



A Database Publication

apple user

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Apples down on the farm

The man who fell in love with a mouse

How compatible are the II+, IIe and IIc?

John Sculley reveals Apple's plans for 1985

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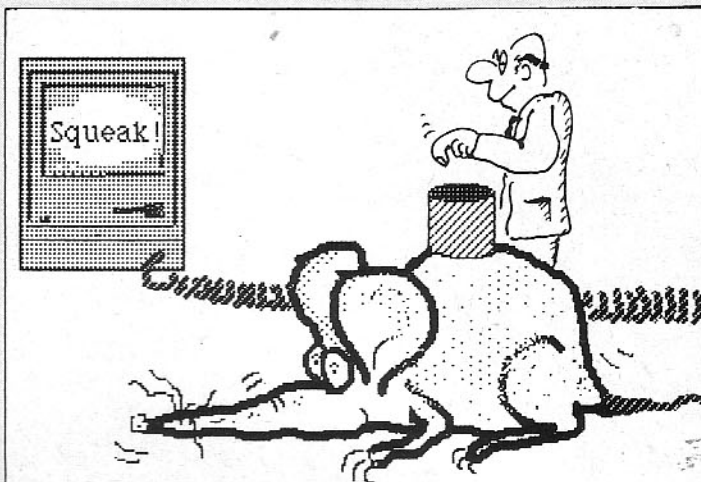
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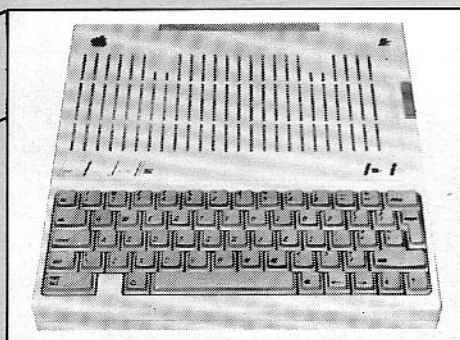
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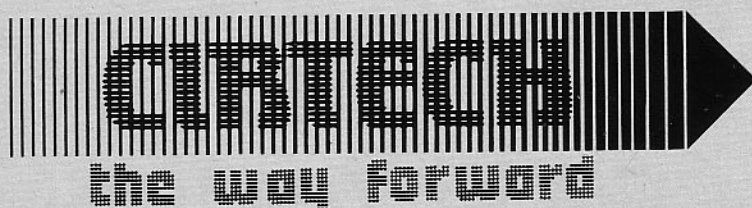
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Eagle eye on sales figures

APPLE Computer chiefs returning from their Christmas and New Year holiday will be anxiously doing their sums during the next few weeks to see if they have succeeded in their bid to prove that the Macintosh is a better buy for the businessman than the IBM PC.

Apple threw down the gauntlet to IBM during the last two months of 1984 with "Test Drive a Macintosh" – a nationwide program enabling potential Mac buyers to try out the machine in their own home or office.

All of the firm's more than 300 dealers took part in the scheme in which customers could take away a 128k Macintosh free of charge for up to 48 hours for a "road test".

Apple UK managing director David Hancock described the scheme as a way to prove to customers how easy a Macintosh is to use compared to its rival.

"If I was a dealer I wouldn't give an IBM PC to anyone and expect them to learn how to use it overnight. They wouldn't get beyond page one of the manual", he said.

"The best way to demon-

strate Macintosh's power and radical ease of use, which is our key competitive advantage, is through hands on experience.

"More than 38 per cent of current Macintosh owners learned to use the machine in less than one hour. We know that allowing people to evaluate the machine at their leisure without the aid of experts is a major endorsement of its unique qualities".

Now Hancock is hoping he will find the proof was in the pudding when the November/December Macintosh sales figures are tallied.

Home grown upgrade kit

AFTER a deluge of Big Mac 512k upgrade kits from America, Pete & Pam has announced its own home-grown version – and it will undercut the others by £200.

Most of the upgrades around are based on expensive 256k DRAM chips and sell at around £800.

But the P & P upgrade uses cheaper 64k chips mounted on a board which fits on top of the original logic board inside the Macintosh.

AN Apple lookalike has popped up behind the Iron Curtain, according to an American surgeon who came across it in Moscow recently.

Known as the Agat, it is almost identical to the original version of the genuine article – the Apple I – with a few minor differences which include a case in bright communist red.

The operating system and ROM are described as "a direct lift" from the Apple but the machine has apparently developed some particularly Russian foibles in manufacture – it is said to be heavy, sluggish and noisy.

A report on the comrades' copy appears in a recent issue of Byte magazine from Dr Leo



Mac goes on record

WHAT could well be another "first" for Macintosh comes from an unlikely source – the pop record industry.

At 7 inches, "Make Believe" by Naked Lunch is obviously the wrong size of disc for the Mac. But the record sleeve, pictured here, was designed using MacPaint.

Pleasure Records, who released "Make Believe", use an Apple II as well as a Mac in their business.

Consensus of opinion around the Apple User office though was that they need a bit more practice with MacPaint! If it's any consolation, the record inside the sleeve was much better.

Enter the yablocka!

– that's Russian for Apple

Bores – an American eye surgeon who is a regular visitor to Moscow.

He dubbed the micro yablocka – Russian for Apple – after being allowed to use one for a week.

"The machine is definitely not in the portable category", he writes. "It is however a transportable computer – that is you would not get a hernia unless you carried it too far.

"I suppose you could call it robust. The monitor that comes with it weighs almost as much as the computer itself.

"It is a standard 30cm composite colour SECAM

television set with an RCA connector at the back for a video signal".

The Russian "Apple" has a standard height 5½ inch disc drive built in but there is no provision for adding a second.

It was when Dr Bores peeked into the micro through the openings in the back and top that he discovered the drawbacks to the Soviet copy.

"What I saw was not reassuring", he writes. "I was confronted with a nightmarish wiring maze.

"The boards were a sickly

Turn to Page 7

MacProject – latest tool for the planners

APPLE has brought out MacProject, a management tool that lets Macintosh owners design and schedule projects.

It enables the user to draw a project schedule on the screen, using beginning and completion dates, resources and fixed and variable cost data for each task involved.

The program then calculates the beginning and ending dates for each task as well as for the entire project. Its features include:

- Representation of project schedules and status through schedule, task, resource and tabular charts.
- Ability to calculate and adjust fixed costs, variable costs and income with tabular display of total costs and net cash flows.
- Calculation of the critical path, or the succession of tasks that determine the final completion date of the project.
- A "What if?" analytical capability that allows instant recalculation of dates, resources, and costs if variables are introduced into the project.
- Easy graphic modification of the project tasks and dependencies.
- Ability to cut and paste sections of projects into other projects' schedules or into files created with MacWrite – and the ability to transfer costing data to Microsoft's Multiplan for further analysis.

Business software manager for Apple UK Phil Peters said: "The Macintosh mouse and MacProject's various graphics features enable the user to design simple or complicated projects much more quickly and with greater ease.

"At the same time MacProject offers the experienced project manager a powerful tool that can translate project data into various resources, cash flow and schedule charts as well as cut and paste products into



other documents".

MacProject will be particularly useful for businesses such as advertising, construction and publishing.

For example, a manager in charge of an advertising campaign could organise the photography, artwork, copy coordination, market research and media buying into specific dependencies that lead to a specified goal.

MacProject can accommodate up to 200 tasks on the Macintosh 128k, up to 2,000 on the Lisa 2 or the Macintosh 512k, and can handle up to six resources per task with a maximum of 50 resources per project.

Suggested retail price is £99.

SAM TEST DRIVES A MAC

SAMANTHA Fox, Page Three Girl of the Year, keeps failing her driving test on motor vehicles – but she hopes to have better luck on a Macintosh.

She was first in line when Program's Unlimited, one of Apple Computer's major dealers, joined in the national "Test Drive a Macintosh" campaign.

The offer allows potential customers to evaluate Macintosh over a 48 hour period at their home or office free of charge.

Hands on the yablocka

From Page 5

brown colour and looked like the old semi-glass boards of ancient renown.

"I could not see anything resembling a motherboard although it's possible there's one buried down there somewhere, and had to assume I was looking at a variant of an old 'back-plane' system, and a hard-wired one at that".

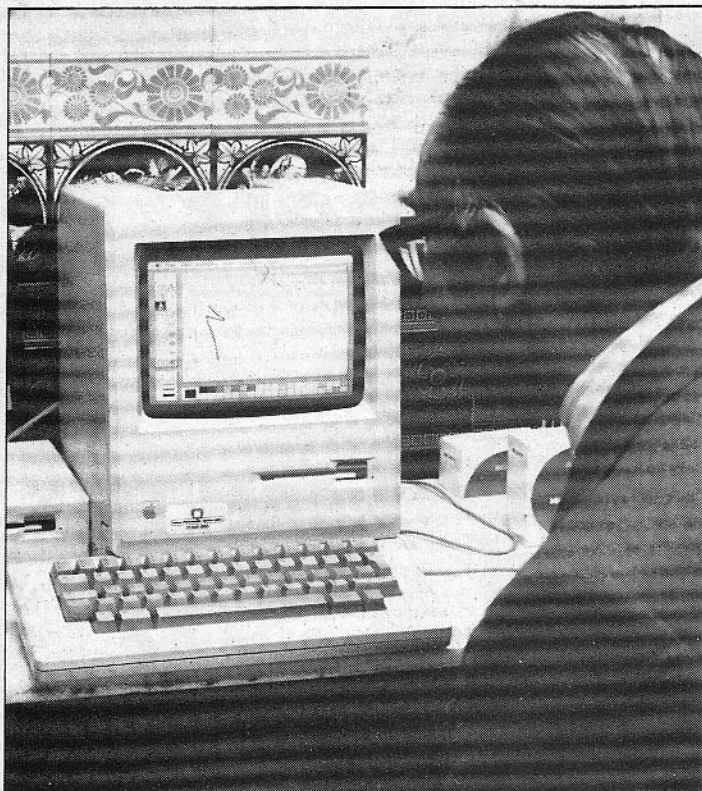
Summing up his hands-on experience, Dr Bores says: "My

overall impressions of the system were favourable considering the source, although I would not buy one. The system is just too slow to compete with what is already available.

"It's really akin to an old Apple I..."

But what do the boys from Apple UK think about the Russian copy?

"It's really a niet comment situation", said a spokesman. "But if they were going to try to copy a machine, I'm glad to see they've chosen the best".



Mac tiles on tap

THANKS to the versatile Macintosh, a London firm has come up with a way to achieve one-upmanship in your bathroom – unique, owner-designed tiles.

Ceramic Tile Design of Fulham is using a Macintosh to design and store pictures and patterns for tiles and tile panels.

Using the computer graphics function of the machine – where the screen acts as a blank canvas – customers can create, edit and store their own personal tile designs.

Different textures can be created with the paint brush or pencil and different densities of shading are achieved by using the paint pot or aerosol.

Once drawn, any image can

be altered, moved, duplicated, inverted, reversed, copied and printed onto paper.

Says Christopher Crewe-Reid, director of Ceramic Tile Design: "This will revolutionise tile designing and enable us to keep a complete library of designs available for our clients to choose from at their leisure."

"Once a design has been decided on we should be able to get the tiles printed within two weeks.

"If the client can't make up his mind, we can print out several designs for him to take home and live with for a few days before deciding. The tiles can then be made in almost any colour".

Emulation system on its way

A FREELANCE systems developer has created a Macintosh emulation subsystem for the Apple II.

The software runs on a 128k IIe or IIc and sits in the background of Apple Pascal 1.2.

It allows programs to be written in Pascal using the desktop, windows, icons, pull-down menus and so on.

According to its author Patrick Buckland, the system is not as powerful as the Mac but is much easier to use.

And surprisingly, he says, the graphics are actually faster than the Macintosh equivalent.

Buckland says he is about two months away from finishing the system.

At the moment, he is looking for financial and marketing backers rather than customers.

Contacted by *Apple User*, Apple's UK marketing chief Bob Kissach said: "Patrick has our full co-operation and support in the project".

Tel: 0983 854421.



Advanced communications

APPLE users can achieve a higher level of communications sophistication with two new releases from Pace Software Supplies designed to complement the Nightingale modem.

The Data Highway communications package provides a viewdata mode with full graphic displays and a terminal mode incorporating many advanced features. All program options are accessed in two keystrokes

at most.

Data Highway also boasts a comprehensive file transfer mode which allows individual DOS files to be transferred.

In addition there is a complete disc transfer mode which allows entire DOS, Pascal, CP/M or Prodos discs to be transferred with advanced error checking for complete accuracy.

Mastercard provides a versatile serial interface conform-

ing to RS232 standards. It is supplied with on-board terminal software in an 8k eeprom and can be software configured for a complete range of baud rates and word formats. It can also be used to drive a serial printer.

Mastercard can support true split baud rates and can be configured to emulate existing CCS type cards for use with non-viewdata packages such as Ascii Express.



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"GREAT NEWS" from The U.K.'s

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Well informed

Some of the most knowledgeable Mac experts in the UK.

Polite

Full qualifications from the "Apple school of Mac etiquette".®

Intelligent

With a combined IQ of 512K.

Trustworthy

Guaranteed no pirate software.

User friendly

All fully trained by Macintosh.

Mouse Driven

Mac's mouse software is our main motivation in life.

Helpful

Try us and see (remember . . . Freephone MacCall)

— We are also:

Loyal, kind, obedient, house trained, cheerful, thrifty, bold, clean, occasionally irreverent, and always modest.

That's us at Computer City

Now, enough of that bull, lets get down to the hard facts . . .

We are in this business to make money and you are out there looking for value for money. So here's the deal.

We will give you the best products with . . . the best support at . . . the best prices.

O.K.

Every Month we will present to you our expert evaluation of the 10 best business packages for Macintosh. This is not a chart of the top ten best sellers, but a list of software that we believe offers the best value for money, while giving you the best opportunities to get high productivity from your Macintosh. Every package we select is a powerful, serious and useful business application.

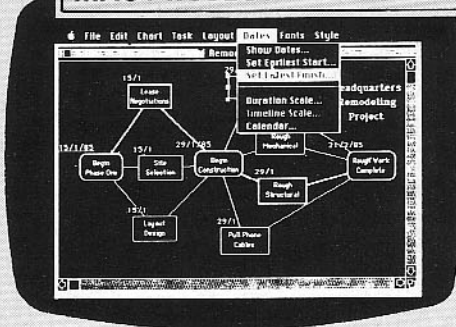
Each of these packages is fully understood by our staff who will ensure that you get the right package to suit your needs.

For such services you might expect to pay a little extra, but we have such confidence in the products we present, that each program is marked down from the manufacturers suggested retail price.

From Apple Computer Inc.

MAC PROJECT

OUR PRICE **£89** SAVE **£10**

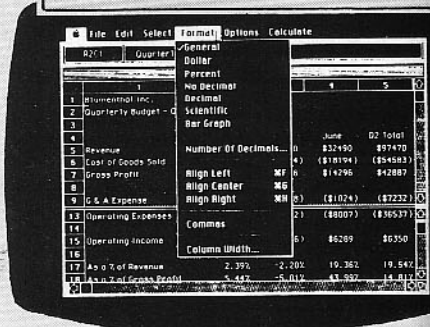


Critical Path Analysis is one of the most useful techniques available to managers, and yet, because it is difficult and tedious to do manually, very few managers use it. MacProject makes planned monitoring and control of business projects possible for every manager through incredible ease of use.

From Microsoft Corp.

MULTIPLAN

OUR PRICE **£139** SAVE **£4**

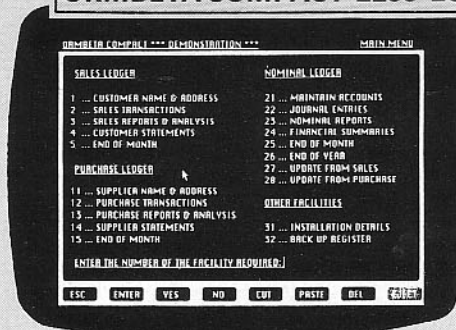


Without doubt the best implementation of Microsofts superb spreadsheet, proving that 'Macintosh does it best'. You don't even have to remember all of the functions, you can simply scroll through them and click your formulas into place with the mouse.

From Eurobeta Info. Systems

ORBETA COMPACT

OUR PRICE **£299** SAVE **£51**

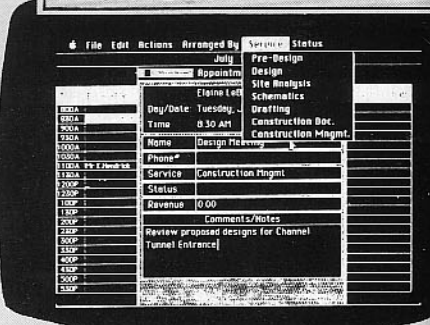


Ormbeta Compact Accounting is the first fully integrated UK accounts package for Macintosh. In one package it includes 'Brought Forward' Sales and Purchase Ledgers and a powerful Nominal Ledger with advanced reporting capabilities. We particularly like this package because the manual is capable of steering a complete novice into gaining the full benefit of computerised accounting.

From Layered

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"MACCALL" BETWEEN
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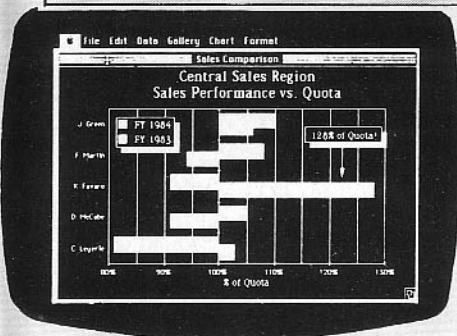


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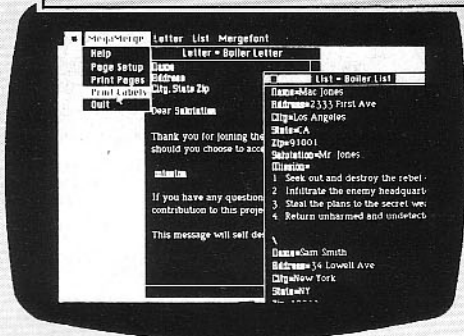
No.1 Macintosh Centre

From Microsoft Corp.
M. SOFT CHART OUR PRICE **£119** SAVE **£20**



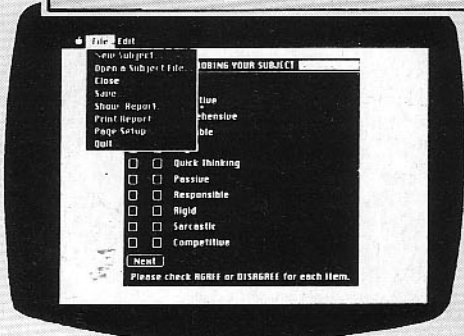
MS-Chart from Microsoft is an essential partner for Multiplan. Generate and annotate bar, line, pie and area charts, in any combination, with incredible ease. MS-Chart will even generate statistical analyses to plot with your own data.

From Megahouse
MEGAMERGE OUR PRICE **£89** SAVE **£15**



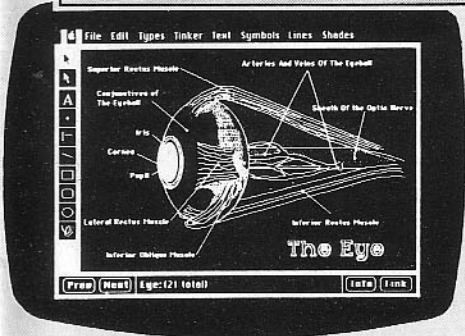
Megamerge works with your MacWrite program to generate mailshots and other personalised multiple mailings. Simply include your Megamerge field names in your MacWrite letter and the information in your mailing lists will be automatically printed.

From Human Edge
MINDPROBE OUR PRICE **£39** SAVE **£10**



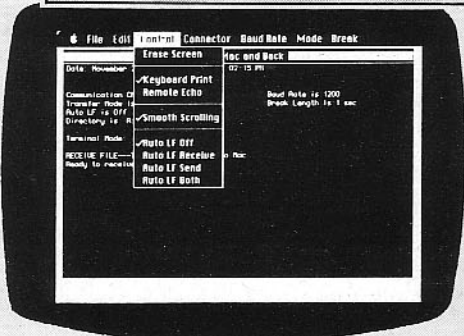
We have deliberately kept this program out of the entertainment sections because it is a powerful management aid to help you evaluate the characteristics of the people you have to work with, Staff, interviewees and clients. MindProbe will give you helpful insights to associate with them better.

From Telos
FILEVISION OUR PRICE **£129** SAVE **£30**



Filevision is a truly inspired approach to data management on computers. You have only to point at any item on your screen to access all information relating to that item, and producing the pictures, reports and file designs is all intuitively easy.

From Dilithium Press
PC TO MAC & BACK OUR PRICE **£79** SAVE **£20**



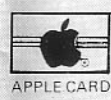
'PC to Mac and Back' is two programs (one for your Macintosh and one for your IBM-PC) which let you transfer files between the Macintosh and IBM-PC. Now you don't have to retype all of that data to be able to use it on the 'insanely great' Macintosh.

From Provue Developments
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1985 – 'The year Apple focuses on the office'

And it will be the big year for Apple in Europe says JOHN SCULLEY in a revealing interview with Paul Walton

APPLE will now concentrate efforts on selling office systems – especially in Europe – John Sculley told *Apple User* in a wide-ranging interview outlining new products, marketing and a brave go-it-alone strategy which totally ignores the IBM PC.

It is 12 months since he became chief executive officer and, he thinks, an appropriate time to consider his strategy.

"1985 will be the year that Apple focuses on the office", said Sculley, adding that it's also "the big year for Apple in Europe".

New products to support his assertion that "Apple can again shake a stable (IBM) market growth of 25 per cent a year, doubling or trebling growth", will be launched on January 1 and, for the first time, simultaneously on both sides of the Atlantic.

Decidedly bullish Sculley is looking for upwards of 50 per

cent growth in sales in Europe "where 95 per cent of the people who should use computers don't".

More active promotion of the Mac will take Apple out of 1984 – theme of the present ad campaign – with a £3 million press and TV splurge and the try'n'buy scheme called Test-Drive. "But expect a heck of a lot more clever marketing schemes

'Apple has now dropped all plans to provide IBM compatibility'

from Apple in 1985", said Sculley.

If Test-Drive works it will continue into the New Year, for instance. And if the dealers

cannot sell Apple, and especially the Mac, Sculley hinted that for the first time a direct demonstration and sales force might be given the task of selling into larger accounts.

Sculley revealed that Apple has now dropped all plans to provide IBM compatibility – a PC DOS board, conversion aids and comms software were in the pipeline – when the latest IIc model took off in the States.

Although launch dates aren't finalised, there are plenty more Apple II and Mac products coming, together with some limited communications gear for attaching both products to IBM systems.

These all fall under the Applebus networking architecture which is intended to take Apple into the office and corporate market.

The Apple II family is "still our best product-line for the small business because of all the special and vertical market

applications written", said Sculley.

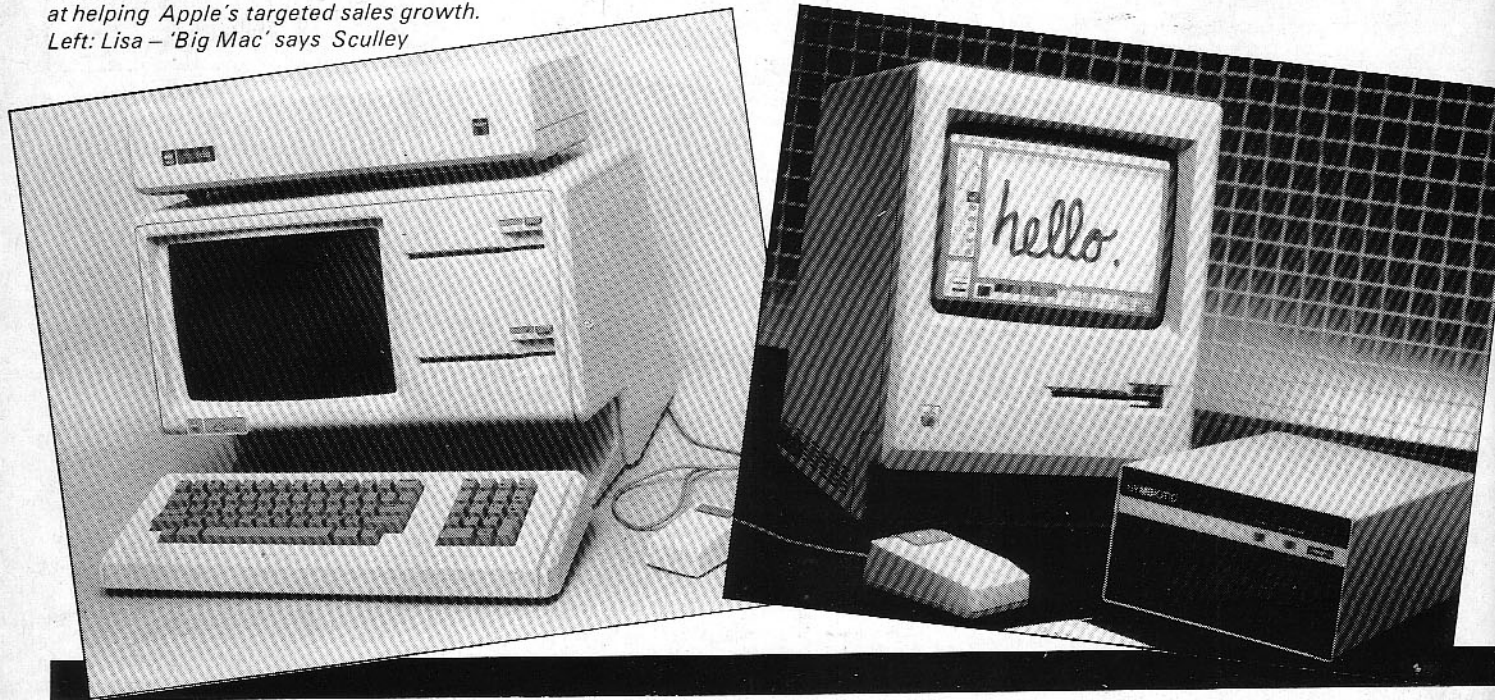
It is to get a faster and more powerful model dubbed the

'The Apple II family is still our best product line for the small business'

Apple IIx. CMOS 6502 chips will up the speed, 256k RAM chips double internal store and it might see first use of the 3in hard disc technology being developed for Apple under licence by Sony.

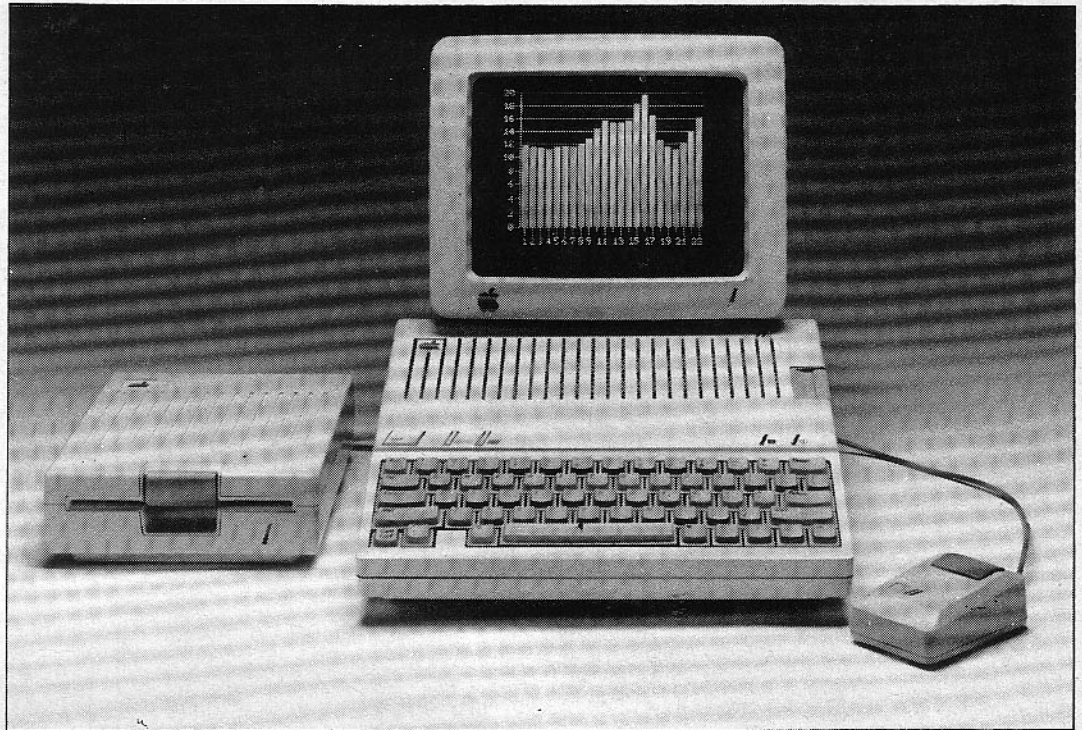
The forgotten Apple III will reappear with, for the first time, the windows, icons and mice programs (or Wimps) of a Mac.

*Right: Macintosh – Test Drive promotion aimed at helping Apple's targeted sales growth.
Left: Lisa – 'Big Mac' says Sculley*





Apple IIe



Apple IIc: Really taken off in the States

Meanwhile service industries and what he called "the forgotten managers", or the non-computerate, are the target market for Mac. (Lisa, or the "Big Mac" to Sculley, is intended for larger organisations in the same lines of business.)

Peripherals and software galore are promised for the Mac, including a laser printer for under £2,000, an intelligent hard disc mass storage device or file server and the networking products collectively known as Applebus.

However Apple will not follow IBM's lead in offering its own applications software, said

'Mac: The first software appliance'

Sculley, rather lending technical support to third parties.

But there will be some Mac systems software from Apple, including the long-awaited Toolbox applications developer, communications for all of the popular IBM and DEC protocols (and ICL in the UK), and icon-based networking systems between Apples to other computers and peripherals and across telecoms lines.

Apple has strengthened its links with several leading software houses in order to produce "unique" versions of their existing products for the Mac, said Sculley, or more surprisingly to write "exclusive" packages.

For instance, Microsoft will

customise every package, utility or language for the Mac. And Lotus Development is writing "a new concept in integrated database / spreadsheet / graphics/word processing suite - which is not just a rewrite of Symphony - that could only work on the Mac", said Sculley.

The cabal which ousted the heads of Apple's European distribution was a success, "and now they've got 1985 to prove it".

Men like David Hancock in the UK are now charged with marketing all these new products. Apple's US management will shuttle between London, Paris and their Californian HQ to make sure that old gripes like reliable hardware, software support or prompt service are receiving attention.

The innovative Test Drive - with over 1,000 half-price Macs out with dealers - was only planned to last until Christmas.

Hancock now has a several million pounds budget for promotions. One idea is that Apple will take out entire advertising supplements in the trade and national press and maintain a higher profile elsewhere.

Another is that Apple should prepare vertical market *selling* packages - everything from the best software packages to

Apple III: Once forgotten - but now reappearing with windows, icons and mice



seminar notes - which dealers simply re-enact.

Sculley describes the Mac as the first "software appliance", though he admits that there might be others in 1985.

He claims the Mac will be the only unique PC still competing with IBM in 1986. By then Apple will be considering the Mac-in-a-book portable product, first described by Steve Jobs (July *Apple User*). Sculley would not comment on how this project was progressing, except to say that "it's inevitably coming".

In the meantime it now looks as though there will be at least one Mac-alike out in 1985, from

Commodore, with another planned by Atari.

Sculley revealed that Apple didn't buy up Mac-alike maker Amiga - which is to supply Commodore with the Lorraine next year - because its "excellent graphics (or Wimps) were offset by totally unmanageable software".

And Atari is still battling through the US courts for access to the graphics chip for which it paid development costs, being used by Amiga.

"But there will still be nothing quite like the Mac on the market next year, or even the year after", Sculley re-emphasised.

YOU'VE seen the film, you've read the book, you've played the adventure game... now get your kids involved in it!

What Sierra On-Line have done is to combine one of their adult adventures with the junior format used for games like *Dragon's Keep* and *Troll's Tale*.

The result is *Gelfling Adventure* which, as the title might suggest, is based upon *The Dark Crystal*.

The graphics look identical to the adult version which we reviewed in the December 1983 issue of *Apple User*. However rather than the free-form input allowed in ordinary adventure games, Sierra have adapted the game to use their space bar/return key method of play.

Each picture has two or three alternative courses of action following the description of the location. The space bar is used to cycle through the options and the return key is used to select the highlighted one.

The game is slimmed down somewhat, although the story line is the same. It's obviously meant to be completed in a single session, though, because there is no save facility.

The problem with the lack of save is that the most difficult part is towards the end. This means that the child has to go through most of the game each time in order to try a new tactic — that's if they can remember how they got that far in the first place.

Although one of the skills which the game aims to improve is "following map directions", the sepia tint map doesn't have compass points

marked on it. The handbook mentions a compass decal which ought to accompany the package, but the review copy didn't contain one.

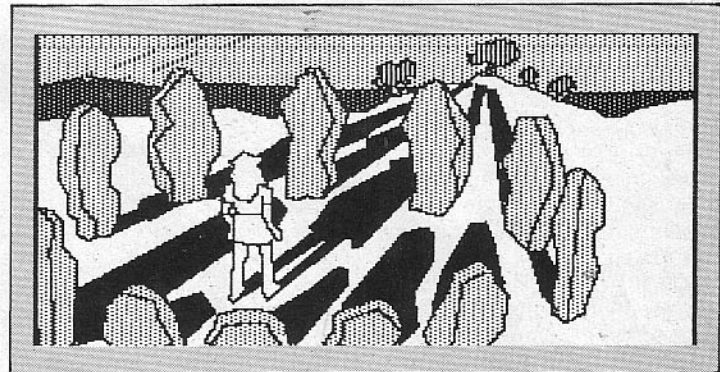
Hence although the children who tried the game were presented with options like "Go to the south", there was no obvious way to relate this to the map.

The manual also makes great play of the fact that it contains a glossary of Gelfling terms. Using this is supposed to encourage dictionary usage in children, but to be honest the kids were more interested in following the game on the screen. It's not as if it's overly complicated, after all.

— If you ignore the educational claims made for *Gelfling Adventure*, it's a nice game for the younger members of the family. However it's obvious that it's aimed at the home education market.

It is a sign of the times that games have to be wrapped up in

Great way to get the kids involved in adventures!



Jen wonders which way to go

this way, rather than being sold simply for the fun they might bring. The trouble is that once you start describing games in these terms, where do you stop?

For example, my kids really enjoy a game which develops their eye-hand coordination, fine motor control, pattern recognition, and strategic skills, while introducing notions of ordinality and familiarity with large numbers. It's called *Pac-Man*.

Of course, the children who tried *Gelfling Adventure* were oblivious to its beneficial aspects — they just enjoyed playing it.

It would be nice to see a family pack which contained both the adult and junior games, but at present costs the price of one would be prohibitive.

Title: Gelfling Adventure
Author: Al Lowe + cast of thousands
Publisher: Sierra On-Line
Requirements: Any Apple II with 48k

They wanna tell you a story...

I HAVE a sneaking suspicion that although Sierra On-Line published *Story Maker*, it was actually sponsored by the disc manufacturers.

Basically it's a program which enables children to write and illustrate stories — so why am I suspicious?

Well it needs a new disc for each story, and it's so much fun to use that the kids are going to be begging for more discs so they can write more stories.

Once you've booted the master program you are presented with four options — read the instructions, prepare a new story disc, work on a story and quit.

The first is self-explanatory while the second simply



Jen and Kira — stars of a new adventure for younger users



First make your title page...

prepares a blank disc – there's even one supplied with the package, along with 10 pretty labels, a book of tips and a handy reference card.

Working on the story gives a new menu allowing a choice of making a title page, writing the story, drawing the pictures or reading the story.

Opting to write the story yields a mini word processor, with all the major commands shown clearly at the bottom of the screen.

On an Apple IIe or IIc the shift key functions normally. If you have a II or II+ without shift key mod then Ctrl-S puts the next single letter in upper case.

With the on-screen prompts for the commands, any child who is used to the keyboard would find it easy to write a story – at least the mechanics of it are easy. Of course the interesting part of a story is its creation, and that's where the book of tips comes in.

This gives some hints on how stories are put together and discusses elements like the setting, theme, characters and so forth. It even gets onto such things as metaphors, dialogue and the distinction between first and third person writing.

It's all quite nicely explained, but isn't essential if the child is eager to make a start. After all, every child can tell a story – the book of tips merely provides a good tutorial on the techniques of composition.

If you opt to draw the pictures you are presented with a bordered hi-res screen. Again the control keys are shown at the bottom of the screen so the child doesn't have to commit them to memory.

Drawing can be done with joystick, touch tablet, keyboard or mouse, with single-pixel

movement available from the keyboard. There are line, box and circle drawing modes, with a painting mode to fill in the colour and an undo command to remove the last action.

As with all freehand drawing systems, this one takes a bit of getting used to. Response to the joystick seemed a little slow in circle drawing mode, but it was not really a problem.

Of course you don't have to write all the story and then illustrate it. You can move between the two activities, and you can edit the text or change the pictures.

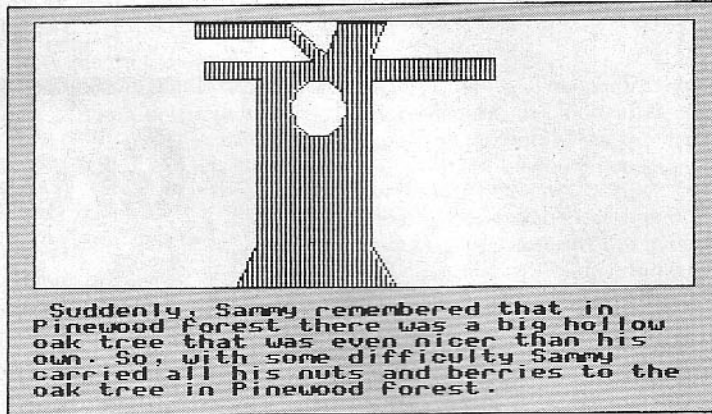
The pictures are positioned using Ctrl-P while in text mode. This command yields a catalog of available pictures (including a "new picture" option). Once the picture is selected its title is inserted in the text at the appropriate point.

If you think you've finished, you can read the story. The disc is self-contained and doesn't require the master at all so you could give the story to a friend with an Apple. On booting the title page appears and any key other than Esc will take you into the story.

If you decide that it's still not honed to perfection you must reboot the master disc and select the option to work on a story. You can then load your story back in and carry on with the creative process.

The only omission worth mentioning is the lack of a print option. At least that would allow you to take a hard copy and then recycle the disc, or send the story to someone without an Apple.

All in all this package strikes a good balance between power and ease of use. The word processor and the graphics facility are sufficient to produce



... then write the story

a reasonable finished story, yet are simple enough (and well-presented enough) for most children of story-writing age to manage.

In fact it's so much fun for children that I've taken to leaving my important discs well out of reach. Maybe I could get the kids to write and illustrate some reviews for me. Come to think of it, I should have got them to write *this* one.

Title: *Story Maker*
 Author: *Bobbit*
 Publisher: *Sierra On-Line*
 Requirements: *II/III+/IIc/IIe*

Blast it – then try a warplink

IF you read the American computer magazines the name of Stellar 7 may well be familiar

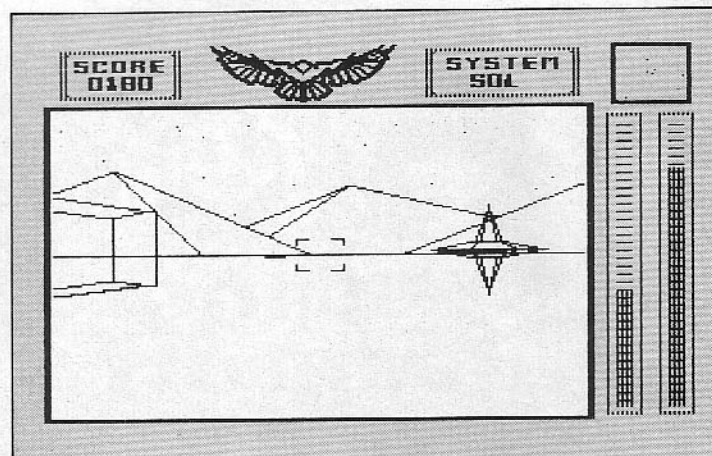
to you. Until recently it's been advertised by the Software Entertainment Company, but now it's been released as part of the Penguin catalogue.

In fact the box says that the game is copyrighted by the Software Entertainment Company, but the manual says that it is copyrighted by "dynamix". Fortunately you don't have to be a copyright lawyer to play the game.

Arcade fans might recognise the basic formula as deriving from Battlezone, but instead of a tank you are now commanding Earth's most sophisticated fighting machine, The Raven, and must battle through seven star systems to reach your ultimate goal.

Yes, once again it's time to blast everything in sight as you carve your name into the history books, or at least the high-score table. Only the names have been changed to confuse the innocent.

The Raven has a few things which the arcade tank didn't have. For example, an invisibility cloak lets you hide from the Arcturan hordes and protonic



Heading for the warplink

CLIFF'S COLUMN

This year, next year, sometime we'll write it!

QUITE frankly, I don't believe it. I'm sure another year hasn't passed already. Own up . . . who's been messing about with my space-time continuum?

Nothing seems to stand out particularly from the past year, although I wouldn't mind £1 for every minute I spent playing **Lode Runner**.

The arrival of a Macintosh on my desk opened up a whole new style of playing. Games written specifically for the Mac – as opposed to those which are merely translations – are now starting to appear. Watch out for my review of **Mouse Stampede** from Mark of the Unicorn.

Sierra On-Line continues its trend of interesting collaborations. In the past we've seen the firm working with the Muppet people to produce **Dark Crystal and Gelfling Adventure**, and with Sydney Development to produce **BC's Quest for Tires** and the Wizard of Id series.

This year we should get to

see the outcome of On-Line's collaboration with the Walt Disney stable. As you might imagine, these offerings are aimed at the younger members of the family.

The games will feature such favourites as Winnie the Pooh, Mickey Mouse and Donald Duck. From what I've seen of the advance publicity it looks as though the style will be for "different each time you play" type games. This should give them a longer useful life and therefore be better value.

The use of A.A. Milne's Pooh is just one example of British authors featuring in games

software. Arthur C. Clarke has been working with software house Trillium to produce a game of **Rendezvous with Rama**. Even if you've read the book, you might be interested because Clarke has written a secret new ending.

You may also come across Ray Bradbury's **Fahrenheit 451** and Michael Crichton's **Amazon** if you keep an eye on Trillium. I'll be reviewing Amazon in a few month's time. You might be pleasantly surprised by the price of Trillium games, too.

Douglas Adams has been working on what must surely be

the definitive version of his **Hitch-Hiker's Guide to the Galaxy**. This should find its way across the pond from Infocom in the near future.

All in all then, there's plenty to look forward to in the coming year. For those who think we neglect strategy games, we've even got a few lined up in the review pipeline.

Yet another year has passed without Denise and I finishing our adventure game, but at least we've now got **Adventure Writer** ("your own adventure program the first time you try") to help us. This year . . . next year . . . some time . . .?

shields protect you from enemy fire.

Unfortunately your biphasal thunder cannon only fires two shots per round before it needs reloading. You'd think a civilisation capable of producing the technological wonders of the invisibility cloak could manage better than two shots per round,

wouldn't you?

You also have a gravitic scope (that's it – the square box in the top right hand corner of the screen) to locate your enemies, complete with a zoom lens facility.

The two indicators down the right hand side show the shield strength and the energy reserve.

Each time you are hit the shield loses some energy. When the shield is all gone so are you.

The energy "cistern" doesn't hold much energy but can be replenished at a fuelbay, assuming you can find one. I wonder if the cistern has a plasma ball-cock.

The other word which amuses me in the manual is the "warplink". The idea is that once you've killed enough people in the star system a warplink appears and flying into it causes you to re-materialise in the next system. To put it another way, it's a way of progressing from one level to the next.

I wish they'd hyphenated the word after the first four letters, though. I once read it as "warplink" and now I can't see it differently!

If my comments seem a little jaded I'm probably not being entirely fair to Stellar 7. It's as good an example of the genre as I've seen, with excellent 3D wire

frame graphics, smooth animation, sound toggle, pause facility and self-destruct mechanism.

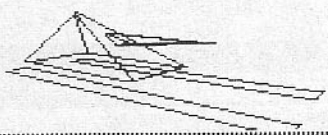
Actually, the self-destruct is a little unnecessary with so many different varieties of Arcturan mega menace out to get you.

If you've got a friend with a Commodore 64 you can buy a copy of Stellar 7 to share between you. The disc has the Apple version on the back and the Commodore version on the front.

Despite the familiarity of the formula Stellar 7 is difficult enough to be engrossing. If you're a true arcade fan it doesn't matter whether it's Gir Draxon or Wellington Womble's flagship you have to destroy.

Title: Stellar 7
Author: Damon Slye
Publisher: Penguin
Requirements: Apple II+
//IIe//IIc

MISSION BRIEFING



Sandsled

ARMAMENT: Low Laser 2 shot(s)/round
PROPULSION: Rocket Thrusters
SPEED: 200 kph ARMOR: .1 meters

The Sandsled's runners allow it to operate only on those planets which have a sandy or icy surface.

A preview of the opposition

COMPUTERS have become the ubiquitous tools of modern business. As more and more people find out the advantages they can offer, they are beginning to crop up in all kinds of unusual places.

Computers still tend to be equated with modern, antiseptic-looking offices. But they are just as much at home – and have much the same benefits to offer – down on the farm.

Today's farmer has to be as much of a businessman as anything else. Cash flow, that bane of many a business, is as important to him as to any other businessman. And the farmer of today has to cope with reams of paperwork, including monthly VAT returns.

Profit margins too are under increasing pressure. It is more important than ever for a farmer to keep a close watch on the day-to-day running of the business side of his farm.

An increasing number are now using micros to do so, and the most popular machine is probably the tried and trusted Apple IIe.

Many of the problems which modern farmers have to tackle are ideal for the introduction of computers. Dairy farmers, for example, now have to adhere to strict production quotas.

The farmer who produces more than his quota is penalised for doing so. Yet if he produces less, his dairy herd is obviously earning less than it could.

Up-to-date sources suggest that several thousand farmers in Britain now have systems installed, and the number appears to be growing steadily.

There are many specialised farming software packages on the market, including applications designed for the management of crops and dairy or pig herds.

An acknowledged leader in the field is Farmplan Computer Systems of Ross-on-Wye, Herefordshire, which supplies hardware – mainly Apple – as well as software.

Its complete farming packages enjoy a high reputation for being both powerful and easy to use. And well they might be since they were written, not by computer programmers, but by farmers themselves.

In addition to these, many well-known business packages such as spreadsheets which allow the setting-up of financial

Apples cropping up down on the farm

BILL HILL looks at the role of the Apple in helping today's businessman farmer get the most out of his holding

and other models are finding applications in farming.

But the bottom line for any business is whether a computer installation is able to repay the money it costs to purchase, and the time it takes to learn how to use it.

A typical farmer who now has considerable practical experience of running an installation is Mr James Stobo, well known throughout the country as a former president of the National Farmers' Union.

Mr Stobo farms 780 acres in Berwickshire in the Scottish Borders and has been using an Apple to do so for the past three years.

His hardware consists of an Apple IIe with two floppy disc drives and an Anadex printer, purchased from Edinburgh main Apple dealers McQueen Systems. The software was provided by Farmplan's Scottish subsidiary, Pentland Farmplan.

Mr Stobo runs two main software packages – Farmplan's financial suite, called Program Plan, and Visicalc. Among the built-in provisions of Program

Plan are a payroll facility and automatic VAT calculation.

"I find it a very sane agricultural software package. We use Visicalc to build models for ourselves", he said.

"We have a cropping model we use which does fields by size, variety of seed sown, and fertiliser. It gives us our total order requirements for both, and it also tells the tractor men what to sow on which field.

"One aspect we have done some work on is a veterinary program, again on Visicalc, which is an aide memoire to the shepherd for work to be done that month. Eventually it will also give us an order requirement for the next month for anthelmintics and so on.

"We have other Visicalc models for buying fertiliser, mixing feeds and so on.

"I'm very satisfied with the system. The biggest problems in introducing it were those of the clot driving it – me.

"But the Farmplan User Group gives a degree of tuition, and you constantly get benefits like updates and new develop-

ments.

"The system cost upwards of £3,000, but it was money well spent. I'm very happy with it, even though I'm still learning a lot about it – but I feel I'm much better able to control things than before.


"The big thing is that you don't have to input any more work than when you are using books – but you get much more out".

Everything to do with computers is developing at a tremendous rate, and hardware prices are now falling steadily. As a result, it is possible that the farmer setting up a system today could do so cheaper, depending on his requirements.

Pentland Farmplan offer a smaller system based around the Apple IIc, with a basic accounts package, for just over £2,000.

Future developments may also include porting the packages across for use on the Macintosh, since its ease of use makes the Mac ideal for farmers, many of whom still know very little about a micro.

appletip

 The ability to BRUN or EXEC the boot file is normally only available to those people with disc patching facilities which allow them to change the boot command index from RUN to BRUN or EXEC.

The patching method is done by changing byte \$42 on track 0, sector \$0D from \$06 (RUN) to \$34 (BRUN) or \$14 (EXEC).

There is however a way for less well-equipped Apple users. Boot a normal DOS and change the command index as follows: For BRUN then POKE 40514, 52 and for EXEC POKE 40514, 20

or if you want to revert to a normal DOS then POKE 40514, 6.

Then put a blank disc in the drive and type INIT 'filename' where filename is the name of the program you want to run on booting the disc.

This will then format a disc to run the program filename on booting. You will then have to DELETE 'filename' as it is always saved as an Applesoft file.

If you now put on the disc the program you wish to run on booting and call it the same as filename then it will be run on booting.

Allan Ogg

Find what's missing, then Cloze the gaps!

HUGH DOBBS examines the teaching method known as Cloze procedure and then reviews Clozemaster, an Apple package using that approach.

CLOZE procedure is a method of teaching, learning and testing which all teachers have been using in one form or another all their lives.

The name derives from Gestalt psychology: if you have four equal line segments arranged in the form of a square but not quite meeting at the corners, the figure is usually perceived as a square rather than as four separate line segments so that it becomes a closed, single entity.

This effect is called closure, hence the name Cloze.

In language teaching the processes involved are far more complex than in this simple example. For a full discussion of Cloze methods and their advantages and limitations, and the psychology behind them I would refer you to James Rye's excellent book on the subject.

We were so impressed with it that we have actually bought a second copy.

Some of my earliest memories of school involve exercises which began like these:

Remplacez les mots en parenthèses...

Líon na bearnaí seo leanas leis na focail atá idir lúbíní...

Complete the following sentences, inserting the correct preposition in each...

... and so on. This is one, very directed use of Cloze. The focus is on one small grammatical topic, and the point of the exercise is to ensure that you learn the imperfect subjunctive or whatever it may be.

Students generally regard it as somewhere between a

necessarily evil and an outright imposition. The subject material is generally boring and repetitive.

If you abandon the directive approach, simply choose some suitable passage of text – with a reasonably high incidence of the imperfect subjunctive, if you insist – and delete words from time to time, the process of filling-in the blanks becomes far more rewarding and educational, and is perceived by the student as a game rather than work as such. See the example below.

As you have probably noticed, I used a different approach in each verse. In verse one I deleted every tenth word, which means that there is a great deal of semantic information surrounding each gap and (other things being equal) it is an easy test.

How easy depends on semi-random factors of syntax – which actual words get deleted.

In verse two, I deleted every fifth word, which would normally produce a rather difficult test.

In verse three, I have deleted the articles, the pronouns and the conjunctions. You probably found most of the answers were obvious – maybe you had 'I' for 'we'.

In verse four, I deleted the nouns, which usually makes things very difficult, but in this case there is enough surrounding information to identify most of them. Whether it should be animal or Elephant is purely a matter of style. If you got it wrong, complain to the author.

In verse five, I deleted every fifth word, but left a clue to the length of the missing words.

In verse six, I have added a shape clue: tall letters such as *bdhk* ... are replaced by 'Z', small letters *ace* ... are replaced by 'z', and ones with descenders *gjp* ... are replaced by 'q'. This shape would become 'zZzqz', which carries slightly more

information than the length alone.

Verse seven has initial letters as well as lengths, while the last verse is not strictly a verbal Cloze test – but it is literally analogous. Surprisingly, deleting every second letter produces something far more readable than what you get by deleting every second word.

Cloze tests have a multitude of uses and test a wide range of different skills – they can of course be used backwards to assess the suitability of a particular book for your students as well.

The simplest version is the one where words are deleted at regular intervals. This is obviously an ideal computer application, and is the approach taken by the Wida Software package.

This includes a master disc and a student disc. The master disc allows you to type in a passage of text and store it on

The Parable of the Blind Men and the Elephant by John Godfrey Saxe.

*It was six men of Indostan
To learning much ---,
Who went to see the Elephant
(Though all of --- were blind),
That each by observation
Might satisfy his ---.*

*The First approached the ---,
And happening to fall
--- his broad and sturdy ---,
At once began to ---:
"God bless me! but --- Elephant
Is very like --- wall!"*

*--- Second feeling of --- tusk
Cried, "Ho! what have --- here*

*So very round --- smooth --- sharp?
To --- 'tis very clear
This wonder of --- Elephant
Is very like --- spear!"*

*The --- approached the ---
And happening to take
The squirming --- within his ---
Thus boldly up he spake:
"I see," quoth he, "the ---
Is very like a ---!"*

*The ----- reached out an eager ---,
And felt about the ----:
"What most this wondrous ----- is like
Is very -----," quoth he;
" 'Tis clear ----- the Elephant
Is very ---- a tree!"*

*The Fifth, who chanced Zz touch the ear,
Said: "z'zz the blindest man*

*Can ZzZZ what resembles most;
Zzqz the fact who can
ZZzz marvel of an Elephant
zz very like a fan!"*

*The Sixth no s---- had begun
About the b---- to grope
Than, seizing o- the swinging tail
That f--- within his scope,
"I s---," quoth he, "the Elephant
I- very like a rope!"*

*Axd xo xhxx mxn xf Xnxoxtxn
Xixpxtd xoxd xnx lxx,
Excx ix hxs wxw oxixxn
Xxxexdxn sxixf xnx srxnx.
Txoxgx excx xaxtxy xn xhx rxgxt,
Xhxy xlx wxrx íx txé xrxnx!*

... the missing words, etc., are on Page 59

the student disc, the student disc sets the test.

The user may select any of the Cloze texts on the disc, and then choose the frequency with which words should be deleted (five to 15 being the allowed range).

The text is displayed with numbered gaps, and the student can choose a gap and suggest a word to fill it.

As with Wida's Storyboard package — by the same author — the EFG high-resolution character generator from Microsource Eurosoft is used to provide lower-case and European characters as required, and words typed in by the student are matched against the deleted words irrespective of case.

Unfortunately I have received two versions of Clozemaker for review, with identical disc labels but with incompatible text-file layouts. The earlier version supports English, French and German text and selects the

correct character-set automatically, while the more-recent one only allows English text, although it is still labelled "English/French/German".

This might be forgivable if the actual Cloze-testing program were written in Applesoft and therefore modifiable — but in fact it has been compiled and it is far from simple to modify compiled programs.

I hope they will return to the original approach, and indeed I hope Microsource Eurosoft will get around to adding a Spanish/Irish character-set to EFG.

All it would take for Irish is the five vowels with accents ('), Spanish would need an n with a tilde, c-cedilla and an upside-down exclamation mark ... nothing serious.

Since Cloze passages have to be significantly longer than would fit on one screen, the testing program allows the text to be scrolled a line at a time by pressing the space bar. When

the end is reached, it starts again at the beginning until all the words are correctly identified.

You can ask for help (h---), or cheat on one word, or give up altogether.

When you finish you can see your score if you wish — usually it is higher than you expect, which is comforting.

One feature of official Cloze tests is that the first sentence is usually free of gaps, so as to give an easy start. This is not possible with the present package.

In fact it is not possible to vary the position of the first gap, so that if you repeat a test with the same gap frequency you get the same words deleted. Both of these problems could be dealt with easily — if only I could get at the source code — by putting in one more option at the start of the test — where would you like the first gap (10-20) ... ?

I am interested to find that

compiled Basic has the same garbage-collection problem as Applesoft, and like Storyboard the program gets hung-up for long enough to worry the student.

Again this could be fixed by inserting an XX — FRE(0) at some appropriate point ... in the source code.

Aside from the points mentioned, it is a valuable and enjoyable resource, and has been built into two mixed-media teaching packages so far, of which more later.

Having spent much of the summer meditating on Cloze methods (when I wasn't involved with Goedel/Escher/Bach) I have come to the following conclusion.

Pragmatic considerations invalidate experimentation utilising bombastic, esoteric, euphuistic circumlocutions, especially incorporating ananticipated semantic convolutions.

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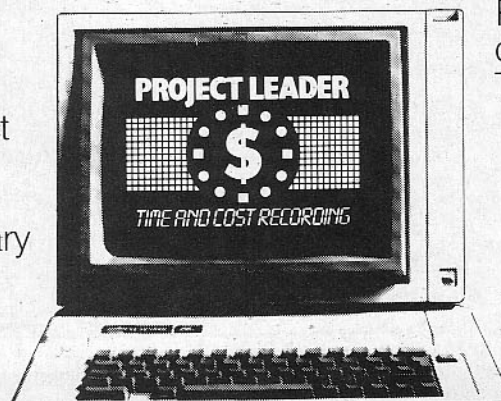
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**The perfect business partner
for your Apple.**

The second in a series of three articles by CORNELIS BONGERS in which he explores the world of the 6809. This month — the Flex operating system.

IN last month's article we looked at the technical features of the Rehaflex board and some possible fields of application were examined.

Now we'll discuss Flex, which is one of the two operating systems supported by the board. It must be emphasised though that not all the Flex software mentioned comes with the board.

Supplied with it is the Flex operating system (not the Flex utilities, diagnostics, Pascal and Xbasic) and the Flex editor/assembler.

It will be assumed that the reader is familiar with Apple DOS 3.3. This operating system will serve as a reference point and comparisons with Apple DOS will be made frequently.

Flex, from Technical Systems Consultants, is probably the best know operating system for the 6809. It occupies 8k and resides in the memory range \$C000-\$DFFF. Note that this implies that a 16k RAM card is required.

In operation Flex is similar to DOS 3.3, so Apple users will need little time to become familiar with it.

The documentation is splendid. Apart from a clear description of the commands, the manual contains extensive information about Flex internals.

The advanced programmer's guide has a list of the important internal locations and many entry points of the user-callable system routines are listed and described.

There is even a section that explains how to write and install your own commands. The file management system is also extensively documented.

Some 20 functions are available for disc I/O so machine language programmers will have no problems in communicating with the disc.

When working with Flex — I used version 3.01 — several differences with DOS 3.3 soon became apparent. The first is that Flex has different file naming conventions.

Similar to CP/M, the file type

Now Flex your muscles on a 6809 board

is indicated in an extension of the file name. For example, a binary file is indicated by the extension BIN and a text file by the extension TXT.

This has some advantages when manipulating files. One is that all binary files can be deleted from a disc by specifying ZAP..BIN.

Furthermore, when creating a textfile with the editor and assembling it, it is convenient that the textfile and the binary file can have the same name.

The extension of the filename needs only sometimes to be entered by the user as most utilities and programs append a default extension to the filename (the editor, for example, adds .TXT).

Another point in which Flex differs from DOS is that it has almost no memory resident commands.

When, for example, the CAT (catalog) command is issued, the command driver is loaded from disc first. After that, control is transferred to the loaded code, which subsequently displays the catalog of the disc in the specified (or default) drive.

The fact that all commands except two reside on disc explains why Flex itself consumes a relatively small amount of memory.

However the disadvantages of disc resident commands are that the execution of a command takes more time than execution of a comparable command under DOS 3.3 and the system requires that a disc with Flex commands be in the

system drive.

Due to a different disc organisation, disc operations themselves are also considerably slower than under DOS 3.3, but disc storage is slightly more efficient. For example a file of 200 bytes occupies one sector on a Flex disc rather than two, as would be the case with DOS 3.3.

Since disc resident commands impose less RAM memory constraints, the Flex command set could be made considerably more powerful than that of DOS 3.3.

This applies in particular to commands for manipulating textfiles. For example there is a command BUILD to create a textfile directly from the keyboard. A created file can also directly be listed with the LIST command or be sent to the printer with the P,LIST command.

LIST has several options, among others that to list a user-specified range of lines from the file only. Similar to DOS 3.3, Flex has an EXECUTE command to execute a file. Files can also easily be appended with the APPEND command.

Unlike DOS 3.3, Flex has a COPY command which can be used to copy an entire disc or selected files. For instance, COPY,0,1,C,B,.TXT,O.SYS will copy all files whose name starts with a C or B, all files with the extension TXT and all files whose name start with an O and which have the extension SYS, from drive 0 to drive 1.

Another nice feature con-

cerns the redirection of input/output. The I command redirects input from the keyboard to a specified file. As an illustration, specifying I,ANSWER,REGRES lets REGRES pick its input from the file ANSWER.

With the O command, output can be directed to a disc file, thus O,CATALOG,CAT creates a file CATALOG on disc with the contents of the catalog.

Some other Flex commands are: ASN (to change the system or working drive number), DELETE, VERIFY, SAVE (similar to BSAVE), PROT (similar but more extensive than LOCK) and JUMP (comparable to the Basic CALL instruction).

Flex also has a PRINT command that stores output for the printer in a queue (in memory). After storing the output, control returns to Flex and you can continue with your work. The file will meanwhile be printed.

It should be mentioned that no timer board is needed to use this feature, for the 6502 is used as a timer. When the 6809 is executing programs the (idle) 6502 is decrementing a counter.

If the counter becomes zero (and the PRINT command is active), the 6502 interrupts the 6809, which subsequently sends a part of the file in the print queue to the printer.

If the printer buffer is full the 6809 resumes execution of the program it was running.

There is a problem related to this setup though. If Flex needs keyboard input, it invokes the 6502 and the 6502 in turn calls the monitor RDKEY routine. Although this leads to the highest attainable level of Apple hard/software compatibility, the consequence is that when the 6502 is waiting for input (in RDKEY) it obviously cannot interrupt the 6809 any more, so printer output stops.

Since "waiting for a key" is a frequently occurring operation when editing or entering text, this means that the spooling mechanism does not always work efficiently.

However when carefully organising your work so that a program involving little I/O is executed while printer spooling

takes place, the method works all right.

Observant readers will have missed several commands present in DOS 3.3 but not in the Flex command set. This is true indeed. Flex lacks, for example, a BLOAD-like command.

Fortunately there is a separate library containing many useful Flex utilities. Apart from a BLOAD/BRUN like utility (the RUN utility) the library also contains the following utilities:

CHECK	Compares two disc files.
CMPMEM	Compares a file on disc with its memory image.
DIR	Gives an extended directory with DATE of creation.
DUMP	Displays a binary file in hex/Ascii.
EXTRACT	Creates a file from segments of other files.
FIND	Locates a user-specified string in a file.
MAP	Finds the load addresses of a binary file.

If the utilities are stored on the system disc there is no difference between entering a Flex command or a command that invokes one of the utilities. Both are entered by typing the name of the command or the utility, eventually followed by a specification list. It goes without saying that this is very convenient for the user.

Apart from the utilities, the Flex user has an extensive set of diagnostics routines available (with 100 pages of documentation).

They include RAM and disc tests. Additionally there are routines to examine and – when you are lucky – repair discs.

In view of the complexity of the material, several case studies are included in the documentation and these give an in-depth description of how to solve all kind of disc related problems.

The commands and utilities described so far are handy to have around, but without additional software there would be not much use for them. So a key question is: "What else is available?"

Well, in the first place there is a reasonable editor/assembler. The editor is definitely less easy to operate than the 6502 Big Mac editor/assembler, but it compares favourably with several other editors with which I am familiar.

I have heard that a better,

screen orientated, editor Stylograph is available from Great Plains Computer. The assembler supports all the usual features, including macros, and works fine.

Overall users not familiar with the 6809 and Flex – which included me until a month ago – will encounter no real problems in developing their first 6809 programs with the editor/assembler.

Now writing a 6809 program for the first time, entering

the source in the editor and assembling it is one thing. Debugging the code is quite another.

Again, no problem, for the Flex system has an excellent debugger with many options. Operation of the debugger is described in another well written manual. The debugger supports among others:

ASM	Invokes a mini assembler.
DIS	Disassembles code.
DUMP	Dumps code in Hex/Ascii.
FILL	Fills a memory range with a specified byte.
FIND	Finds a string (Hex or Ascii) in memory.
MEM	Examines and alters memory.
PAST	Displays user specified number of last instructions executed (in disassembled form).

Regarding general control functions, there are commands to display or set the registers, to display the state of the "simulated machine" and to count the number of cycles.

As to simulation control, extensive STEP and TRACE commands are available.

Execution of a program can be monitored in many ways. For example, the command B@4330, IF X=FFFF stops simulation at \$4330, but only if the X register contains \$FFFF.

A very valuable feature of the debugger is memory protection. Here a distinction is even made between write and simulation protection, so when the user sets the protection bounds properly there is little chance

that crashes occur when debugging.

The debugger itself keeps good track of the simulation. When I entered JUMP CDOO (the cold start entry of Flex), the debugger followed execution all the way.

After waiting for some time the Flex prompt appeared and several commands, among others CAT, could be executed without problems.

Although I am very content with the debugger, two negative points should be mentioned. The first is that the mini assembler contains a nasty bug which prohibits entering negative arguments in the operand field, such as LEAX -1, X.

Second, the debugger lacks a MOVE instruction, which is often needed when working in machine language.

Another, minor, criticism is that when disassembling code, you have to specify the start as well as the end of the range to be disassembled. This is very inconvenient when you are accustomed to the Apple monitor L(list) command which lists 20 lines by default.

Regarding high level languages, there are a Basic

One new feature is the option to define virtual memory arrays. Operation of the virtual array feature is simple, as is demonstrated by this program:

```

10 OPEN "VIRT" AS 1 :
   REM Open file VIRT on
   REM working drive
20 DIM #1, VI(5000) :
   REM DIM virtual array
30 FOR I= 1 TO 5000 :
   REM fill array
40 VI(I) = I
50 NEXT I
60 CLOSE 1 :
   REM Close file
    
```

This creates a virtual array with 5,000 elements. Each time the assignment at line 40 is executed the associated array element is written to the disc buffer. The buffer is written to disc every 31 assignments.

The total execution time of the program was 540 seconds, or about .1 seconds per element.

Readers who think that with this feature array size is limited only by the amount of free disc space, rather than the amount of free memory, will be disappointed.

Since XBasic allocates only two sectors to the track sector map associated with the virtual array, a dimension of, say, 10,000 is impossible and leads to a "sector overflow" error.

Other typical instructions of XBasic include PRINT USING, IF/THEN/ELSE, SCALE (to increase precision of FP calculations), INPUT LINE, ERR and ERL (contain error number and error line if an error occurs), DIGITS (sets the number of digits to be displayed) and PTR (to find the address of the variable in memory).

Of course XBasic has also all the usual arithmetical and string functions. It lacks a CALL instruction, but since the USR function is supported this is not much of a problem.

XBasic interfaces with Flex by means of the + command.

(XBasic) and Pascal. I haven't yet tested Pascal but XBasic works well.

The main differences between Applesoft and XBasic are that the latter has a better set of disc related instructions but lacks – for obvious reasons – all the graphic instructions, HOME and VTAB.

Readers familiar with the Z80 MBasic will recognise many of the XBasic disc instructions. Implemented are, among others:

GET	Gets a record from disc in the buffer.
PUT	Writes a record from the buffer to disc.
FIELD	Links string variables to the record in the buffer.
LSET	Assigns new value to linked string (left justification).
RSET	Ditto (right justification).

For example, to display the catalog of a disc, you have to specify +CAT.

The internal storage XBasic allocates to real variables is 11 bytes. Two bytes are reserved for the name, one for an internal code and eight for the representation of the number.

The exponent is represented in excess \$80 form and requires one byte, which leaves seven bytes for the mantissa. This results in fairly high precision arithmetic when processing real numbers.

Real variables are displayed by default with a 13 digit mantissa, as opposed to nine digits in Applesoft, but the internal precision at which calculations are done is 16 to 17 digits.

Due to its greater precision, XBasic is slower than Applesoft if real variables are used.

For example, the loop: FOR I=1 TO 10000:NEXT I takes 10.5 secs in Applesoft but 14.2 secs in XBasic. Computation of

1,000 SIN functions takes much more time in XBasic (73 seconds versus 27 seconds in Applesoft), but the SIN function in XBasic gives 12 to 13 significant digits while Applesoft only gives nine.

However XBasic is much faster than Applesoft in handling integer variables. The loop above takes then only 3.6 seconds to execute and the initialisation of a large array to unity with : FOR I%=1 TO 2000:A(I%)=1:NEXT I% goes nearly 45 per cent faster than the corresponding Applesoft program.

The amount of free memory available in XBasic is 28,665 bytes. This is less than in Applesoft, but large enough for the majority of programs. Note though that memory is consumed at a much faster rate when many real variables - 11 bytes in XBasic versus seven in Applesoft - or real arrays - eight bytes per element in XBasic versus five per element in

Applesoft - are used.

But memory usage can be reduced, and speed increased, by using - where possible - integer variables, for these take only five bytes in XBasic versus seven bytes in Applesoft.

Conclusions

Flex provides a good environment for software developers but, being bug free and user friendly, this operating system is also extremely well suited to help beginners find their way around in the new 6809 environment.

Furthermore, the Rehaflex implementation of Flex is excellent. There is even a provision for those who get homesick while Flex is up. You can return to the Apple monitor simply by entering MON and execute the regular monitor commands.

Additionally, since the designers of the Rehaflex software took great care in the choice of the zero page locations used for 6809-6502 communication, it

is even possible to enter and run Applesoft programs without disturbing the Flex interface.

The only condition is that Applesoft must not clobber the area \$800-\$0FFF. This can be prevented by entering POKE 103,1:POKE 104,16:POKE 4096,0:NEW immediately after coldstarting Applesoft (with E000G).

Flex can be warmstarted by pressing Ctrl-Y [Return] (or 300G) from monitor command level or executing CALL 768 from Applesoft.

This high level of Flex/6502 interaction support of the Rehaflex software is in particular very valuable when you want to develop "joint" 6502/6809 software.

In next month's article we will look at the OS-9 operating system.

*Flex is available from:
Technical Systems Consultants,
P.O. Box 2574 West Lafayette,
IN 47906, USA.*



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I have, at last, been seduced by a mouse. One with a very curly 12in tail plugged into a Macintosh. And like all such lovers I'm wonderfully happy with my new partner.

Let me fill in a little of the background. I'm a journalist, reporting for TVam in the North West. I was taught my trade in the newsroom at BBC Radio Manchester, and progressed though Radio London, IRN, Thames TV, and thence to TVam. I've not, therefore, had much experience of print journalism on newspapers or magazines.

For some time I've wanted to remedy that by writing articles for the press, but somehow I never got very far.

A well presented manuscript is a powerful sales aid, but endless retyping on a portable typewriter to get the work just right was enough to dampen the most rabid enthusiasm.

I convinced myself that a word processor was the answer.

So I bought the computer magazines, read the reviews, went to the exhibitions – and got nowhere.

Each time I found a system which looked good, there was always the promise of something slightly better and cheaper just around the corner – if I could only wait a few more months.

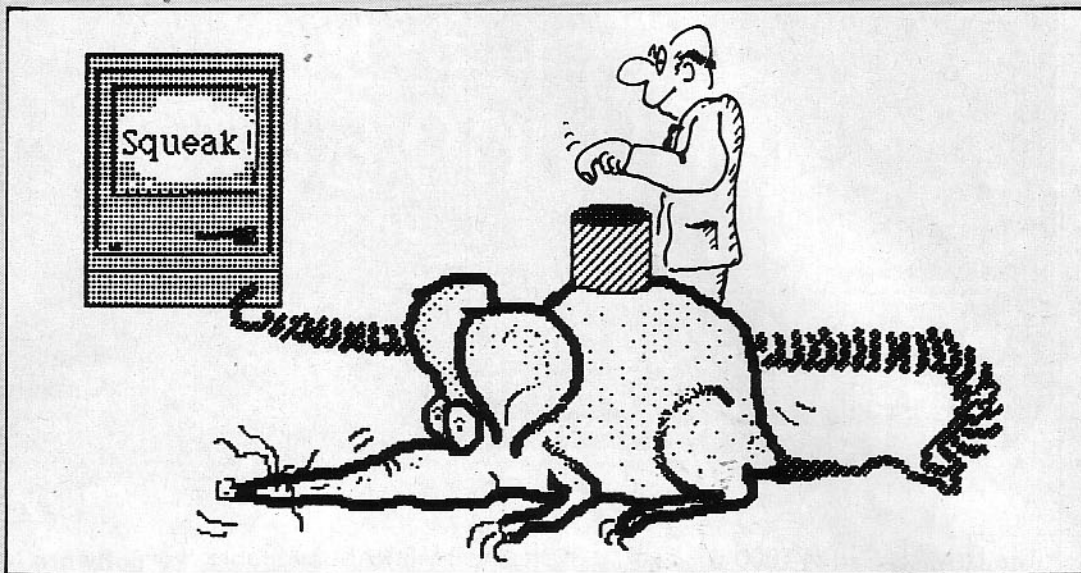
I even found an old plastic ice-cream tub and labelled it "Word Processor Appeal Fund" so that I'd have some money to hand when the mythical purchase date arrived. It became a handy receptacle for small change.

Then I thought, "Get on with it, if you don't buy one soon you'll never write anything!"

So the other week I went to my local computer shop with its array of Apple, Hitachi, Sanyo, Qume, Sinclair and Acorn hardware. I'd decided that I'd go for the bottom end of the business machine range, rather than mess about adding endless bits and pieces to a home micro.

I was first shown Wordstar wordprocessing on a £1,000 Sanyo – and my heart sank.

Maybe I'm getting old or something, but I really couldn't



PETER SHARRATT's lonely confession –

I'm in love.. with a mouse!

face getting to grips with learning all the keystrokes needed to lay out the page and edit the text. For too long I'd had this image of wordprocessing as the byword for ease of operation. And here was my dream being shattered.

Then the girl demonstrating Wordstar, sensing my disappointment, suggested I have a go on the Mac nearby.

Of course I'd read the reviews and thought, "Yeah, that sounds great – but a bit pricey". Tentatively I sat down in front of the little beast, tickled its mouse – and was hooked.

This really was word processing! A novice like me could create documents in minutes.

No learning codes and keystrokes – it was all there in front of me. A ruler at the top, with margins, tabs, line spacing, indentation, and text alignment adjustable with a click of the switch – and you can see what you've done.

And those pull down menus!

Whenever I'd read about them in magazines I'd had visions of meat and two veg on a roll of unravelling wallpaper.

But here they were providing every editing, printing and information facility without the bother of learning a new wordprocessing language. It was a clicking miracle!

And those type faces. Pull down the Font menu with a click of the mouse, and you've got nine different faces to choose from. A tap on the Style menu shows how you can have them printed plain, bold, italic, outline, or shadow in five different sizes.

If this isn't user friendliness, I'm a working QL.

Of course all this fancywork would be pretty useless if you couldn't print the end result, and that's where Apple's dot matrix Imagewriter comes in.

It not only handles all those typefaces in draft, standard and near letter quality, but will draw all your artistic excursions into

Macpaint. And Macpaint just has to be the killer blow to anyone trying to resist the lure of the mouse.

On the ground floor of TVam's London studios at Camden Lock, next to all the videotape machines, is a partitioned area with such polite notices as "This is NOT a thoroughfare – NO ENTRY." Inside is the nearest thing to Macpaint I know.

Many of the graphics, title sequences and maps you see on the TV nowadays are computer generated – and the Macpaint program is merely a less sophisticated version of that.

Our friends on Mariani Avenue, Cupertino, California would have you believe that Macpaint is required for the serious business of properly illustrating important memos and company documents. Rhubarb!

For doodlers, repressed graffiti artists and the grown up children who inhabit the

business world, it's simply addictive.

If I had Mac on my desk in the office I'd never get any work done, because I use Macpaint for cartooning. The possibilities are endless, and the delight of showing, for example, a complicated suit pattern with the flick of a microswitch is marvellous.

A combination of Mac-generated and freehand drawing provides interesting results. For example, everything in the mouse drawing apart from the man pressing the button is Macpaint originated.

The program allows you to create quickly cartoon images which would take a graphic artist a while to sort out.

And the half tones and shading – because it's all dots to start with, obviate the need for drawings to be screened before printing – thus saving the printer time and money.

Take the multipatterned mad scientist below. He's drawn with Mac's pencil, then a selection box is pulled around him. Click Copy on the edit menu, and a mad scientist clone is ready to be placed anywhere else in the drawing.

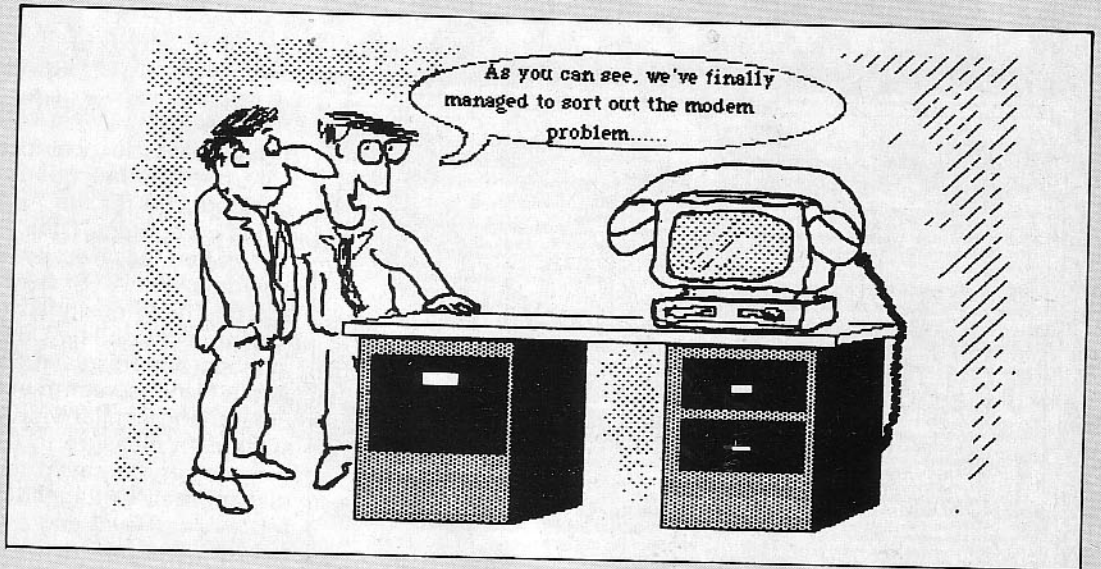
I want him on the original scientist's hand, so that's where I place another selection box.

The size of the new scientist depends on how big a box you draw. Click Paste in the edit menu, and up pops a miniature scientist neatly in the box.

But that's not all ... I need him facing the original. No problem! Just click Flip Horizontal in the edit menu, and the mini scientist turns around to face his creator.

Then I can go to town on the scientist's clothes by brushing in preselected patterns. The loony boffin's mainframe computer is then added to the picture, along with brushed in floorboards and receding gloom.

It's also possible to draw with Macpaint, and then touch up your artwork by hand, as in the modem cartoon. After the print-out, the figures, computer and handset were all outlined in black pen. It smooths out some lines, while still retaining the unique, slightly jagged appearance of computer generated



graphics.

As I said, the possibilities are endless – I'm discovering new methods every day.

And the problems?

Well, I haven't had the beast long enough to find many. On three out of the four Macintoshes I've seen working, there can be intermittent flashing of lines of text, which seems to appear arbitrarily during typing.

If, like me, such eyeball irritation gives you headaches, then it's something you can do without.

I phoned Apple – Hemel Hempstead, not California – and they couldn't tell me why it happened. Both they and the shop made helpful noises and it hasn't made me feel ill yet. In fact the screen is mostly flicker free, and of course the bright-

ness is adjustable.

Something I wish would disappear is the high pitched whistle occasionally emitted.

The heat generated along the left side and top of the Mac casing is also a worry. With no fan to dissipate the heat there's been some nifty design work among the non accessible innards to prevent a meltdown – which seemed a possibility during the hot summer. Let's hope it stays OK.

If you stick with the basic one disc Mac then disc copying can be a bit of an arm-acher, playing "After you Cecil – no after you Claud", with the single 400k disc drive.

So if you add in the extra drive and the Imagewriter printer, the major irritation has got to be the price. I had a

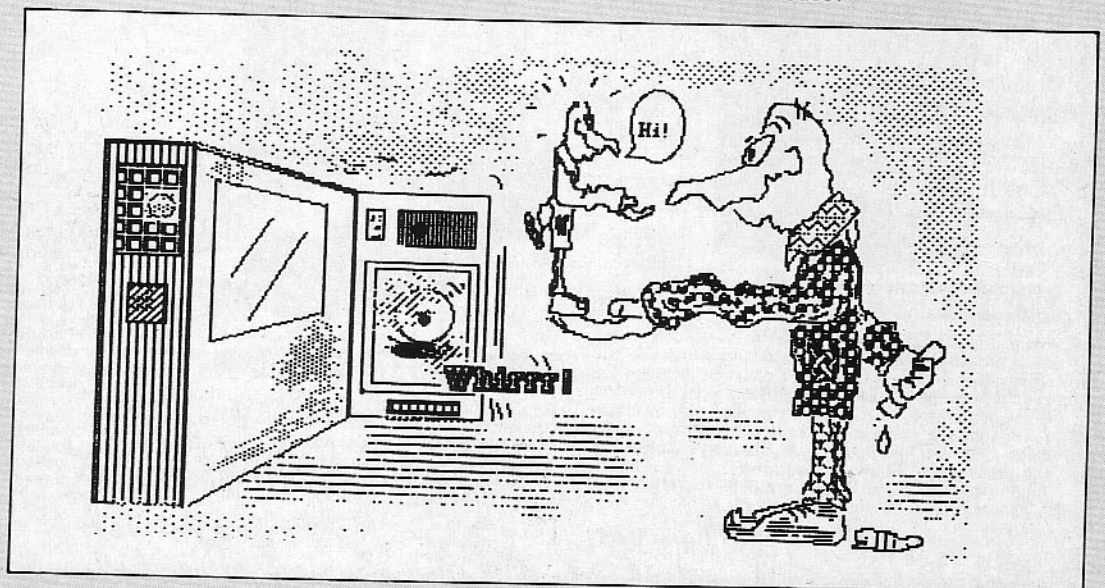
budget limit of £1,500, and ended up spending another £1,200 on top of that.

It makes me wince just to type it out.

Macwrite and Macpaint programs are included, but when Apple charge £38 just for the Imagewriter cable and instruction manual alone, it has to be over the top.

I don't smoke or drink. I have been saving for ages and I am kind to my mother in law. So my wife Sue (who'll also be Macwriting) was very understanding when the building society pass-book reappeared, greatly depleted.

If I'd had any sense I would have waited until the price dropped. But what can you do when you're in love with a mouse?



Apple User is often asked questions regarding the compatibility between the Apple II and the ITT 2020.

In this article DAVE MILLER takes a comprehensive look at the relationship that exists between the two machines.

THERE are several Apple look-alikes available, but many are not quite compatible with the Apple.

Probably the largest group of such machines in the UK is the ITT 2020 – sometimes called the 'Silver Apple' because of its colour.

Many hardware add-ons for the Apple also work with the ITT. These include most printer interface cards, those RAM cards which do not require a main memory IC to be replaced with a lead from the card, disc drive controllers and serial interfaces.

Cards which will not work on the ITT are those which require very critical timing from that machine.

These include co-processors such as Accelerator, Mill 6809 and the Z80 Softcard, as well as those devices which require Direct Memory Addressing (DMA) such as the Hal Scorpio multi-floppy disc unit.

A surprising incompatibility is with internal Epson printer buffers such as the Wizard EBI. These buffers seem to be very time critical, and on the ITT the data is corrupted.

The Applesoft and Integer ROM cards do not work with the ITT simply because its V-slots in the back are in slightly different places from those in the back of the Apple. Consequently, the switch on the back of the card has no corresponding slot.

Other devices which do not work on the ITT are those which require the use of paddle three and switch two – both absent on the ITT.

Such devices are the Robocom Bitstik graphics system, most 80-column cards and many of those systems which require some sort of 'dongle' in the games port.

Unusual items of hardware known to work on the ITT are: Graphics Tablet, Versawriter,

Apple and the 'Silver Apple' – all a question of timing...

Applemouse, Snapshot II, Zapple music card and some 80-column cards.

The Zapple card requires Applesoft, not Palssoft to be active.

Most 80-column cards can actually run on the ITT but require input from switch two about the state of the Shift key.

I was able to use the Vision-80 card on my ITT provided I set both hi-res pages to white and did not use hi-res graphics.

The only 80-column card totally compatible with the ITT is the Videx Videoterm. The Ultraterm should also work but this is not certain.

Most ITT disc drive controllers are limited to DOS 3.2 because the card is of a slightly different design. For most ITT drives, the card can be replaced with an Apple interface card.

Some drives will require speed adjustments but others seem unable to work with DOS 3.3 and will require an expensive hardware modification.

The ITT has a few odd quirks such as a very odd keyboard conforming to no known Apple revision. There are also problems with lower case character generators.

There seems to be precious few remedies for these hardware problems. Peanut Computer markets a Z80 card for the

ITT and Pete & Pam is developing a plug-in board which alters the internal timing of the ITT – thus making it compatible with almost all interface cards.

It apparently restores the lost paddle and switch as well as restoring normal Apple graphics. The best method is to experiment with any hardware on your ITT before buying it.

There are a few old ITTs with integer in ROM but most have ITT's Palssoft version of Applesoft. This appears almost exactly like Applesoft but there are some differences.

The most obvious change is the catering for the increased graphics. Only one graphic construct is not supported by Palssoft:

H PLOT A,B TO C,D TO E,F

has to be replaced by:

H PLOT A,B TO C,D: H PLOT TO E,F

ITT graphics run at about two-thirds the speed of Apple graphics.

All other Applesoft commands work on the ITT.

The ON ERR bug in Applesoft has been rectified, and the patch as supplied in the Applesoft Reference Manual might crash the machine.

Because of the different graphics processing routines, many

of the Palssoft entry points are slightly different from those in Applesoft, causing havoc with those programs which directly call Basic routines.

These programs include compilers such as Tasc and Expediter.

The monitor routines in the Palssoft ROMs are the standard Apple non-autostart monitor and all entry points are maintained.

Such systems as the UCSD Pascal/Fortran work on the ITT although there are a few problems with getting lower case and square brackets from the keyboard. Also, the graphics work incorrectly as with Applesoft.

Most of the best programs written for the Apple are in machine code and, providing these do not call any routines in the Basic ROM, they will work on the ITT, but there might be graphics problems.

Note that machine code programs which only call the monitor and not Basic will still work.

In fact many of the entry points are still the same for the Apple as the ITT, such as many of the floating point routines and the USR(X) entry points given in the Applesoft Reference Manual.

Most good games and programs work on the ITT. For example, Locksmith and other bit copiers like Nibbles Away, Visicalc, graphics programs such as Bill Budge's 3-D Graphics System, Apple World and Mousepaint.

Many Applesoft programs will also run on the ITT but some features might not act as expected. These include colour graphics which quite often turn out to be a mess on the ITT.

Many software problems can be removed by replacing your ITT ROMs with Apple ones.

I advise replacing all the ROMs since there seem to be some differences in the floating point as well as the Basic ROMs. They should be available from most Apple dealers.

If you don't want to pull out ICs, you could buy a RAM card such as the Ramex-16 and load in Applesoft.

A note of warning: although Applesoft and Palssoft are different, they can not be differentiated by DOS, so resets, cold starts and boot-ups usually

result in the RAM card being disabled.

If Applesoft is used, there will be the following graphics problems:

When the ITT was designed it was decided to increase the resolution from 280 x 192 on the Apple to 360 x 192 points. This was done by splitting the extra 80 points along the width of the screen.

Each group of seven horizontal points belong to one byte. The eighth bit is used to select the colour of the byte (bit off for colours 0-3, bit on for colours 4-7).

In the ITT, this hidden bit is visible and another bit is added making nine bits altogether.

Since the internal circuitry can only handle eight bits at one time, it was decided to use the locations allocated to paddle three and switch two to handle these extra bits.

It can now be seen why the hi-res screen has to be set to white when using an 80-column

'...ninth bits are the bane of ITT graphics programmers...'

card such as Vision-80.

The switch two location is used to read the ninth bits, so to make the card think that the Shift key is not being pressed, the ninth bits must be set by setting the screens to white.

These infamous 'ninth bits' are the bane of ITT graphics programmers. Software written for the Apple does not access these bits and so graphics appear to be behind vertical bars.

Since the colour bit is also visible, those programs which

look fantastic on the Apple usually look a mess on the ITT.

There are three main solutions to these graphic problems. You could buy an add-on card called Jailbreak which provides both normal ITT graphics and monochrome Apple-like graphics.

I say Apple-like since the high resolution (560 x 192) graphics available on all monochrome Apples (using clever programming) do not work on the ITT.

Another solution is to buy the Pete & Pam board I mentioned earlier, but this board is not yet available.

The third is to buy an external graphic processor which beats both the ITT and the Apple, such as Pluto or Digisolve VGP.

The ITT is a very good machine which can run the bulk of Apple software without trouble. The use of devices such as Jailbreak, 3.3 disc controller and RAM card defeat most of the incompatibility problems.

The ITT also has a much higher quality display than the Apple. I have an old ITT and a new Apple IIe and the ITT's display is far superior.

Before buying any piece of hardware or software, try it out on an ITT or ask your dealer whether it runs on the ITT.

I suggest talking to other ITT users. The British Apple Systems User Group has many ITT users who can give you help and advice.

Dave Miller



At last the
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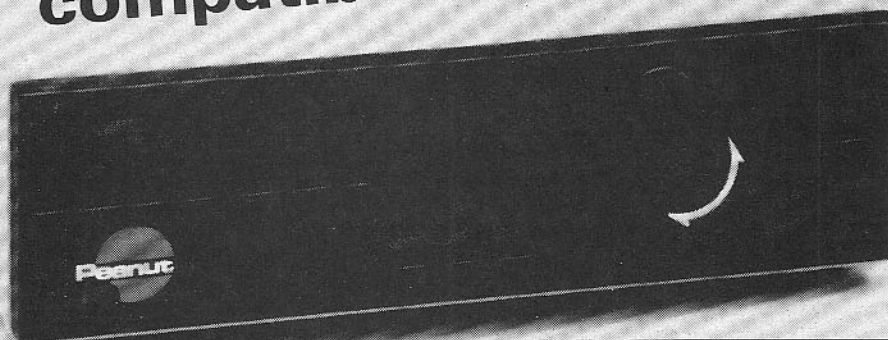
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ORBETA COMPACT ACCOUNTING SYSTEM (No 999)		MAIN MENU
SALES LEDGER		NOMINAL LEDGER
1 ... CUSTOMER NAME & ADDRESS		21 ... MAINTAIN ACCOUNTS
2 ... SALES TRANSACTIONS		22 ... JOURNAL ENTRIES
3 ... SALES REPORTS & ANALYSIS		23 ... NOMINAL REPORTS
4 ... CUSTOMER STATEMENTS		24 ... FINANCIAL STATEMENTS
5 ... END OF MONTH		25 ... END OF YEAR
		26 ... END OF YEAR
		27 ... UPDATE FROM SALES
		28 ... UPDATE FROM PURCHASES
		29 ... OTHER FACILITIES
PURCHASE LEDGER		
11 ... SUPPLIER NAME & ADDRESS		31 ... INSTALLATION DETAILS
12 ... PURCHASE TRANSACTIONS		32 ... BACK UP REGISTER
13 ... PURCHASE REPORTS & ANALYSIS		
14 ... SUPPLIER STATEMENTS		
15 ... END OF MONTH		
ENTER THE NUMBER OF THE FACILITY REQUIRED:		

Ormbeta Compact, taking account of small man's needs

ACCORDING to the manual which accompanies it, the Ormbeta Compact Accounting System is designed to run on a single-drive setup.

This makes it ideal for the Apple IIc on which I tested it although it operates perfectly well on a two-drive system such as the average Apple II+ (with 64k and 80-column card) or IIe.

The package provides the user with sales and purchase ledgers and, unusual on a single disc system, a fully functional nominal ledger.

The system is user friendly and very well documented, the manual being very easy to read. There is a particularly useful tutorial which takes you through the package from first principles and leaves you with a firm grasp of the essentials and a desire to see the program working in a real situation.

I came to the program knowing very little about the principles of accounting and it was refreshing to read the manual which shed light on, for me, a very dark room.

The sales and purchase ledger worked in a predictable way but I had only the vaguest idea of the use of a nominal ledger. After an hour or two of browsing through the program documentation this was much clearer and I could see my way to producing highly useful

reports such as profit and loss – essential to every businessman and normally only available from an expensive accountant.

The program is driven from a main menu accessed by typing in a one or two figure number. It would have been nice to have cursor key highlighting but that

By STEVE RAMSDOM

is just a personal preference and the system works perfectly well as it stands.

The initial task for the first time user is to choose the option system configuration. Behind this daunting title lies a list of questions which tell the system such vital details as how many disc drives you have and what type of printer you use.

Once these details have been fed into the system you must tell it the type of accounts you need in the program. It is necessary to configure three files – sales ledger, purchase ledger and nominal ledger.

The system will run perfectly happily without the nominal ledger so those users who do not need this can miss out all references to it and thus save disc space.

The only problem I encountered occurred during this stage of the operation. While saving my initial sales ledger onto disc I

mistakenly put in a write protected disc. Stupid I know, but unfortunately the whole system crashed and I had to re-boot.

At this stage the program asks for details on the number of records required. The capacity of the system is limited by disc

size but you are provided with a very useful facility to store all files on one disc or to spread them across three discs for sales, purchase and nominal ledgers.

For example, if you keep all your files on one disc you can have 150 sales, 150 purchase and 200 nominal ledger accounts. If you don't mind swapping discs, these figures become 350, 350 and 500 respectively.

Once the system is configured and the various accounts within the nominal ledger specified it is possible to use the program in earnest.

The program is driven from the main menu which offers a clear choice of such options as invoices, customer or supplier details. Each of these opens up a second menu which gently leads the user into the correct use of the program.

The manual supplies a sug-

gested method of use – daily entry of invoices, paid invoices, orders and so on, monthly end of month routines which transfer data to the nominal ledger and a comprehensive year end routine which produces a complete profit and loss summary.

The nominal ledger can be used at any time to generate reports which will allow the businessman to keep his finger on the pulse of his business with accurate figures on the financial state of his company.

To get the best from these reports it is necessary to have a printer capable of printing in condensed mode since the reports are wider than the screen's 80 columns.

Additional products are now appearing to link with Ormbeta Compact. For example, there is an invoicing system to generate your invoices and a comprehensive report generator to give detailed reports on trends within your business.

At £350 Ormbeta Compact represents good value. It allows a small to medium sized business to run all its accounts on a very competitively priced system of an Apple with printer.

I understand the system is now available for the Macintosh. Version one has limited mouse features, version two will be available during the first quarter of 1985.



Spot the difference

THE Apple IIc stands at the head of a noble line of micros. Students of genealogy can trace its origins directly to the original Apple I and Wozniac's garage — arguably the first real personal computer.

Although Apple has at times been criticised for the compatibility gaps in the II lineage, the company has a far better record than most others in this respect. If you doubt this, take a look at the Commodore or Tandy line of products.

Hence, the vast majority of software for the Apple IIe will run on the IIc. What we'd like to do here, then, is highlight some of the differences between the two machines and mention some of the incompatible software.

As always, when Apple releases a new version of the II, they have to rewrite parts of the monitor. In this respect the IIc is no exception, using the extra instructions of the 65C02 to add a 65C02 disassembler among other things.

The Basic is remarkably unchanged. The bugs that were in the II+ version still seem to be there. While this might seem a bit strange, it does mean that if you have a program that calls various routines in Basic directly, the chances are extremely high that they will still work on the IIc.

The obvious exception is the IIc's lack of a cassette port. Yes, the cassette operating system has finally been removed. The areas previously used by the tape routines are now used as patch areas.

The cassette instructions — Load, Save, Store, Recall and Shload — can still be entered without causing a syntax error because they are treated as & commands and directed to the ampersand vector in page 3.

All documented monitor entry points for the Apple II+

By
MALCOLM WHAPSHOTT
and **CLIFF McKNIGHT**

and IIe are maintained in the IIc, although some of the code has been rewritten using the extra op-codes of the 65C02. The Basic does not seem to make use of the extra op-codes though.

The mini-disassembler will now display the new op-codes, but programs that use the disassembler's data (like the old faithful integer mini-assembler) will not now work.

As far as commercial software is concerned, you may have noticed the little red, yellow and white stickers proudly proclaiming "Works on the Apple IIc".

Although it's natural for manufacturers to accentuate the positive, a more useful label might have been one which pointed out the software which *didn't* work on the IIc.

There are several games which fall into this latter category. For example, Microbe from Synergistic, Miner 2049er from Micro Lab, Music Construction Set from Electronic Arts, Super Taxman II from HAL Labs, Zenith from Gebelli, Duelling Digits from Broderbund, and Gamma Goblins, Gorgon and Space Eggs from Sirius.

On a more serious note, Terrapin Logo will not work on the IIc. However, Logo fans need not despair since Apple Logo works and a new version has been written in conjunction with LCSI especially for the IIc.

Some packages work fine on the Apple IIc as far as text is concerned but encounter prob-

lems with graphics. This list includes Spinnaker's Delta Drawing and Phoenix's Zoom Graphix, both of which are therefore rendered somewhat less than useful.

The ever-popular Apple Writer IIe will work except for the fact that upper case inverse characters appear as graphics symbols. In fact, Apple Writer II will work normally as long as you change the line width with the IIc utilities disc before printing.

Of course, if the IIc is your first Apple you may as well buy the new ProDOS version which runs perfectly on it.

Many manufacturers have been quick to produce IIc versions of II+ and IIe programs which are incompatible with the new machine. This list includes Quark's Word Juggler and Lexicheck, the SVS Word and List Handler, Software Art's TK! Solver, Sir-Tech's Star Maze, Sierra On-Line's Frogger, and The Learning Company's Moptown Parade, Moptown Hotel and Juggle's Rainbow.

This is good news for new IIc owners because it means the machine is being supported by software houses. However, it's bad news for existing II+ and IIe owners who buy a IIc expecting to be able to use their existing software.

If you have an Apple IIe then, can you turn it into a IIc?

You could start by replacing the 6502 with a 65C02, expand it to 128k and replace the Basic ROM and the character generator ROM (since the alternate

character set contains some special characters for use with the mouse).

You could then add a Super Serial interface in slots one and two, although most software should run without the second of these. You could also put a mouse interface in slot five.

However, even with all of this, you couldn't guarantee that all IIc software would run. The IIc is capable of generating interrupts both to indicate the start of a vertical blank — when the display has reached the bottom of the screen — and when a key is pressed.

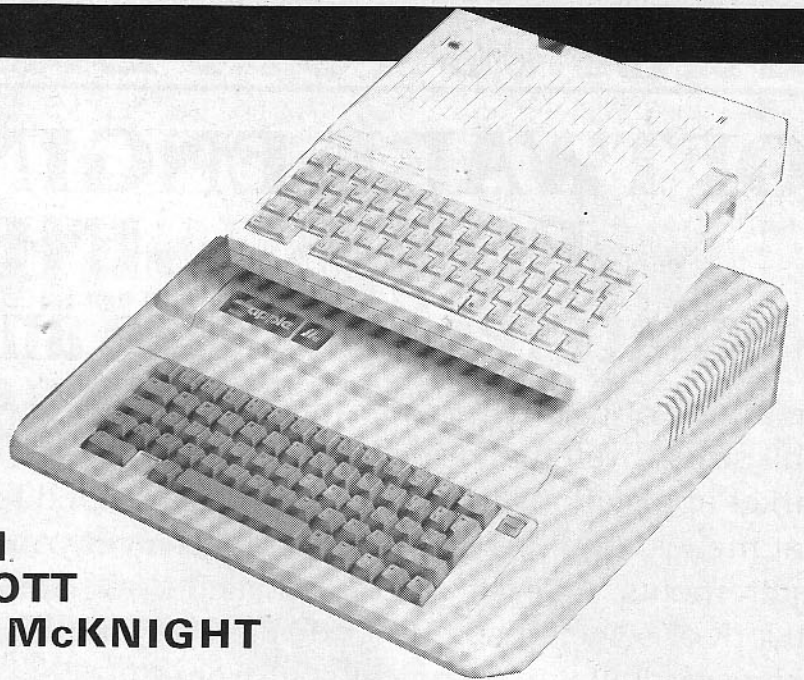
By comparison, the IIe must poll a particular location to find out if the display has reached the bottom of the screen.

Some provisional documentation for the IIc suggested that Apple would produce a kit consisting of a 65C02 and new ROMs. However, the company has since denied that it has any intention to do this.

If you've got an Apple II+ you can't even get as far as exchanging the CPU for a 65C02 because of what Apple refers to as "timing difficulties".

So, if you have an Apple II+ or IIe with lots of software, you might want to think twice about upgrading to a IIc.

However, if you only use a few packages, and particularly if you are one of those people who can be seen repeatedly loading and unloading an Apple II system from the boot of their car, the IIc may well represent a natural upgrade path — as well as an energy-saver.



Interrupts and large arrays

THE Apple UCSD Pascal system does not, apart from in its input and output functions, normally use absolute addresses. Whereas from Basic we can write a "patch" of machine code, place it in absolute memory addresses, then call it from a program, this is not the normal route with Pascal.

Here all of the code is relocatable, and the system uses the SYSTEM.LINKER to connect the program with EXTERNAL procedures or PUBLIC variables. The programmer does not normally have to concern himself with the addresses.

There are at least two circumstances, apart from input/output, in which it is necessary to use absolute addresses from Pascal. Firstly, if we have a Pascal interrupt procedure. Secondly (less obvious), if we need to set up a large array in a Pascal program and to put into it data collected from a machine coded procedure (or function).

In both instances a similar "trick" can be used to communicate absolute addresses within the program.

In Basic interrupts are obscured because they have to be indirectly vectored through \$3FE for IRQ and Break, and through \$3FB for NMI. This is because the normal 6502 microprocessor interrupt locations of \$FFFE, \$FFFF and \$FFFA, \$FFFB respectively, are in the Autostart Basic ROM.

From Pascal there is no such problem, since these addresses are now in RAM on the language card. Thus we can write the address of the procedure to be operated under interrupt directly into the required 6502 vectors. The only small complication is that we have to "write-enable" the language card before doing this. (see Installation and Operation Manual for the Apple Language System, Appendix D, page 28.)

In the example we use IRQ, initiating the interrupt by pushing a button connected to the CA1 line of a 6821 PIA interface, for instance on an SSM-AIO card. CA1 is held high through a 5k resistor, then

earthed with a push button to generate a negative pulse.

The programs (Listings 1 and 2), detect the pulses and count them, displaying the count value continuously on the screen. It runs for a couple of minutes with the repeat loop size given. The hardware to operate this was described by John Littler on Page 56 of the August 1982 issue of *Windfall*.

The 6502 code procedures are declared as EXTERNAL in Pascal, are assembled, then linked to the program, thus setting up the absolute memory positions of the external code procedures. To run an IRQ interrupt we need to put the address of the interrupt procedure into the locations \$FFFE and \$FFFF. Thus, we need to provide a mechanism for the linker to do this for us.

In this example (Listing 1), a label, START, is placed at the beginning of the procedure INTERRUPT. The address for this label corresponds to the start of the procedure in memory.

The assembler directives .DEF and .REF allow labels to be "seen" between procedures. Thus START can be referenced in SETUP by the assembler directive .DEF START in INTERRUPT and .REF START in SETUP.

In SETUP is another label, POSITION, and a dummy LDA instruction, LDA START. When SETUP is assembled, a listing of the assembly (e.g. to PRINTER:) will show that LDA, converted to hexadecimal code AD, is followed by 0000.

When the procedure is linked

these four zeros are replaced by the address of START. The four lines of code following transfer this address to the IRQ interrupt addresses.

The procedure CLOSEDOWN is present as a safety net since I am uncertain whether the Pascal BIOS (basic input output system) turns off the IRQ interrupt enable before it accesses the discs. The Basic BIOS does turn it off so that Pascal probably does as well.

Interrupts will cause havoc with your disc system if they occur during any writing to the discs. However the program has not caused any crashes yet where it has been used, with or without CLOSEDOWN.

In the procedure INTERRUPT, the integer COUNTER, which is .PUBLIC between the Pascal and 6502 parts of the program, is a normal signed integer. As written the program will not function correctly on reaching Pascal's MAXINT, instead it will go negative. I did not test this with button presses!

Note also that the PIA interrupt has to be reset by a read to the peripheral register PRA before another interrupt can be detected.

The declaration of COUNTER in the Pascal part of the interrupt routine as .PUBLIC in the 6502 code procedure allows this variable to be used by both the assembly language procedure and the host program.

This scheme works well for unstructured types such as integers and reals, and for small arrays and records. However it

is complicated by the page size of 256 bytes associated with the 6502 microprocessor. Thus an array could be declared as Var DATA:Packed Array [1..256] of 0..255 in the host program together with an external procedure declaration for the assembly language procedure.

Correspondingly, the assembly language procedure immediately after .PROC [Title], has the declaration .PUBLIC DATA, and the individual bytes in the DATA array can be referenced by using an index register offset.

If DATA is larger than 256 bytes we can overcome the size limit by declaring a series of arrays, for example DATA1, DATA2, DATA3, etc. up to the required size. This is obviously very cumbersome for large arrays.

Listings 3 and 4 show how it is possible, by using self modifying code together with the address determination technique used for interrupts, to address a very large array. As is seen from the example, it is extremely effective, and it could also be used to zero or initialise large arrays in Pascal. It is very much faster than using p-coded Pascal, even the FILLCHAR procedure.

In the example the array size is set up via the labels LOW, HIGH, and REM. They could equally well be set up themselves from the Pascal program with more .PUBLIC declarations, or by using .CONST.

I thank Dr John Littler for suggesting the technique to me.

JOHN MAHER introduces a technique for determining the addresses of procedures and variables in UCSD Pascal and its 6502 Assembler


```

;Procedures to test the operation of interrupts from UC50 Apple Pascal

```

```

IRQVEC .EQU OFFFE ; 6502 IRQ vector
PRA .EQU 0C0A0 ; Peripheral register, AIO card in slot 2
CRA .EQU 0C0A1 ; Control register A for PIA
PRTCT .EQU 0C0B8 ; Write protect RAM
ENABLE .EQU 0C0B9 ; Write enable RAM

;-----
.PROC INTERRUPT ; Procedure to be executed on interrupt
.PUBLIC COUNTER ; Declared as INTEGER in Pascal
.DEF START ; Makes label START visible to SETUP
; Label to mark position of interrupt procedure.
; It is strictly necessary to check whether the
; interrupt was from a Break or an IRQ, see Apple
; Reference Manual autostart ROM $FA40 to $FA5B.
; Save the accumulator, X- and Y-registers
; on interrupt

PHA
TXA
PHA
TYA
PHA
INC COUNTER
LDA COUNTER ; COUNTER occupies 16 bits in Pascal
CMP #255 ; Check for 255 in lower 8 bits
BNE $1 ; Branch if less than 255
LDA #0 ; else zero the lower 8 bits
STA COUNTER
INC COUNTER+1 ; and increment upper 8 bits
LDA PRA ; Reset interrupt with a read to the PIA
PLA ; Restore the Y- and X-registers and the
TAY ; accumulator after the interrupt
PLA
TAX
PLA
RTI

;-----
.PROC SETUP ; Procedure to set up interrupt conditions.
.PUBLIC COUNTER ; Declared in Pascal as INTEGER
.REF START ; Allows SETUP to see the label START above
LDA ENABLE ; Two successive reads to this address
LDA ENABLE ; write-enables the RAM card
LDA START ; Dummy to establish the position of the
; interrupt procedure in memory, the address
; is then stored at IRQVEC.

LDA POSITION+1
STA IRQVEC
LDA POSITION+2
STA IRQVEC+1
LDA PRTCT ; Write-protect the RAM again when done
LDA #0
STA COUNTER
STA COUNTER+1 ; Zeros COUNTER, could be done from Pascal
LDA #5 ; Z00000101 access the Control Register of
; the PIA and set to sense a negative edge
; from a pulse on CA1 as an interrupt.

STA CRA
LDA PRA ; In case button already pushed
CLI ; Allow interrupts
RTS

;-----
.PROC CLOSEDOWN ; Procedure to disable the interrupts on
SEI ; exiting the main program.
RTS
.END

```

Listing I

```

PROGRAM TestInterrupts; (* Test program for the above machine code procedure.
Interrupts were discussed in a series of articles
by Dr John Littler, in Windfall for July, August
and September 1982. *)

CONST WaitTime = 3000; (* Program runs for some 2 minutes *)
VAR COUNTER, (* PUBLIC variable to count the interrupts *)
I : INTEGER;

PROCEDURE SETUP; (* Sets up the system, enabling interrupts *)
EXTERNAL;
PROCEDURE INTERRUPT; (* Operates when the button is pressed, note that *)
EXTERNAL; (* It never appears as a procedure call from Pascal! *)
PROCEDURE CLOSEDOWN; (* The interrupts should be disabled on exit *)
EXTERNAL;

BEGIN
I := 0;
SETUP;
REPEAT
I:=I+1;
WRITELN(COUNTER);
UNTIL I = WaitTime;
CLOSEDOWN;
END (* TestInterrupts *).

```

Listing II

```

;Procedure to test swapping values in an array larger than a page (256 bytes)
;between a Pascal program and a 6502 code procedure

```

```

RETURN .EQU 0 ; Return address for Pascal
LOW .EQU 2 ; Will be zero if counting more than one page.
HIGH .EQU 4 ; High-byte number of pages in array.
REM .EQU 6 ; Remainder left in low byte for the rest of the array.

;-----
.PROC SWOP
.PUBLIC DATA ; Array with 27000 bytes.
PLA ; Save accumulator for return to Pascal
STA RETURN
PLA
STA RETURN+1
LDX #0
LDY #0
LDA #0
STA LOW
LBA #69
STA HIGH
LBA #78
STA REM ; 27000 is 69*78 so set up loop counts accordingly.
L1 LDA DATA ; Dummy load to determine the address of the array DATA
L4 TXA ; Set array elements to follow the count in the
; X-register, this could be anything, e.g. collecting
; data from an external port.

L2 STA DATA
INX
INC L2+1 ; Modify address, low byte.
BNE L3 ; Branch if count less than 256
INC L2+2 ; Modify address, high byte.
L3 CPX LOW ; This counts the number of elements in the low page
; it will always have LOW set to zero for arrays of
; more than 256 elements, this is included only to
; make the procedure apply to all array sizes.
INY ; If the X-register was zero then it is necessary to
; increment the Y-register, note that since the Pascal
; calling program does not set the position of the array
; DATA in memory to start on a page boundary, if Y is
; incremented after the above BNE L3 instruction the
; program increments the Y-register when it crosses a
; memory page boundary, and this will not necessarily
; correspond to the X-register being at zero.

CPY HIGH ; Check to see whether high byte count is finished
BNE L4
LBA L2+1 ; There are still REM elements left in the array, to
STA L6+1 ; get at these we transfer the pointer to the current
LDA L2+2 ; address of DATA to another pointer and repeat the a
STA L6+2 ; above process.

L5 TXA
L6 STA DATA
INX
INC L6+1
BNE L7
INC L6+2
L7 CPX REM
BNE L5
LDA L1+1 ; Restore the original address of DATA on exit, it
STA L2+1 ; may be needed if there is another call to the
LDA L1+2 ; procedure
STA L2+2
LDA RETURN+1; Return to Pascal
PHA
LBA RETURN
PHA
RTS
.END

```

Listing III

```

PROGRAM TestBigTransfer; (*Test program for the above machine code procedure *)
VAR I : INTEGER;
DATA : PACKED ARRAY[1..27000] OF 0..255; (* This array is PUBLIC in SWOP *)

PROCEDURE SWOP; EXTERNAL;

PROCEDURE CheckDATAcontents;
BEGIN
WRITELN('First 1000 bytes :- ');(* If the beginning and end are OK then the *)
FOR I := 1 TO 1000 DO (* rest of the array will be correct ! *)
WRITE(DATA[I]:4);
IF (I MOD 20) = 0 THEN WRITELN;
END;
WRITELN('Last 1000 bytes :- ');
FOR I := 26000 TO 27000 DO
WRITE(DATA[I]:4);
IF (I MOD 20) = 0 THEN WRITELN;
END
END (*CheckDATAcontents*);

BEGIN
PAGE(OUTPUT);
FILLCHAR(DATA,27000,0);
WRITELN('FILLCHAR done'); (* Note that FILLCHAR is only fractionally *)
CheckDATAcontents; (* slower than a machine code procedure *)
SWOP; (* in zeroing arrays - it is very efficient *)
WRITELN('SWOP done');
CheckDATAcontents;
END (*TestBigTransfer*);

```

Listing IV

IT doesn't seem all that long ago when the only drive you could get for the Apple was the Disk II unit. Now there are several alternatives to the old faithful.

The one I've been trying lately is the half-height drive from CGL.

The first thing I noticed is that, being half-height, I couldn't stand my monitor on it. You see, the other drive I was using was the standard Apple unit which left the monitor at a rakish angle.

Now, if I'd got two drives for review...

So how do you test a drive unit? The obvious way is to use it as you would any other drive.

I used it both as a primary and a secondary drive, I booted DOS 3.2 and 3.3, Fortran and Pascal without any problems.

I tried to think about software which did a lot of disc-accessing and eventually came up with rather a nice test.

If you've ever seen Scrabble from Little Genius, you'll know that the program will play one of the hands. In fact, it will ask if it can take the hand as each player's name is entered.

I entered four player names and allowed the program to play each of them, opting for the highest level for each player. This left the program playing itself, so to speak.

The fact that each hand was at its highest level meant that

CGL drive passes test with ease - it's neat too!

the program did a lot of dictionary searching. Hence, the disc was almost constantly accessed for quite a while. The CGL drive performed without complaint.

If you're used to the usual flap door, the CGL may take a bit of getting used to because the mechanism is completely different. It also features a sort of spring-loaded eject mechanism and it was with this that I encountered the only problem.

Once a floppy is pushed into the drive, there isn't really enough of it left to get a grip on. One of my discs had a slightly peeling label and this was enough to jam it in the thin slot.

I had to operate the eject

mechanism several times before it protruded enough to pull it out.

Even without the Made in Japan sticker, the drive obviously originates somewhere to the East of here because the instruction manual/leaflet is clearly a translation. If you've read any printer manuals recently, you'll know what I mean.

The only genuinely strange bit is the one which cautions you not to have a disc in the drive on power-up. Since this is the standard procedure with Apples I decided to ignore the caution.

As far as I can tell, no harm has been done to either the drive or the software.

I usually have my second drive adapted to allow writing to write-protected discs.

Rather than go to the trouble of fitting a disabling switch, I simply loosen the retaining screw on the micro-switch and allow it to drop sufficiently far for it to remain permanently open.

This saves me the bother of cutting notches if I want to use the back of so-called single-sided floppies.

I opened up the CGL drive to see how easy such a modification would be. However, being a completely different design, there's no micro-switch. It's so cramped in there that it's hard to be sure, but it looked like an optical sensing mechanism at work.

This means that you'd have to resort to cutting notches. Of course, many people would judge my micro-switch method to be silly in the first place, so a drive which doesn't allow it can't really be criticised.

All in all, the CGL drive performed perfectly well. It costs considerably less than the standard Apple unit, and I also think that half-height units look neater.

As with all the new drives on the market, only time will tell whether they will withstand the rigours of use with the same reliability as the Apple units.

Cliff McKnight

AppleTips

A Have you some favourite routines which you hesitate to merge into large programs in case they interfere with your global variables?

I have, but I solved the problem by localising my sub-routine variables. Any variables which are completely local to the routine and which are changed during the routine, I first store in an array called ZS(*) before initialising them in my routine. Then before returning to the main program I restore them.

This means that I can happily merge such routines with any large programs without any niggling fears - providing that I do not use ZS(*) in my main loop.

For example, the variables I and J are frequently used as loop counters. If you wish to use them in a sub-routine

Merging routines

you could disturb the main program loop which called it.

However in a routine numbered 100-199 the following lines will solve this problem:

```
101 REM LOCALISE YOUR VARIABLES
```

```
102 LET ZS(1)=I: LET ZS(2)=J
```

then use I and J during the routine

```
197 REM RESTORE GLOBAL VARIABLES
```

```
198 LET I=ZS(1): LET J=ZS(2)
```

```
199 RETURN
```

Marie Donegan

A ONE of the most memory wasteful actions of DOS 3.3 is to set up for three file buffers which is only of use to the few programs which have several text files open simultaneously.

I find it more useful to set up the DOS so that it only builds one buffer when booted or coldstarted.

The actual location in DOS 3.3 that holds the default MAXFILES number 3 is \$AAB1. If the contents of this location are changed to one - for example POKE 43697,1 - then any disc subsequently initialised with this DOS will only set up one buffer on booting or coldstarting.

If you want to directly patch the disc then the relevant byte exists on track 1, sector 9 at byte \$B1.

Allan Ogg



An Israeli Mac user is coming to town

SHALOM! My name is Yariv Nachshon and I am 17 years old. I am an Apple Macintosh user and I live in Israel.

In April I will be in London for two weeks and I want to have some connection with Mac users or clubs of Macintosh users. If you can please put my letter in your newspaper it will help me very much.

I read your newspaper every time and the Mac section is very nice, but here in Israel we want to see more programs and some utilities for the system or for the disc work, like Disc Zap. — **Yariv Nachshon, The Israeli Mac Users Club, 13 Nehardea st. Tel-Aviv, Israel 64235. Tel: 03 231925.**

Appleworks omission

I AM running Appleworks on a IIc using an Imagewriter. Is there any way to call the Imagewriter backspace/overwrite control code from inside the Appleworks program?

That is, apart from making up a custom printer file reassigning, say, the sub or super script command, and having to copy in all the rest of the Imagewriter codes.

The omission of a backspace/overstrike command in Appleworks is a shame. While the seven different alternate characters sets cover most situations, others arise — a ^over

Applesoft — DOS conflict

PEOPLE may be interested to know that there is an undocumented feature, that is a bug, in the Apple IIc. If a Basic program is written as, for example:

```
10 PR#1
20 FOR I = 1 TO 10
30 PRINT "ABC"
40 NEXT
50 PR#0
60 END
```

This will produce an output on the printer of not just ABC 10 times but:

```
£10 £20 ABC
£20 £30 ABC
£20 £30 ABC etc. (That is,
the TRACE as well)
```

e, as in fête or forêt, the most obvious example.

Your suggestions are most welcome. — **Thomas Meyer, Sedbergh, Cumbria.**

● Afraid we don't have access to Appleworks at the moment. Perhaps a reader knows the answer.

A pleasant change . . .

I THOUGHT I would tell you a pleasant experience with a software company, to set against some of the horror stories we usually read.

I sent off \$80 to Medical Software Company, Centre Merickes, New York for a book of Medical Programs in Basic.

I got the book back in very short time and had some questions about a patient history program. They phoned me in response to my letter and answered my question. A pleasant change. — **Dr D. Derik, Belfast.**

Transfers from DOS 3.3

USERS of ProDOS might be interested in the experience I

This is apparently due to a conflict between the Applesoft and the disc operating system. It is necessary to output to the printer with a command of the form:

```
10 PRINT
   CHR$(4);"PR#1"
```

for the program to behave as one might reasonably expect.

Incidentally, this feature might apply to an APPLE II+ or IIe running ProDOS. — **Quintin Gardner, Groydon.**

● It does, but to be fair Apple always did request that DOS was informed of slot commands.

have had in transferring random data files from DOS 3.3.

The Convert program on the user's disc does not allow random access files to be transferred and it is necessary therefore to write a pair of programs the first of which saves the data in sequential form which can be transferred to ProDOS and the second of which reformats the data as a random access file in ProDOS.

A further problem apparently arises in writing to a specified byte in a random access file, and I continually was confronted with an "out of range" error.

By trial and error I have eventually found that it is necessary to write data (a null string will do) to a record one higher than the highest record to which a specified byte is to be written.

This all seems a little odd, and I would be interested to hear from anyone who has had a similar problem and has been able to overcome it in any other way. — **Lawrence M. Gaunt, London.**

Where are the manuals?

I HAVE recently bought the ProDOS Users Kit in order to speed up disc access in my data storage programs. These are written in Basic and use random access text files.

From articles I have read in Apple User and Call Apple magazines I understand there to be changes in the commands for random access text files.

I find it annoying that a new disc operating system has been launched and yet a ProDOS programmers manual is not available.

I have been offered a ProDOS Technical Reference Manual and an Assembly Language Tool Kit but no programmers manual. Does this manual exist?

The following routine under

DOS gives a range error under ProDOS at line 1060:

```
1000 PRINT CHR$(4);"OPEN
      FILE,L20"
1010 PRINT CHR$(4);"READ
      FILE,R0"
1020 INPUT I
1030 I=I+1
1040 PRINT CHR$(4);"WRITE
      FILE,R";I;"",B";0
1050 PRINT A$
1060 PRINT CHR$(4);"WRITE
      FILE,R";I;"",B";10
1070 PRINT B$
1080 PRINT CHR$(4);"WRITE
      FILE,R0"
1090 PRINT I
1100 PRINT CHR$(4);"CLOSE
      FILE"
```

Can you please advise me on the correct syntax for ProDOS. — **P. Spiller, Bristol.**

● Like you Mr Spiller, we're bitterly disappointed that the manuals aren't forthcoming. We believe that at least a couple of books are published in America on ProDOS but we haven't seen them yet.

Your sub program works on a file created under ProDOS but not on a file converted to ProDOS from DOS 3.3 — rum do eh!

Has anyone else noted that under DOS 3.3 the best way to set up D\$ was to set D\$=CHR\$(13) + CHR\$(4) However under ProDOS this will not work. You have to set D\$=CHR\$(4).

I wonder how many programs won't convert?

Max Parrott

Three year deadlines

IF it has taken Mr Mathieson three years to come up with his marvellously streamlined and efficient program (which he hasn't offered for similar scrutiny to that received by the

original, note!) then I'm even more pleased than I was originally that Max Parrott printed his original when he did.

I for one wouldn't be able to produce perfect programs to meet your monthly deadlines and I wish you all the best. — **Carol Clarke, Greenford, Middlesex.**

Double trouble!

I AM 15 years old and during the school holidays I have been staying with my grandparents. I took my Apple with me to keep me occupied.

When I eventually returned home, I carefully packed the Apple away, but foolishly tucked the aerial lead inside the computer. Now when I switch it on, everything is presented in duplicate. Two cursors appear and as I type both cursors show what I have typed. Whether in Basic or the monitor, everything output appears twice, with one line separating them.

Even a command such as POKE 1024,65 shows two "A"s. Please can you tell me what is wrong? — **Darwood Taylor, Southport, Lancs.**

● Funnily enough, the same thing happened to me on one occasion. It's impossible to say exactly what's wrong in your case, but the chances are it is quite easy to remedy.

— Make sure that all the chips

are pressed down on the board and that connections to the video output are all right.

What happened to me was that the co-axial cable's outer shield had come adrift at the video plug end, inside the casing.

So carefully check your leads. Ideally, you should also check the monitor by substituting another one. — **Max Parrott.**

Doubtful at high speed

I WAS interested to note that one of your readers (Mr Foster, December issue) has had problems with the Wizard buffered serial card and Accelerator in combination.

I doubt that voltage drop is causing the difficulty — I run a similar setup, and also have a 16k RAMcard (Vergecourt), a 128k RAMcard (Saturn), an Ultraterm 80 column card and a Digitec colour card in addition to my disc drive adapter — seven cards in all. I do use a fan to prevent overheating.

However, I had a problem with my first Wizard card — it turned out to be due to bad memory. It may be that one of the memory chips at the high end of the buffer is "doubtful", and that the buffer is only filled that far when the extra speed of the Accelerator is invoked.

I would suggest that Mr Foster changes the jumpers on

the Wizard board to reflect a memory setting of 16k (I am assuming he has 32k) and try the board again. If it works, then the problem is in the upper 16k bank. If not, he could try swapping the two chip banks to see if the problem is in the lower 16k.

If neither of these works I would ask the dealer for the loan of a different Wizard and, if necessary, a different Accelerator — I have also had problems with bad memory on that board.

Best of luck to Mr Foster. — **Len Goddard, Epsom, Surrey.**

PS — Does anybody know how to invoke the ROM-based graphics dump routines on the Wizard from UCSD Pascal? The normal Ctrl-I based sequences cannot be used as the operating system treats Ctrl-I as a tab character.

Details please!

CAN you head me in the right direction. I wish to dump the hi-res graphics screen to an Epson MX100 printer when operating in Pascal. The dumping really needs to be software operated. — **Melvyn Cole, Crewe, Cheshire.**

● So much of the answer to this question depends on the printer interface being used. Could you let us have full details of this please?

Changing the cursor

IS there a short program or command which allows you to change the type of cursor on the Apple IIe to a line from a box so the delete key can be used?

If it is at all possible would you send me the command or listing for this as I find using this type of cursor very useful. — **Matthew Barrow.**

● A simple, no frills subroutine such as that of line 1000 could be used to enter any string via ANS. BACK is a monitor routine to move the cursor back.

```

5 BACK=64528
10 PRINT"ENTER YOUR STRING:
   ";:GOSUB 1000:FRD$=AN$
20 PRINT"YOU ENTERED ";FRD$
30 IF FRD$="/" THEN END
40 GOTO 10
1000 AN$="":L=0
1010 GET B$:B=ASC(B$)
1020 IF B<>127 GOTO 1070
1030 IF L<1 GOTO 1000
1040 CALL BACK:PRINT"
   ";:CALL BACK
1050 L=L+1:IF L=0 GOTO 1000
1060 AN$=LEFT$(AN$,L):GOTO
   1010
1070 IF B<>13 THEN
   AN$=AN$+B$:L=L+1:PRINT
   B$:GOTO 1010
1080 PRINT:RETURN
    
```

Max Parrott

When memory runs out . . .

WE have been developing educational programs in Applesoft Basic to suit our local environment. These programs require pictures and so we decided to use the HPLLOT function.

The coordinates of these pictures are first stored sequentially in a text file. They are read into arrays and then plotted onto the hi-res screen (pg1).

However due to the massive arrays that were being used I have frequently encountered OUT OF MEMORY error, or sometimes the programs just halt during the RUN command.

We know from other pro-

grams that it is possible to store coordinates into binary files. These files are BLOADED and the coordinates retrieved by PEEKING particular locations in the RAM.

Here are my questions:

- How do I store the coordinates in binary file?
- Are there any calculations or formula to convert these binary data back into the HPLLOT coordinates?
- Which address must the binary data be BLOADED at and what is the address that must be PEEKed to obtain the coordinates?
- Is there any other efficient and fast way to store and to

retrieve coordinates for the HPLLOT? — **Heng Nga, Kuala Lumpur.**

● First we cannot be sure but suspect that you are losing data when HGR is issued. Have you set LOMEM: above the hi-res pages?

Other people sometimes BSAVE the picture area. This is expensive on disc space but saves a lot in memory.

Other techniques involve shape tables. To save the coordinates of a point needs three bytes in memory, two for the X axis and one for the Y. You will have to decide on your own data structure.

Max Parrott

Cloze answers

Answers to Cloze problems on page 29:

denilcni meht dnm
 tnahpele tsniaa edis lwab eht a
 eht eht ew dna dna em na a
 driht lamina knurt sdnah
 tnahpele ekans
 htruof dnah eenk tsaeb
 nialp hguone ekil
 ot ne'e llet yned siht si
 renoos tsaeb no llef ees si
 n s tee e o ldsa
 Dsue lu ad og
 ah n i on pno
 Ecegf td tog
 huh ah a pr i te ih
 Te al ee n h wog

Accurate controller

HAYES joysticks are an accurate positioning control for games, business and graphics.

The Mach III model contains two linear potentiometers, one which reads the X-axis and is accessed by AppleSoft using the stick (0) function and the other which reads the Y-axis and is accessed by AppleSoft using the stick (1) function.

Because all micros and their software are not created equal, each axis (X and Y) has independent rotary trims for cursor position adjustment.

This feature is most useful in the "self-centring" mode of operation, to adjust the cursor's return to centre.

Price around £50.

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

Pascal database

A BUSINESS system for the Macintosh, Apple IIe, IIc and II+ based on a Pascal database has just been launched.

It includes sales, purchase, nominal, stock and order processing ledgers, plus information management.

The system is claimed to offer a high degree of customisation.

● Southern Commerce Computers, 219 Croydon Road, Caterham, Surrey CR3 6XJ. Tel: 0883 48919.

Software guide

THE creators of the Whole Earth Catalog series have produced a guide to software for a range of personal computers including the Apple II and Macintosh.

This is the book for, which Doubleday - its US publisher - paid the largest-ever advance



Hayes Mach III joystick

for a non-fiction title: \$1.3 million.

"For new computer users these days", says editor Stewart Brand, "the most daunting task is not learning how to use the machine, but shopping. Hence this book".

To guide micro owners through all the available software, the Whole Earth team sifted a library of 1,900 programs to produce reviews of 362 recommended titles ranging from games to educational and business programs.

Each program is illustrated with screenshots and print-outs. The book also includes reviews of hardware and peripherals.

● Corgi Books, Century House, 61 Uxbridge Road, Ealing, London W9. Tel: 01-579 2652.

Omnis 2 on Mac

"OMNIS 2 on the Macintosh is in the top five programs I have seen..."

That is the verdict of Alain Rossman, Apple USA's product manager, Macintosh Products, according to its publishers.

Omnis 2 is an information management program which allows you to draw your own record card.

Each can consist of up to 12 screen pages and 120 different items. The only limit to the number of records is disc space.

If more storage is needed, Omnis 2 will run on any Macintosh hard disc system.

Records can be retrieved

from the information base using up to 50 selection criteria. These records can then be printed out on reports designed to exact requirements.

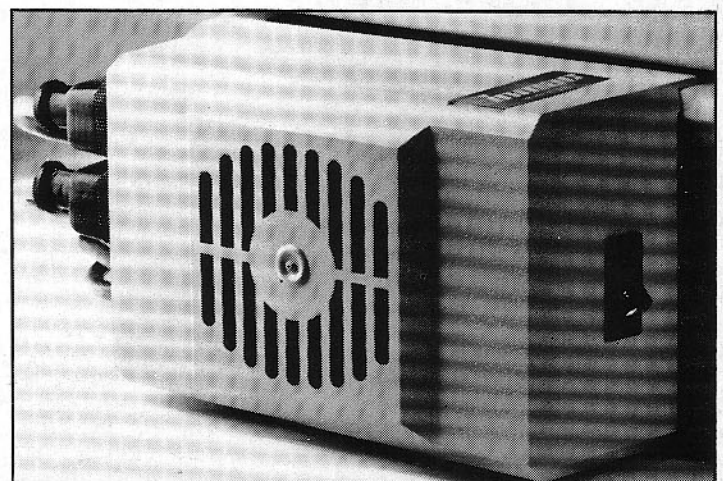
Omnis 2 allows information to be sorted and sub-totalled up to nine levels deep. It will produce mailing labels, invoices, forms, standard letters and so on whenever required. You can even send reports to disc to be used within MacWrite/MacPaint.

● Blythe Computers, Wenhaston, Halesworth, Suffolk IP19 9DH. Tel: 050 270 371.

Spike stopper

THE Inmac Apple Saver is designed to protect the Apple from excess heat, voltage surges and power switch failures.

It slides onto the ventilation



Inmac's Apple Saver

slots of the Apple and sucks out the hot air.

There is also a built-in surge suppressor to clip voltage spikes which could damage the micro or cause false data.

The unit can also protect two other pieces of equipment as it has three power outlet sockets at the rear, all controlled by one switch on the front of the unit.

The Apple Saver is approved by Apple and it has a one year guarantee. Price is £106.

● Inmac (UK), Davy Road, Astmoor, Runcorn, Cheshire WA7 1PZ. Tel: 09285 67551.

Upgraded Visicalc

A VISICALC package has been introduced by Software Arts to provide users of any Apple II series micros with up-rated versions of Visicalc and Advanced Visicalc in one purchase.

The package also includes The Visicalc Book, plus clear documentation.

Visicalc now includes variable column widths, support for 40/80 columns, window and format options, full-word prompts and so on.

In addition, six home-management and financial models are included.

Advanced Visicalc features single-keystroke context-sensitive help, keystroke memory, new formatting abilities, expanded financial and calendar functions, and hide and protect.

● Software Arts International, 43 Buttermarket, Ipswich, Suffolk. Tel: 0473 221551, 213187.

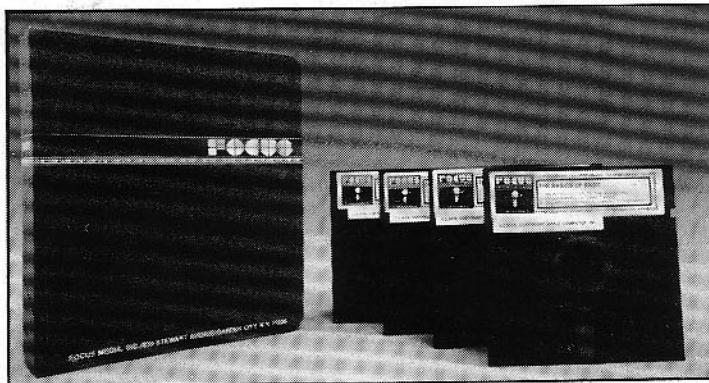
Course on Basic

THE Basics of Basic from Focus Media is designed to teach Apple users everything they need to know to be their own programmer – even if they have no previous programming experience.

The guided, self-paced course lets users learn from their computer – not only what to do, but also why they are doing it.

Each concept to be learned is first introduced on the self-booting and self-explanatory disc. Instructions for use are displayed on each screen as the program progresses, so that no experience in using the computer is necessary in order to proceed from screen to screen or from program to program.

Jargon is held to a minimum,



Focus – on Basic

and interaction with the computer is maximised.

Concepts are carried forward as they are developed and practiced, and they are applied and used in succeeding lessons in a manner designed both to reinforce them and to suggest the variety of the applications.

Retail price: £82.95.

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

Multi networking

TOPS, a Transcendental-Networking system, claims a breakthrough in networking technology – total operating system independence.

Centram's new product can

network together computers of different makes and operating systems, including IBM PCs, Apple Macintosh, Unix micros and CP/M 80 systems.

The flexibility offered by the Tops network promises to revolutionise the modern office, says Centram. Businesses can now take full advantage of the unique character of different computer types, allowing each to process the kind of information it handles best.

According to Michael Pflaumer, Centram's vice-president, each machine on the network can be accessed at any time. Remote directories appear as if they were local, with no noticeable loss of performance.

All network functions take place in the background, without disrupting other users.

Tops is both a hardware and software product. The hardware consists of an add-on card for PC compatibles and other machines with expansion slots.

Backing-up essential software...Multi-tasking...Instant printing utilities...

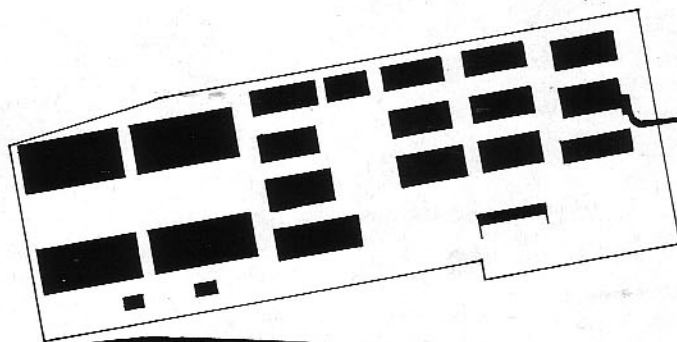
With the Snapshot card installed in one of the slots in your Apple II, II+ or IIe, you have at your fingertips the sort of power other micro users can only dream about.

At the press of a button, you can interrupt a running program and take control of it with any of the powerful Snapshot software utilities described here. When you're ready to continue, there's no need to re-boot; you can restart your program exactly where you left off with just a single keystroke. It never knows it was interrupted.

There are already three excellent utility programs designed for use with the Snapshot card and more on the way! Each Snapshot program is operated from a single menu written in plain English. There are no complicated commands to learn and you won't need a Computer Science Degree to understand our documentation.

Because all its software is in RAM rather than inflexible ROM, you can obtain system enhancements for the Snapshot card as and when they're developed – at very little cost.

Every Snapshot card comes with a 90-day, no-quibble guarantee for defective parts or workmanship and our technical support is second to none. As a Snapshot owner, you can get free technical advice from our helpful engineers no matter where or when you bought the product.



Complete details of all our products and news of the latest software enhancements are available now. Write or call to secure your free copy of our literature.

The Snapshot range is available from your local dealer or direct from us. Send or phone your order to:

DARK STAR SYSTEMS LTD.
78 Robin Hood Way, GREENFORD
Middlesex, UB6 7QW
Telephone: 01-900 0104
Telex: 8813271 GECOMS G

Prices: Snapshot Card + 1 software package
£115.00 + VAT

Snapshot Card + 2 software packages
£130.00 + VAT

Snapshot Card + 3 software packages
£140.00 + VAT

Individual software packages
£20.00 + VAT

Snapshot Two or Copykit updates
£10.00 + VAT

We accept Visa, Master Card (Access) or American Express – otherwise please enclose payment with your order.

UK prices include postage & packaging. For European Orders add £2.00, outside Europe add £7.00

DarkStar
SYSTEMS

Other computers are networked with an external network unit.

Machines are connected via a low cost, four conductor telephone cable.

The software provides the standard ISO network layers and the Tops inter-operating system translation facility.

Further, Pflaumer claimed, Centram made every effort to reduce the cost of the system to the end user without sacrificing performance.

● Centram Systems West, 2372 Ellsworth Avenue, Berkeley, CA 94704. Tel: 0101 415 644 8244.

Typing tutor

MACTYPE, a typing tutor software package designed for the Macintosh, is being introduced by Palantir Ltd.

It is made specially for the

UK market, adapted from the software designed and developed by Palantir and now selling successfully in the USA.

In the MacType standard training cycle it sets out simply to teach the student by six preset tests to qualify up to 60 words a minute at 99 per cent accuracy.

The student sets his own standard and when this is reached a Certificate of Achievement is printed out. When the final test is achieved, the student may wish to continue to improve.

MacType repeats the cycle indefinitely, increasing the words per minute goal by five each time, with 99 per cent accuracy for all levels.

The package boasts a built-in metronome to help the student maintain an even rhythm and the option of the Dvorak keyboard in addition to the standard qwerty. The same MacType disc has been desig-

ned to accommodate over 100 students.

Price about £49.95.

● Palantir Ltd, Columbia House, 69 Aldwych, London WC2B 4DX. Tel: 01-242 6284.

Grappler+ adapted

ORANGE Micro is offering a special version of the Grappler+ printer interface for use with Dataproducts and IDS printers.

This Apple II series compatible card will perform a number of hi-res graphic and text formatting commands on most past and current Dataproducts models.

The IDS/Dataproducts Grappler+ will work with Dataproducts 8010, 8020 and 8050, IDS Paper Tiger 460 and 560, IDS Microprism 480 and

IDS Prism 80 and Prism 132.

● Orange Micro, 1400 North Lakeview Avenue, Anaheim, California 92807. Tel: 0101 714 779 2772.

Extra graphics

BRODERBUND Software is following up The Print Shop with The Print Shop Graphics Library for the Apple II family.

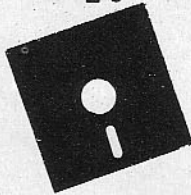
The disc contains 120 new designs, symbols and pictures for use in do-it-yourself graphic creations.

The Print Shop captured the number one spot on Billboard's home software chart and has been within the top five almost continuously since the product's release.

"We've never had such an enthusiastic response and so much fan mail before", says Ed

No other card on the market can do so much for you and your Apple II.

The Copykit.



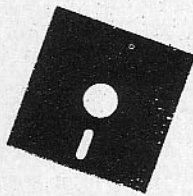
THE COPYKIT - Backing up your costly software is an essential part of sensible computer use. If you don't use backups and something disastrous happens to one of your original disks (and it probably will), say goodbye to your hard earned cash.

With the Copykit software loaded into your Snapshot card, making security backups of even a 128K program will take no longer than 25 seconds. What's more, your backup

will be in BRUNnable binary files which can be easily transferred to hard disk.

And making backups is just the beginning. You can use the Copykit to save or load the largest spreadsheet in seconds. You can suspend any program while you list it, disassemble it, step-and-trace it, modify it, compress it or print out its display. These features add up to one of the most powerful debugging and customizing tools around.

The Shuttle.



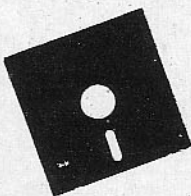
THE SHUTTLE - If you regularly use more than one program - and who doesn't? - our Shuttle program will save you continually booting and re-booting disk after disk. You can use it to switch back and forth between your spreadsheet software and your word-processor and your database - in fact, between any of the applications you want to use - in just a few seconds. As with the Copykit, you can resume a program that you've suspended at exactly the point where it was interrupted.

The Shuttle will work with virtually all the

popular business, educational, hobby and utility programs. This means that you can enjoy the main benefits of an integrated software package or a concurrent operating system, but still use the programs you own already. And, unlike the alternatives, the Shuttle won't cost you an arm and a leg!

The Shuttle can use any standard memory expansion cards (you'll need 64K RAM for each program you want to run at any one time) or, if you have a hard disk, it will use that instead.

The Printerrupt.



THE PRINTERRUPT - Those of you who like to use graphics for business or fun will love this program. You can use the Printerrupt to suspend the program you're running, print its screen and resume running it.

But it doesn't stop there! The Printerrupt is the most versatile, sophisticated printing utility you can buy. Configurable for all the major makes of dot-matrix printers and printer cards, the Printerrupt lets you edit

the screen with vertical and horizontal cropping, rotate both clockwise and anti-clockwise, independently expand a graphics screen vertically and horizontally up to 8 times, inverse, enhance, enlarge, shade in four different modes and much, much more.

If there's a better printing utility program, we haven't heard of it. And the Printerrupt is the only one that lets you continue to run your program where you left off without re-booting.

Bernstein, Broderbund's director of product development. "The main thing users have requested is more graphics to use in their creations".

Graphics Library obliges with the new images, including the 12 Zodiac signs, sports symbols, various images useful in schools, background patterns for typeset pieces, and special-occasion images for such holidays as Christmas, Easter and Mother's Day.

Suggested retail price is \$24.95.

● Broderbund Software, 17 Paul Drive, San Rafael, CA 94903-2101. Tel: 0101 415 479 1170.

Disc sharing

A NEW version of the CP/M card for the Apple II family that

allows CP/M and ProDOS files to share a hard disc comes from Advanced Logic Systems.

Through a process that dynamically allocates the disc, ProDOS remains intact when CP/M 3.0 is loaded.

Through the ProDOS the entire CP/M system, including programs and data, is contained in a single file on disc.

When in CP/M the user is unaware that the two operating systems are running simultaneously. The CP/M "file", operating on top of ProDOS, can be any size the user requires up to the maximum 10 megabytes.

Through dynamic allocation of the disc the CP/M area of the hard disc is only as big as it needs to be to accommodate the user's CP/M file.

"This is an example of true disc sharing", says ALS director of marketing Nathan Schulhof. "The user has the convenience of two operating systems and does not have the incon-

venience of choosing one to the exclusion of the other".

● Advanced Logic Systems. Tel: 0101 408 730 0307.

Wizard teachers

AVANT-Garde is introducing four educational programs for the Apple II series designed to challenge and instruct children.

The Magic Cash Register teaches about money by letting children become cashier of their own make-believe store.

A short story/colouring book introduces children to the cash register, and a friendly Wizard on screen explains what to do at every step.

Introductory Algebra challenges students from grades 8 to 12 with thousands of equations available to solve.

There are 24 varieties of operations to choose from, with three to four levels of difficulty each. An optional review of laws, theory and methods is available.

Lessons are automatically timed and scored, so students can compete against each other or against the clock.

Intermediate Algebra explores special products and algebraic factors, including distributive law, polynomials, squaring and grouping.

Instant on-screen scoring, sample problems, three levels of difficulty, and hundreds of exercises all work together to make the program a good follow-up to Introductory Algebra.

Logic Workout introduces students to classical logic and syllogisms. Field tested for eighth grade to college, it is said to boost mental fitness.

The Magic Cash Register is available for the Apple II series



**Suddenly,
quality plotting
is within reach of
every computer user...**

with 64k RAM and one disc drive. Logic Workout, Introductory Algebra and Intermediate Algebra require 48k RAM and one disc drive.

Suggested retail price for each of the four programs is £34.95.

● *Avant-Garde Publishing, 503 345-3043, P.O. Box 30160, 1907 Garden Avenue, Eugene, Oregon 97403.*

Jazzing up Mac

LOTUS Development Corporation has introduced a Jazz business software product designed to run exclusively on the 512k Macintosh.

It is multi function software featuring word processing, worksheet analysis, database management, communications and business graphics.

Jazz requires a 512k Macin-

tosh with an external disc drive. The Apple Imagewriter and modem such as the Apple Modem 1200 are recommended optional equipment.

Jazz has also been designed to run on the Lisa with Macworks.

Suggested retail price is £495.

● *Lotus Development (UK), Consort House, Victoria Road, Windsor. Tel: 0735 840281.*

Mac management

MEGAHAUS Corporation, publishers of MegaMerge, the mail merge program for Apple's MacWrite, have announced their second Macintosh product - MegaFiler.

It is a file management program taking full advantage of the Macintosh technology.

It comes with a library of

ready-made files for a host of applications, such as mailing, lists, sales records, business inventory, home inventory, stocks, customer orders and more.

MegaFiler and MegaMerge are the first two packages in a family of Mac software from Megahaus. MegaForm, a forms generator, and MegaDesk, a collection of desktop accessories, will be released early this year.

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

Budgets on tap

ULTRAPLAN'S "ready to go" preformatted budgets and management aids are said to give the full benefits of Multiplan

immediately on switch on.

The budget is formatted with limited company, partnership or sole trader options and enables the user to produce full profit and loss accounts and balance sheets for 12 periods together with comparative figures for the previous year.

There are supporting schedules on sales, gross profits, debtors, creditors, stock, VAT, PAYE, fixed assets and investments.

Management aids include vehicle cost analysis, marginal costing, breakeven computation, price list preparation, economic order quantities, sales/purchase/nominal ledgers, working capital requirements, and labour cost estimates.

The package of 55 files costs £99 and is available on the Apple IIe and the Macintosh.

● *Trinity Business Systems, 52 Queens Road, Hethersett, Norwich, Norfolk. Tel: 0603 812195.*

Penman... the world's first robotic plotter from only £199 + VAT

Penman is an entirely new concept in plotting.

It is robotic, working almost like the human hand to draw smooth curves, perfect circles and dead straight lines... without 'staircases'.

Penman is simple, reliable, very compact and truly portable; yet can plot on any size paper, on any smooth horizontal surface.

Use Penman at work, at home and at school... as a printer, robot, mouse and desktop plotter for BASIC and LOGO. Use it for design, or to produce graphs from spreadsheets, scribe

captions and notices. The only limit is your imagination.

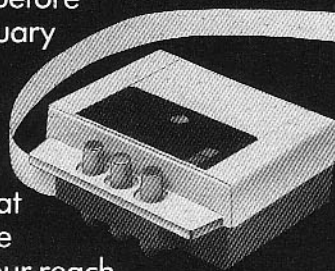
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