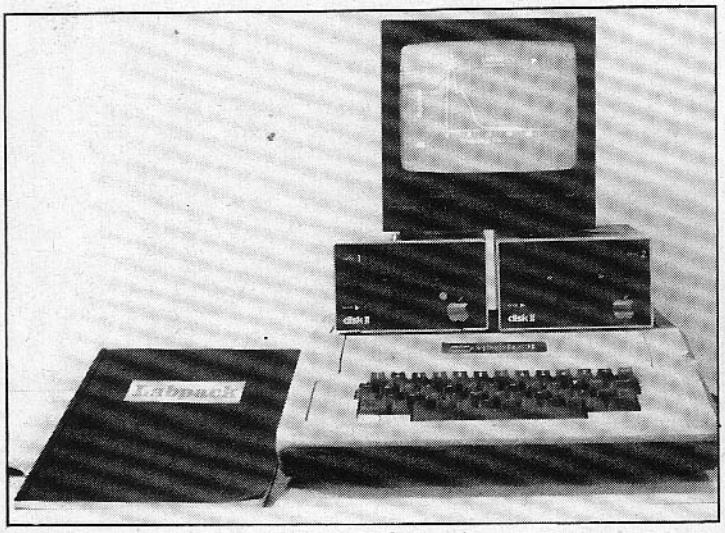
It optionally combines program lines, cuts variable names to one or two characters and removes REM statements. All GOTOs, GOSUBs and IF-THENs are automatically considered. The number of bytes saved is printed on the screen.

D Code also finds program lines that are unused and lets you eliminate them to save even more wasted space. It also acts as a program proof reader, reporting typographical errors before the program is run.

Its super trace features allow an Applesoft program to be stopped at any point to allow the user to see the most recent line numbers and program statements executed.

Its de-bugging features are fully compatible with Beagle's Global Program Line Editor and Double-Take. Price is £36.

● *P & P Micro Distributors, Todd Hall Road, Carrs Industrial Estate, Haslingden, Rossendale, Lancs. BB4 5HU. Tel: 0706 217744.*



The data-logging Labpack, from Stem Computing

Increase in the family

SECOND of a planned family of AI-related software products from ExperTelligence,ExperLisp utilises the power of the Macintosh to deliver a Lisp environment said to rival those on large specialised computers.

ExperLisp is claimed to be the first complete implementation of Lisp on a micro. It costs $495.

● *ExperTelligence, 599 San Ysidro Road, Santa Barbara, California 93108. Tel: (805) 969 7874.*

Multi-user accountancy

COMPANIES with a number of employees needing access to the same computer data now have a multi-user accountancy software package available to them on Cachenet.

Called Skymaster, it is a package of record locking programs from Sky Software. Using it a company can store information on its entire financial records – such as stock control, sales ledger, invoicing, payroll and statutory sick pay.

Skymaster is available on Eicon Research's Cachenet which allows up to 21 micros to share access to data and programs stored on one central hard disc storage unit.

Each of Skymaster's main modules cost £500, the statutory sick pay package £250. A Cachework network for four terminals would cost around £3,800 excluding micros, but with cabling, hard disc interface cards and operating system.

● *Eicon Research Limited, Viking Way, Barr Hill, Cambridge CB3 8EL. Tel: 0954 81825.*

Statistics software

FOR people who work with numbers, Heyden Datasystems has announced a statistics software package for the Macintosh.

StatWorks has been designed to take advantage of the Macintosh's high resolution graphics capability and mouse-based operation.

Among the statistical routines it performs are multiple and polynomial regression, t-test, one-way and two-way Anova, Kruskal-Wallis tests and Friedman tests.

All tests include significance levels, and regressions have full output including coefficient window, Anova window and residual analysis window.

Menus guide the user through the program and there are no complicated systems to learn. Results may be viewed on the screen in a variety of graphic formats and can be printed out or enhanced using MacPaint.

StatWorks can use data from another computer via MacTerminal, entered manually, or transferred from other Macintosh appliations such as Multiplan, MacWrite, MacPaint or Chart. Data can be sorted as required, and data elements rearranged to create datafiles. Price: £145.

● *Heyden & Son, Spectrum House, Hillview Gardens, London NW4 2JQ. Tel: 01-203 5171.*

Key to information

A NEW communications package allowing Macintosh users to access all of the major information systems including Prestel has been announced by AM Technology.

Called Vicom 1.6, it allows users to specify dual baud rates and so gain access to the information systems.

With the mouse-controlled Vicom the Macintosh can be a database terminal for sending and receiving telexes and electronic mail, and computer-to-computer communications. Price: £150.

● *AM Technology, 19 Kensington Court Mews, London W8 5DR.*

Research interface

CAMBRIDGE Electronic Design has announced a breakthrough for Macintosh users – a high performance intelligent interface for research and industrial applications.

The CED 1401 can capture data at 67kHz, store it in its internal memory (up to 2mbyte),

perform 1024-point FFTs in under 1.4 seconds and carry out signal processing operations in a fraction of the time taken by Basic.

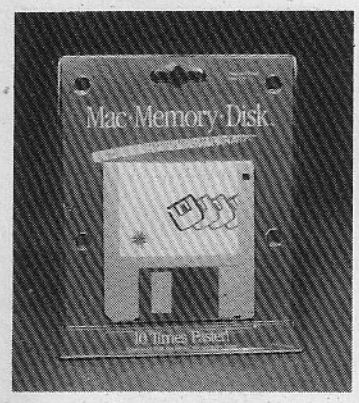
The product can be programmed from Macintosh Basic or Pascal, and is delivered complete with programs for data capture, signal averaging, power spectrum calculation and time interval histogramming. Price: £2,495.

● *Cambridge Electronic Design, Science Park, Milton Road, Cambridge CB4 4BH. Tel: 0223 316186.*

Speed plus storage

FASTER speed and additional storage capacity is claimed for Mac Memory Disc from Assimilation Process.

It allows the user to speed up the interaction between software applications and the 512k Macintosh by eliminating the "overhead" associated with accessing disc-based software.



A RAM disc, it takes advantage of the Mac's unused memory or storage capacity and is compatible with any Macintosh applications software. Price: £34.

● *P&P Micro Distributors, Todd Hall Road, Carrs Industrial Estate, Haslingden, Rossendale, Lancs BB4 5HU. Tel: 0706 217744.*

Check on spelling

A SPELLING checker and mail merge facility designed to complement the Appleworks integrated word processor, spreadsheet and card index is now available from Softsel Computer Products.

Megaworks, published by Megahaus, gives the user a 50,000 word dictionary for use alongside the Appleworks word processor, with the option to add a further 10,000 words to the dictionary.

Its mail merge facility operates by combining data from the Appleworks card index with the documents created on the word processor. It can also take boiler plate formats for merging paragraphs in documents.

Megaworks runs on the Apple IIe and IIc and costs £114.

● *Softsel Computer Products, Syon Gate Way, Great West Road, Brentford TW8 9DD, Middlesex. Tel: 01-568 8866.*

More fonts for mouse

CALIFORNIA based Ahware has launched the Mousefont program which adds additional fonts to Apple's MousePaint program.

Twelve new 94-character typefaces can be added to the existing five within MousePaint.

It also includes a font and icon editor which enables users to design and then install their own typefaces.

● *Ahware, 805 Luz Court, Danville, CA 94526. Tel: 415 837-7346.*

Cobol compiler

WHAT is claimed to be the first Cobol compiler for the Macintosh has been announced by Micro Focus.

Mac Cobol combines the advantages of Cobol with the operating ease of the Macintosh and is "a long awaited addition to the Macintosh family of languages", says Apple's development tools product manager, Dan Cochran.

Software developers can port existing Micro Focus Cobol applications from other machines to the Macintosh. Mac Cobol is also compatible with the Macintosh XL under MacWorks.

It allows the Macintosh window and menu capabilities to be built in to Cobol applications by providing access to the 386 most commonly used Macintosh ROM routines.

Developers can directly access these routines via the Cobol Call verb. Support for the remaining ROM routines will be provided in subsequent releases of Mac Cobol, says Micro Focus. Price: £1,250.

● *Micro Focus, 26 West Street, Newbury, Berkshire RG13 1JT. Tel: 0635 32646.*

Interface board

KAWA Systems RGB interface board, designed for Apple II, II+, IIe and compatibles, converts the computer's composite video signal to RGB and interfaces with any TTL RGB colour monitor.

It supports text and graphic modes and double high resolution. A text mode enhancement circuit improves resolution and readability of 80 column display.

Fifteen foreground colours are selectable and no modification of the Apple board is required. It plugs into slot 7. Price is $149.99.

● *Kawa Systems, 450 San Antonio Road, Suite 31, Palo Alto, California 94306. Tel: 415 856 0926.*

Double-quick time . . .

THE Micro Disk Drive from Tymac has four and a half times the capacity of the standard Apple drive, with a total of 640k on a 3½in micro floppy.

It is compatible with both DOS 3.3 and ProDOS operating systems.

The manufacturer claims the MDD-640's average operations are up to 93 per cent faster than the standard Apple drive and some operations can be run as much as 400 per cent faster. Price: £385.25.

● *Tymac, Unit 78, Standard Way, Gravelly Industrial Park, Tyburn Road, Birmingham B24 8TL. Tel: 021-327 6637.*

Event management

NEW for Apple II and IIe owners is Micro-Manager, an event management program suitable for business and domestic use from Precision Systems.

The software incorporates a database, scheduling facility based on calendar date, scheduling facility based on metered usage, calculator facility and report generator. Price: £195.

● *Precision Systems, Harding Way, Somersham Road, St Ives, Cambs. PE17 4WR. Tel: 0480 67101.*

Precision pair

PRECISION Software has taken two more bites at the Apple II business software market with Superscript and Supertype.

A full-feature word processor, Superscript is an enhanced version of the Easy Script and Spell software. It has Lotus-style menus, spelling checker, mail merge, five function calculator plus line and column arithmetic and integrated mouse.

Supertype is a keyboard trainer suitable for the novice typist and uses proven keyboard training techniques.

The two follow on from Precision's already established Superbase, a programmable database. Prices: Superscript £120 and Supertype £29.95.

● *Precision Software, 6 Park Terrace, Worcester Park, Surrey KT4 7JZ. Tel: 01-330 7166.*

Difficulties with double-res graphs

I WAS extremely interested in Peter Gorry's review of Doublestuff in Apple User Vol. 4, No. 9, September 1984.

I am particularly interested in producing graphs – line, bar and so on – of scientific data on an Apple IIe, and have found PFS Graph to be the best for my needs of programs that I have tried.

However, it is not as good as I would like and I already have an extended 80 column card on order.

So you can see I was most interested to read the article.

There are some questions on which I would very much appreciate your answers.

Where can I obtain Doublestuff and what is the price?

Can it be interfaced easily with a commercial package like PFS Graph? I have only limited Basic programming abilities.

I have also attempted to produce coloured transparencies by photographing the colour graphs on a TV screen via an RF modulator in the IIe, and noted the green and purple vertical lines that you describe.

My IIe already has an Apple PAL colour card on board. What is the colour card that the article mentioned would solve these colour anomalies?

Any other information that you can provide to assist me, particularly in the production of better quality line graphs, would be greatly appreciated. – **John Thompson, Toowoomba, Australia.**

● I'm afraid my answers won't offer much solace in your search for double-res graphs.

I don't have PFS Graph available but I very much doubt that changing it – or any commercial package – to use double-res would be easy, for several reasons.

Firstly, most packages are protected or compiled so that getting into the program code may be impossible.

It's no use setting up double-res and then running the package since the best you would get is a small graph occupying half the screen.

In order to make use of the extra screen resolution you would have to alter the program code everywhere a screen position is calculated – unless a similar scheme to the *Apple User* library is used, in which case only the mapping values need altering.

A further problem arises because the hi-res colour numbers and the Doublestuff colour numbers are different, so this too would need altering in the program.

Just to pile on the gloom, Doublestuff activates the 80 column card and you might find clashes occurring when trying to output to the printer.

Finally you would need a printer card capable of performing double-res screen dumps in order to get hard copy.

With regard to the colour card, you can't have all the hi-res colours and no colour anomalies, but as long as you are happy to use only two colours on any one graph several cards will do the job.

I have experience of two – the DMS card, P&P Distributors, or the Spectragram card from Keyzone, reviewed in *Apple User*, October 1984.

Both of these are RGB cards and will not drive a television without an RF modulator.

Try to get a dealer to show you the results before parting with the cash. – **Peter Gorry**

Statistics program

FOR some time now I have been trying to get hold of a statistics-econometrics program, suitable for a 512k Macintosh without success.

I appreciate the specialised nature of my request, and the difficulties I have had are not surprising.

However, if you do know of such a program(s) and/or can tell me who to get in touch with, I would be most grateful. – **Ian J. Graham, Petersfield, Hants.**

● You could start by having a look at StatWorks from Heyden Data Systems. Two other packages, NWA Statpak from North West Analytical and MacFits from Tesseract Educational Systems may be of interest but may have to be obtained from America. These two both require Microsoft Basic.

Formulae to numbers

MAY I congratulate those responsible for the Apple '85 show – it was well worth a visit.

One of the most useful stands was the Apple User technical stand where I found out how to couple an Apple II+ disc drive to an Apple IIc – from the wiring diagram in Appendix A of the book by Friedman Wagner-Dobler, Introducing the Apple IIc, Pitman, £6.95.

Not only has this tip saved me the cost of buying an Apple IIc external drive, but I bought the book at the show for £3.

Another visitor asked if Multiplan has a function similar to the "pound" operation in VisiCalc whereby the contents of cells containing formulae can be converted into numbers.

Nobody seemed to know, but since then I have found an answer.

You may like to publish this for the benefit of the unknown visitor who wanted to update his quarterly budget figures by holding the current totals before entering data for the next three months. Here's how you do it.

Use the Name function to name the column containing the formulae which add up the data for the three months, then save the file.

Locate the cursor in a blank column and use the external Copy function to copy the named area into the blank column but specify an unlinked copy, not a linked copy.

The new column will look like the original column, but it will contain numbers, not formulae.

Then blank out the data for the individual months and recalculate the sheet.

The original total column will revert to zeros but the unlinked copy column will retain the numbers.

Save the file so that when you reload, you can then enter new data and repeat the operation. – **Geoff Wood, Marple Bridge, Cheshire.**

Cryptic editor

RECENTLY I have been modifying the Shape Table Editor from Peter Gorry to make it more friendly, to get it to tell me what is going on when the screen goes blank, and to add functions to a shape or sections of the table without first deleting.

I quickly discovered why the program is so cryptic. I kept losing the end of the program whenever I used HGR – and I cannot go to HGR2 instead because a shape table is poked into there.

Luckily I bought some back numbers of Windfall and there, in early 1982, I found a letter from you offering a routine to force Basic to straddle the hi-res pages. May I obtain a copy?

It also occurs to me that as an adjunct to Peter's excellent series on graphics it would be appropriate to re-publish your routine.

Pondering this problem prompts me to ask whether DOS could be patched to

Want to write to Feedback? The address is: Feedback, Apple User, Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY.

automatically load Basic around these pages. Also I have a 64k Apple IIe and do not understand why HIMEM is the same as for 48k machines. What goes on in the extra 16k? – **Geoff Cozens, Windsor, Berks.**

● I have sent a description and listings of the "splitting" programs to get round the hi-res pages problem. If you send me a disc I will gladly put the files on it to save typing.

There isn't space in DOS to squeeze in such a routine and generally you wouldn't want programs to be split. This "splitting program" – there are others around – once used, discards itself, so no memory space is lost.

The old 48k machines had 48k of RAM and 16k of ROM which held the monitor and Basic. In addition slot zero could hold a card – known as the language card or 16k RAM card – which had another 16k of RAM which was mapped in parallel to the 16k of ROM so that languages other than Basic could reside in it, such as Pascal, Fortran and so on.

The new IIe's have this 16k of RAM on the board and there is no slot zero. Hence to most software a IIe looks like a II+ with a language card. Basic and DOS 3.3 see 48k of RAM and 16k of ROM – that is a 64k machine. There is another 16k of RAM which can be used but not simply. – **Max Parrott.**

Hardware modification snag

WHEN I read the article VBLANK, by Andy Beveridge, in Apple User Vol. 5 No. 4, I was all ready to become "a real video producer".

But, owning a II+, I had to make the hardware modification required.

This seemed no real problem until I started searching the board for the required chips. The only 74LS151 I could find was stashed away under the keyboard, out of reach unless the casing was removed.

Nevertheless, I took off the case and connected the two chips, re-assembled and switched on.

I was greeted by a normal display except for vertical lines travelling from right to left across the screen.

I assumed I had connected the wrong pin, so I attached the wire to another pin on the 74LS151 which could have been pin 4 depending on the way you looked at it. I turned on and was greeted by a popping sound and a blank screen.

I quickly turned off the Apple, removed the mod and tried again. Still the same.

What I had in fact done was to blow up the video circuitry in the Apple.

I sent the Apple off for repair. While it was being repaired I went to Apple '85 and bought a book called Enhancing Your Apple II Vol. 1.

It had a chapter devoted to the same modification, but instead of connecting pin 4 of the 74LS32 to pin 4 of the 74LS151 it said that pin 4 of the 74LS32 should be connected to pin 4 of the 74LS251 chip.

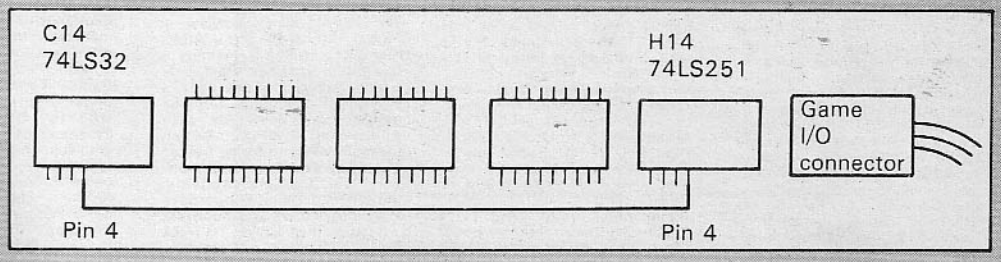
This mod works without any problems, so I am not sure whether there was a printing mistake in the article or whether Mr Beveridge got it wrong, maybe owing to the fact that he hadn't tried out the mod on an Apple II+.

Below is a diagram – which I think should have been included in the article to make things clearer – showing the connections. – **Jason W. Smith, St. Albans, Herts.**

● Sorry to hear you've been having difficulties. For once the mistake was in the author's original copy and not one of our slip-ups.

However, Andy *did* give an additional piece of information which should have aroused your suspicions. He referred to the chip's position (IC H14) and since the 74LS151 you found was (a) difficult to locate, and (b) not in H14, it might have been wiser to check the discrepancy before attempting the mod.

Thanks for bringing the error to our attention – you may have saved someone else a repair bill.



Plea from Denmark

CAN anybody over there help the Danish Apple user group? We are desperately wanting to set up an Apple-based bulletin board system (the first and only in Denmark), but we have trouble getting suitable software.

We believe that there is something like that running in UK?

We already have a system from IAC called WAPABBS, but this will only work with the American Micromodem II, and we don't know how to modify the I/O routines to a modem with European standards.

We intend to use an Apple II+, the Super Serial Card and a Portman modem with autoanswer from Enterlekt.

If anybody can help us by recommending a British system or with advice on modifying WAPABBS we shall be most grateful.

Please write to – **Danske Apple Brugere, Knud Pinholt, Strandparken 41 1.-3, DK 8000 Aarhus C, Denmark.**

Hi-res dumps to printer

I AM hoping to print the displayed graphics hi-res screen to printer. Can you inform me of a program which does this software/hardware at a cheap price?

Could you recommend a matrix printer under £200 which would do this quite well? Is the Brother HR5 capable of this?

Also, is there a way to find if a dot has been plotted or not on the hi-res screen? – **Christopher Brock, Loughton, Essex.**

● Dumping hi-res screens to a printer depends on the printer *and* the interface card.

Many cards have the necessary firmware on board and it is thus very easy to do *but* then your printer choice is limited.

If I were you I would buy a printer with Epson compatible commands or even an Epson RX80 and a Blackboard Interface from Leicester Computer Centre.

Regarding dots-plotted, we published just such a routine in Windfall, May, 1983, page 27. – **Max Parrott.**

It figures

DUE to my great speed in getting round to things, I have just read the June 1984 issue of Apple User.

In reference to the letter from Ian D. Entwistle, I too found strange things happening when I typed in the Shape Editor.

However, after much grafting and editing I now have a fine usable Shape Editor.

All my errors were accountable to the terrible use of O, 0, 1, l, mixups. With so many characters to use, why use those? – **Colin. C. Wood, Chard, Somerset.**