

The International
apple computer
users' magazine

Windfall

Volume 2 No. 11 May 1983 £1

Bill Sowerbutts'
OUTDOOR APPLE

**Date conversion, with
full program listing**

**Stretching Visicalc with
new Super Expander**

**Copying — piracy
or security?**

**What the Epson printer
manual doesn't tell you**

Generating bar indicators

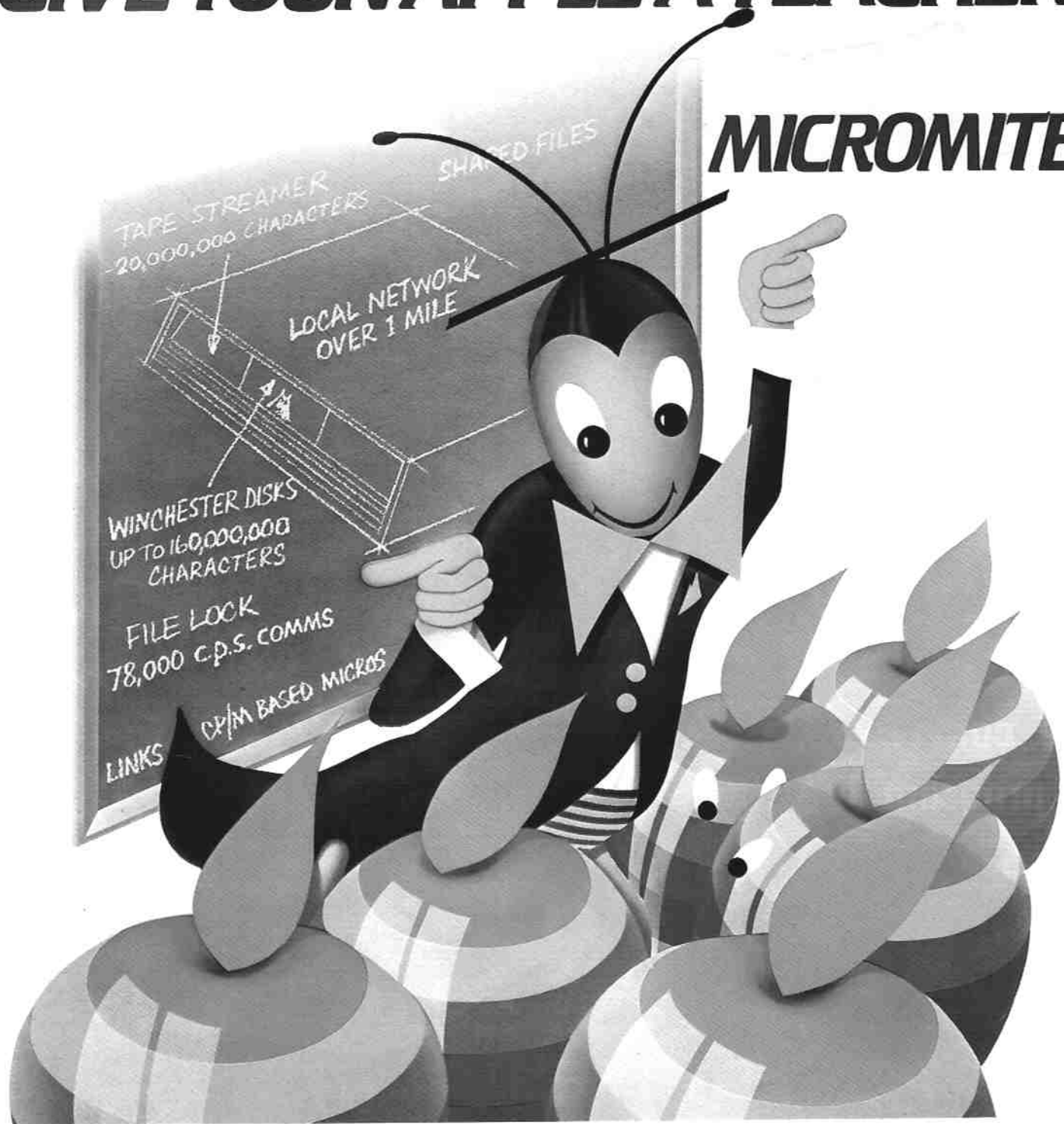
**Personal Data Analysis,
Apple Circuit and
Wildword reviewed**



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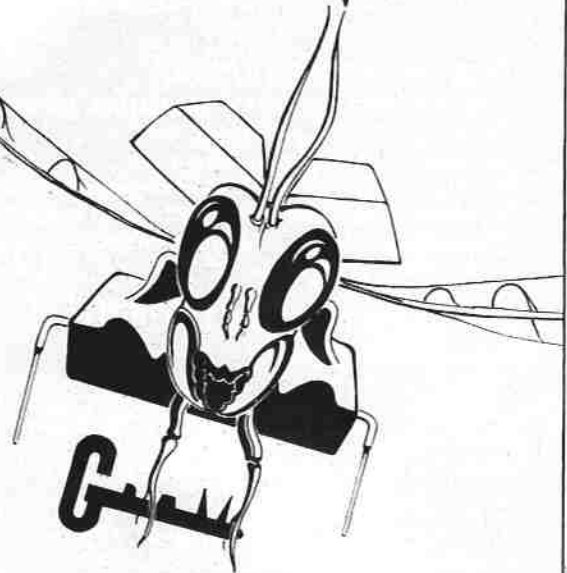
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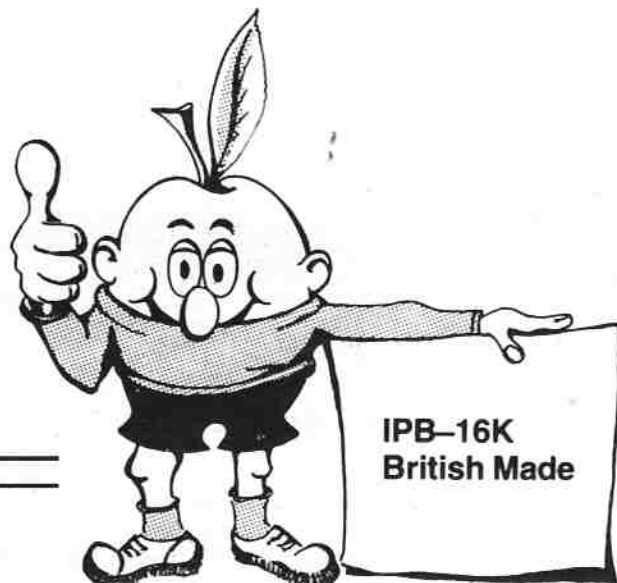
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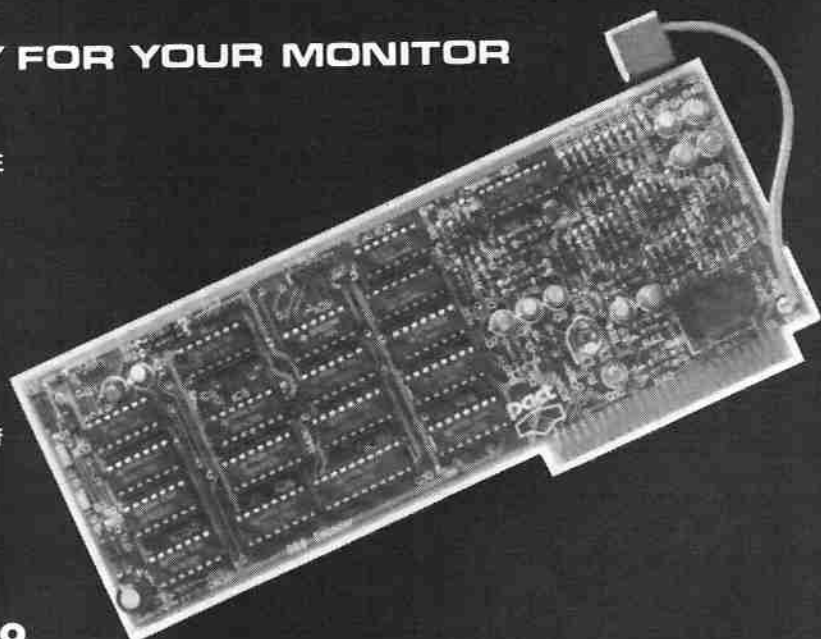
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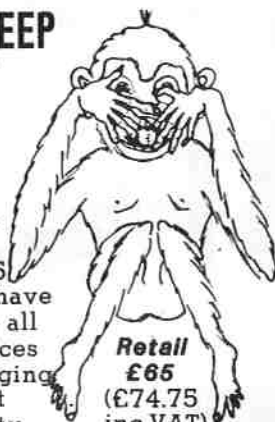
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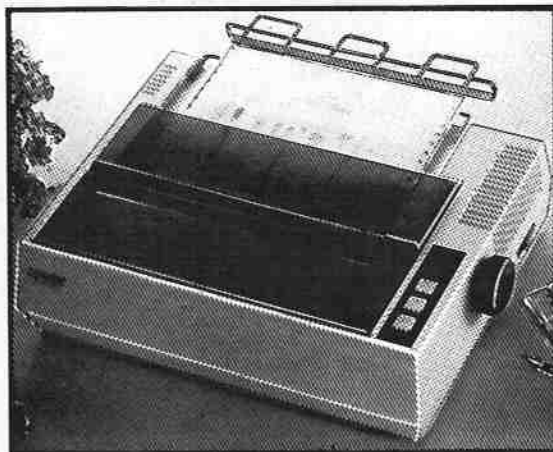
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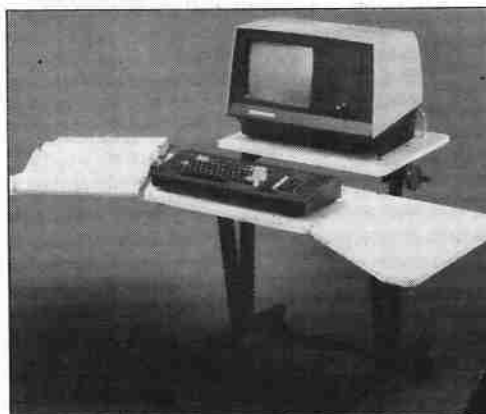
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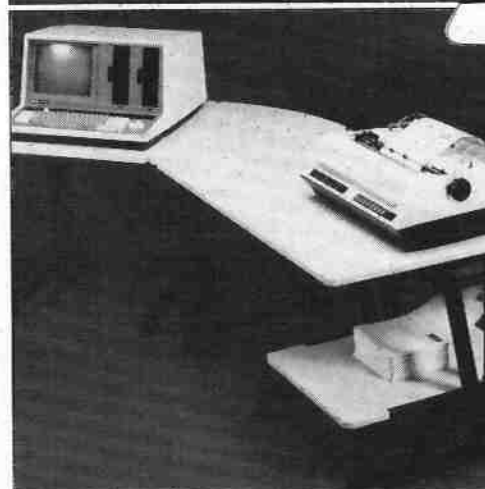
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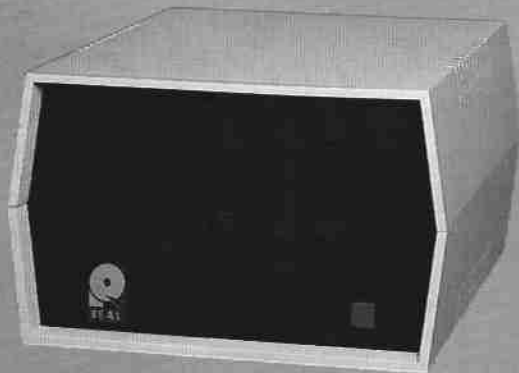
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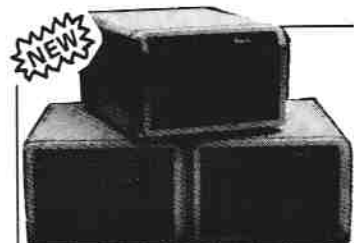
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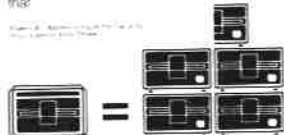
Rana has an advanced write protect feature which makes it impossible to lose your information. A simple touch on the front panel's membrane switch gives you fail-safe control. Apple of course only has a notch or tab, which gives you only minimal protection. With the superior Elite controller card, you can control up to four floppy disks using only one slot. With Apple's you can only use two. Of course, you can still plug into Apple's controller card, but down the line you'll want to switch to Rana's and save yourself a slot.

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The revolutionary new video display card that gives extraordinary new powers to Apple II, Apple IIe & Apple III computers. Setting new standards for versatility, Ultraterm allows you to choose the number of columns and lines you want displayed across your screen. Add to that an incredible clarity of character display and a refreshing ease of use... and you have ULTRATERM!!

- Ultraterm features eight software selectable modes
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 - 80 cols. by 24 lines (interlace mode*)
 - 132 cols. by 24 lines
 - 160 cols. by 24 lines
 - 96 cols. by 24 lines
 - 80 cols. by 32 lines
- You can choose your own mode, displaying as many as 4096 characters at a time. Most modes can use interface for fully connected vertical lines on all characters.*
- Ultraterm utilizes 8 x 9 and 8 x 12 dot character matrix (versus the normal 5 x 7) to deliver high-quality resolution in the clearest, clearest characters available anywhere. Stable, flicker-free display guarantees easy on the eyes readability.
- BASIC, Pascal and CP/M* are completely supported by Ultraterm. BASIC listings can extend to the full screen width, and the Pascal editor can be configured for any display mode.
- Ultraterm's pre-soft packages allow immediate use of Appewriter II and VisiCalc* with display quality unmatched by any other card.
- With Ultraterm, you can define two different sets of three attributes at a time, which may include any of these choices: standard/alternate character sets, normal/inverse display, bright/dim display. One set you define might include standard plus inverse plus bright; so you would see on your screen standard characters in inverse (white on black) and bright display.
- The sets of attributes you define can be displayed on a character-by-character basis or on a line-by-line or whole screen basis. Thus you can differentiate characters, commands, menus, columns, etc. to improve accuracy of input or just to add a touch of aesthetics to an otherwise dull spreadsheet!
- Ultraterm's high-resolution porting capabilities allow composition of bar graphs and even placement of text in the middle of graphs. With an internal programmable soft video switch, you can easily alternate between text and graphics.
- As with all its manuals, Videx has designed its Ultraterm manual to be readable and easy to understand for the beginner! At the same time, more complete technical information is included for the advanced programmer. Support firmware listings and schematic diagrams are contained in each manual.
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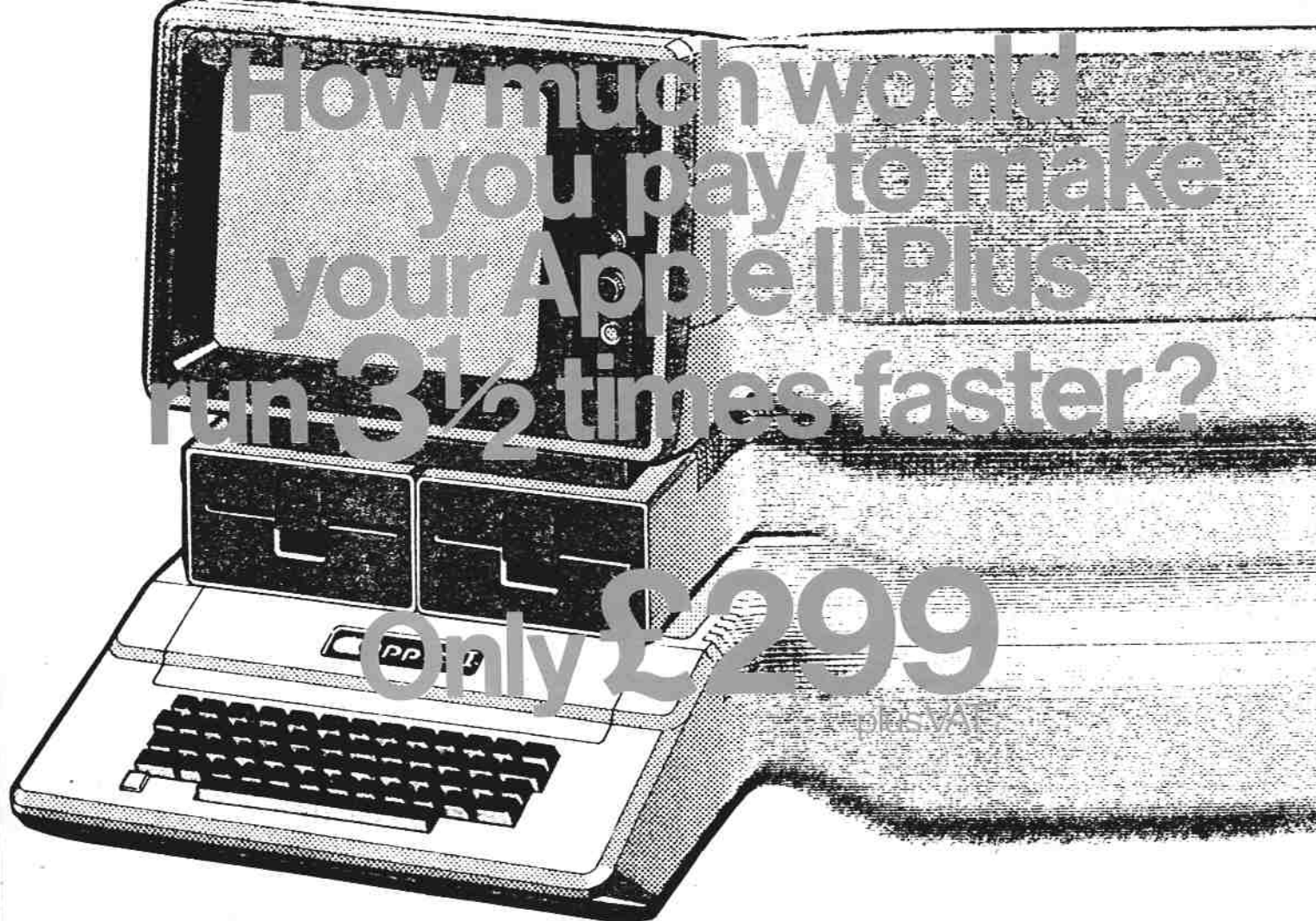
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SAVES TIME

Imagine the time, energy, and frustration you could save by boosting your Apple's speed from 1 Mhz to 3.58 Mhz. That's 3½ times faster than normal, making the Apple II Plus arguably the fastest Micro on the market.

How is it possible? It's all down to ACCELERATOR II. This new plug-in board from Pete & Pam Computers contains a 6502C Processor and 64K of memory. The board runs all native Apple II software, including programs written in Applesoft, Integer, Machine Code, Pascal, Apple Fortran 77 and Forth.

Amongst the many thousands who could benefit from ACCELERATOR II are users of Visicalc, DB Master, Micro Modeller, Multiplan Tabs, and Systematics.

SUPER FAST

In November 1982, PCW published a bumper round up of all the Benchmark Timings since PCW began. The Olivetti M20 came out top of the 'league' with an average Benchmark timing of 11.5. Running the same Benchmark test programs,

the Apple II Plus with Accelerator II averages a timing of 8.58 — that's an incredible 25% faster than the Olivetti M20.

We have reproduced some of PCW's findings, incorporating Benchmark Timings for the Apple II Plus with Accelerator II.

Machine	BM1	BM2	BM3	BM4	BM5	BM6	BM7	BM8	Average
Apple II Plus with Accelerator II	0.3	2.4	4.5	5.0	5.5	8.2	12.9	2.98	8.6
Olivetti M20	1.3	4.0	8.1	8.5	9.6	17.4	26.7	1.6	11.5
IBM Personal Computer	1.5	5.2	12.1	12.6	13.6	23.5	37.4	3.5	17.6
Osborne 01	1.4	4.4	11.7	11.6	12.3	21.9	34.9	6.1	19.9
Intertec Superbrain	1.6	5.2	14.0	13.9	14.8	26.3	43.2	5.6	21.9
Apple III	1.7	7.2	13.5	14.5	16.0	27.0	42.5	7.5	24.7
ACT Sirius 1	2.0	7.4	17.0	17.5	19.8	35.4	55.9	4.3	24.8
Xerox 820	1.7	5.5	15.5	15.1	16.2	28.9	46.1	8.0	26.1
Apple II	1.3	8.5	16.0	17.8	19.1	28.6	44.8	10.7	30.4
Commodore CBM 8032	1.7	10.0	18.4	20.3	21.9	32.4	51.0	11.9	34.3

So don't wait — start to save time now. Contact your local dealer, or call us on (0706) 212321, or, in London on 01-769 1022. A faster, easier computing life is on its way.

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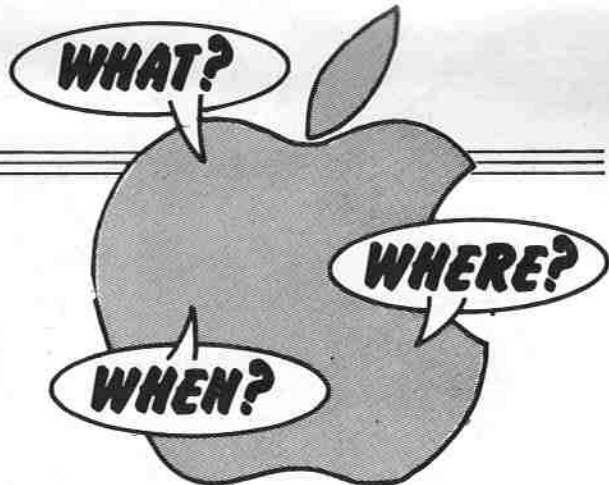


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WHAT'S NEWS...

By David Creasey



Apple II Plus bows out gracefully

THE Apple II Plus has had a triumphant swansong. Nearly 100,000 were sold in the last few months of the machine's production life, bringing the worldwide sales to a total of more than 850,000 according to Apple.

No figures are available for the Ile, but Apple UK has been selling all it could get its hands on and has only recently, through a concerted production effort, managed to bring supply in line with demand.

Workers at the Apple production plant in Cork have been working 12 hours a day seven days a week. It took them only a month to recover the supply situation created by the unprecedented demand for the Ile.

Now that Iles are back in stock, there is a shortage of monitor IIIs and Apple Parallel printer cards.

The monitors are produced independently by Hitachi, so Apple has not been able to do anything about increased production. As a temporary measure it is offering two green screen alternatives, one from Kaga and the other from Sanyo. The Monitor III will be put back into the Ile bundle when stocks are available.

Also officially out of stock is the Apple parallel printer card. The Printermate, by Advanced Logic Systems, is being offered as a temporary alternative, together with technical information about the different control commands it uses.

Decision makers

"YOU don't need an elephant gun to shoot goldfish" is how the head of one of New York's leading financial advisory companies explains why his foreign exchange analysts use Apples rather than larger computers to forecast market fluctuations.

Dr Charles Ramond is head of Predex, which advises giant multinationals like Colgate-Palmolive and McDonalds on when to buy or sell foreign currency.

They not only use their Apples to analyse and predict market trends but also to communicate the results to other



Apple II Plus... selling to the last

Apples all over the world.

Said Dr Ramond: "We could get the actual figures to our clients any number of ways, but there's really no substitute for using the Apple to transmit graphic descriptions of movements in currency rates. It reduces one of our clients' major concerns - the fear of not getting the full story of what the market is doing as fast as the other guy."

Translated from the American

STANDARD practice among many Apple users, although not recommended, seems to be to try out any hardware or software product first - and only to refer to the manual when all else fails.

So it may take some time for many proud owners of an Apple IIe to notice that their owner's manual occasionally refers to an A or B model of the machine.

But there is no need to scabble inside to find out which model you bought. Only 1,000 A boards exist, and all of them are

in the United States.

They are no longer made, and when an A machine is sent in for service it is automatically upgraded at no extra charge. The difference is minor and Apple says owners who have the change made probably haven't even noticed.

The B board uses a redesigned memory management chip which, when used with the extended 80 column card, gives a double hi-resolution mode with double the width in terms of graphics capabilities - a 560 x 180 screen.

All European versions of the Ile were developed from the B board, but were sold initially with American manuals which refer to both A and B, together with a European supplement.

"We've put up with the American manuals for a while and issued a European supplement with them," said Steve Holmes of Apple.

"Now we are busy doing a complete 'translation' of the American manual, incorporating both a manual and supplement, and the result will be a completely localised product."

The all-in-one manuals are due for release soon. Apple says that people who have the original Ile documentation won't need to change it.

Stop me and try one

APPLE dealers in America are being offered a chance to hire special vans to help them get their products out of the shop and in front of potential customers.

The vans were commissioned by Apple Computer to help meet the demand for hands-on experience in corporations, schools, hotels and other out-of-shop locations.

The company claims that while it normally takes a dealer up to four hours to set up and breakdown a sales, seminar or field training session, use of one of the \$34,000 vans reduces the time to less than an hour.

Each van is customised with lockable steel racks that hold six tables and 12 Apple IIs or IIs, monitors and disc drives.

The equipment is bolted to the tables, which can be easily moved from the van to a demonstration room. Setup is a simple matter of moving the table into a room, opening the legs and plugging in the power cord.

Also included with each SST is a screen for audio visual presentations, extension cords and a workbench inside the van which can be used for on site service even when the van is fully loaded.

Pirates pirated!

ONE-UP for the software houses v the pirates! The American software house Sir-tech, which wrote and markets the Wizardry adventure game, hasn't actually beaten the pirates at their own game - instead it has taken what it saw as a serious threat to the success of one of its products and by publicising it, has used it as a clever marketing ploy.

As in real life where strength, learning, experience, cunning and various other human attributes contribute to one's success or failure, so too with Wizardry, where a player has to develop the knowledge and skills of his game characters in order to make any progress in his quest.

Now Sir-tech has told us that a major marketing effort is being readied for a program that will permit artificial creation of super strength characters for the Wizardry program.

"It has come to our attention that some software vendors are marketing so-called 'cheat' programs which allow the creation of characters of arbitrary strength and

ability," says Sir-tech.

It seems to me that Sir-tech don't have too much to worry about, as users will still have to buy their product to be able to benefit from the so-called cheat programs.

However the company has appealed to Wizardry purchasers "not to succumb to the temptation."

It claims: "It took more than four years of careful adjustment to properly balance Wizardry. These products tend to interfere with this subtle balance and many substantially reduce your playing pleasure.

"It would be akin to playing chess with extra queens, or poker with all cards wild."

Wizardry has a long-standing reputation of being a classic Apple adventure game, and Sir-tech's complaints about cheat programs may simply serve to give the game a welcome shot in the arm.

More serious however is the company's claim that some of the cheat programs are unreliable and may even destroy the Wizardry data.

The company says it won't repair or replace "inoperative discs damaged by a cheat program." It is also taking legal advice in respect of copyright infringements and is considering taking court action over the matter.

Cause for complaint . . .

THE microcomputer world had waited a long time for Apple to release its new products, and speculation had been particularly intense in the Apple world.

So when Lisa and the IIe were announced people devoured any information or publicity material they could get their hands on.

Dealers in particular were keen to find out as much as they could about the IIe - their new bread and butter machine.

However, it seems that at least one dealer thought the machine would sell itself, judging by the trouble he took to find out about it.

He sent his first IIe back to Apple within two days of receipt because, he said, it had a faulty keyboard.

"If you hold down any of the keys for more than a second the letter repeats itself on screen," he complained.

An Apple spokesman commented: "He was obviously one of the few dealers who didn't bother to turn up for one of the in-depth dealer training days we organised around the country in the run-up to the launch."

Apple won't say who the dealer was, but my own reaction is that I'd like to know so that I can go to someone else should I need help.

Music for the blind

TWO Apples are at the heart of an organisation which provides taped music for more than four and a half thousand blind people throughout Britain and abroad.

They are being used to provide a catalogue of more than 400,000 tune titles which form the basis of a request service for the blind. So far only 12,000 have been put on disc and any help, advice, or equipment from Apple users would be more than welcomed.

Derek Mills started the National Music for the Blind when he was asked to provide music on tape for a local blind man who wanted something different to the regular fare available from the radio network.

He and his son Christopher created what they describe as a humorous country music programme, "something on the lines of an early mad Kenny Everett type, or, for the oldies, a Jack Jackson type of programme.

"This became a very popular regular service. Without our knowledge the blind man passed our programmes to his many friends - and they eventually approached us for more of the same, created especially for them," he said.

"After a short while we were 'broadcasting' to about fifty blind people in various parts of the North of England."

Today the special cassette tape library for the blind and disabled is dubbed Radio Churchtown.

The service has charity status. It is free, with funds to pay for equipment, tapes, postal wallets and a 24 hour answering service giving legal and other advice for the blind coming from volunteer fund-raising activities.

Listeners are offered a music programme of popular nostalgic requests, a talking newspaper, The Guiding Star, which carries listeners' requests and items on gardening, cooking, useful tips and humour, and a play or talking book.

Derek Mills has appealed for donations, records, floppy discs, articles and short stories (preferably of a humorous or ghostly nature).

More important in terms of running the organisation would be any programs for the Apple II, such as databases or toolkits. However send instructions as well, as only non-programmer Apple users are involved.

Contributions can be sent FREEPOST to: Articles for the Blind, The National Music for the Blind, 2 High Park Road, Southport, Merseyside PR9 7QL.



Derek Mills (centre) receives donations from students. See "Music for the blind"

Prices slashed

A DRAMATIC change in pricing policy has been announced by Penguin Software, a major games publishing company in the United States.

For a six month trial period it is dropping its price for games packages from \$30 and above to a standard \$19.95.

"Games should be for fun. You shouldn't have to empty your wallet each time you go out and buy one," said Mark Pelczarski, Penguin president.

"A lot of people are going to question our sanity, but from the reactions of the retailers and customers we've talked to we think we will sell more than enough to make up for the decreased money per game. If the experiment works, we will continue with that pricing," he said.

The reduced price affects Penguin's existing packages, including Pie Man, Transylvania and Spy's Demise, as well as new games like Thunderbombs and Crime Wave.

It reflects a marketing decision rather than a change in the company's stringent software development policies, said Pelczarski.

Penguin's new policy coincided with the publication in an American Apple magazine, *iNcider*, of an article by Fred Huntingdon, who complained about how often he'd had to put down \$34.95 for a game that proved to be mildly interesting for about five minutes only.

"There are great advertisements to go with these programs, great promises and great artwork on the outside. There may even be great programming and great hires graphics. But the bottom line is that, even discounted to \$25, many of these games are tedious and simply not worth the price," he said.

Breaking down the cost of a game, Huntingdon said that on a \$30 item the manufacturer generally received \$13.50 per program. About 20 per cent -- \$2.70 -- of that went to the author, leaving \$10.80. Disc production, including copying and documentation, usually cost \$2.50, leaving \$8.30, and from that had to come advertising, distribution costs and overheads.

Now CP/M is on tap

GOOD news for Apple III owners is that the long-awaited CP/M softcard is now available in the UK and can be ordered through dealers. It costs £291.

There has been some delay in getting the card to the UK since it was first announced towards the end of last year.

However, two British dealers who have been testing the card for Apple say it is remarkable. They claim that its availability could triple the market for Apple IIIs virtually overnight, giving the III, which is a dedicated business machine, access to the huge library of CP/M-based business software.

Lisa will be on show

NEXT month's Apple '83, Europe's leading Apple showcase, is the year's big opportunity for Apple users -- and those thinking of becoming Apple users -- to catch up with the latest developments in the most exciting period the company has ever known.

Dozens of major manufacturers and suppliers will be showing the latest crop of Apple-related hardware and software. Apple UK will be much in evidence, and there will be special demonstrations each day of the remarkable new Lisa.

While Lisa was announced in January it won't actually be launched until later this year. But visitors will be able to see it in action, examine its many revolutionary features, and also see how UK software developers are responding to the Lisa challenge.

Apple '83 will be held in the Fulcrum Centre at Slough, Berks, from Friday June 3, to Sunday June 5. Entrance at the door will be £2 -- but a free ticket is enclosed with this issue and *Windfall* readers can obtain additional free entry tickets in advance by writing to us and enclosing a stamped addressed envelope.

Running alongside the exhibition will be the National Apple Users' Convention. The underlying theme this year is the application of Apples in business, but there will also be talks on using Apples in schools, and plenty more to interest all Apple enthusiasts.

The convention involves several hour-long presentations each day, with a half-hour demonstration of Apple's new Lisa each lunchtime.

A season ticket for the full three day program costs £28.75, bookable in advance using the coupon in this issue. User group secretaries should contact *Windfall* for details about reduced rates for bona fide members of their groups.

The convention is a unique means of finding out how other people are using their Apples and exploring the full applications potential of the machine.

At the companion exhibition you can browse through books, games, inspect a huge variety of software and hardware -- and get expert advice or make on-the-spot purchases.

We look forward to seeing you there.



Confide in you Apple and live longer . . .

IF you are one of those people who knows what physical condition you are in (balding, fattening, slowing down . . .) but who isn't prepared to tell anyone about it, then you might like to try confiding in your Apple. It may help you get back on the road to better health and fitness.

That's the idea behind a new software package, HELP (the Health and Exercise Lifestyle Programme), launched recently by Gate Microsystems.

The company decided to blend the skills of physical education with the power of the microchip, and is now selling its package for the Apple II on three continents.

The program is designed to evaluate the way a person lives and to recommend a lifestyle which caters for their own preferences. Anyone using the program has to key in information relating to age, sex, blood pressure, weight, family history, stress levels, nicotine intake and aerobic capacity(!).

This information is used to create a fitness profile which considers various risk factors and makes a "lifestyle projection" of the work, sports and pastimes to be followed to gain and maintain good health and fitness.

The package was developed in consultation with Flight Lieutenant Walter Williamson of the RAF, who says: "I could have you running five miles every day and

doing progressive resistance exercises with weights to make your heart and muscles stronger.

"But if after two weeks you threw it in because it didn't appeal to you then I would have given you nothing. Using the activities which a person naturally enjoys increases commitment."

The HELP package identifies and considers more than 150 sports, pastimes and activities ranging from soccer, rugby, pole vaulting, wrestling and sky diving to snooker, chopping wood, housework and polishing the car.

It then links an individual's health rating and choice of activity to produce an exercise lifestyle programme. Once this has been established it can be amended at any time to take into account the season, weather, increased job demands, new skills or activities and any reduction in risk factors such as obesity.

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The skinfold calipers don't require the use of an Apple. But they do require an ability to face up to reality!

Getting the right answers

WINDFALL is often asked questions about the operation of Apple hardware and software that perhaps should be better put to the dealer who sold the materials in the first place.

Most people are happy with this advice to contact the dealer. A few, however, tell us that their dealer doesn't know the answer, and in some cases the advice given is patently bad!

One company bought an Apple III recently and now wants to develop a network system involving several other Apples. The buyer's dealer promptly produced a quote but told him that he would have to get rid of his Apple III, at a very low resale price, as it wouldn't link up with other Apples on the network he was recommending

He also said that the company couldn't have a demonstration of the network system, and would have to place a firm order without first seeing the software and hardware in operation.

We re-assured the company MD that he didn't need to get rid of his Apple III as it could easily be networked, that if he did want to sell it it would have a high resale value and that he should consider finding another dealer.

Yet another query concerned the use of the DELETE, TAB and cursor movement keys on the IIe. The user said his dealer didn't know the answer.

And a school that installed a network of Apples told us ruefully that while the Apples were excellent, the network controller wasn't, and that his dealer had become less helpful and harder to get hold of once the system had been installed and he'd received his money.

The fault lies with a minority of dealers who haven't taken the trouble to attend the frequent dealer training sessions run

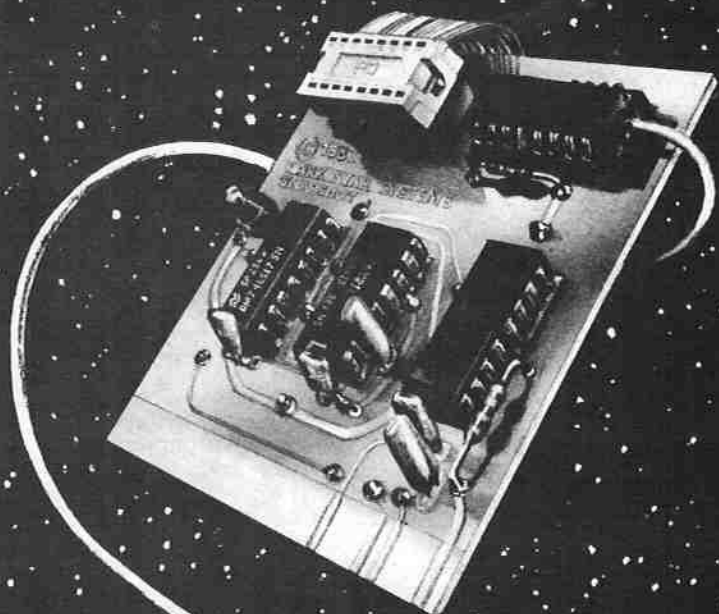
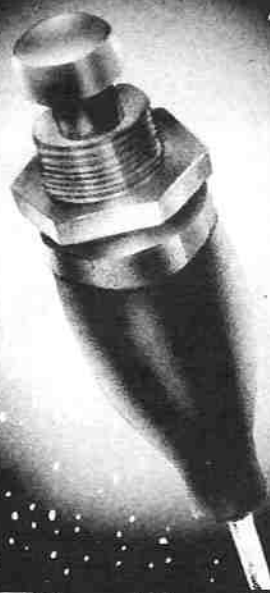
by Apple UK.

Apple itself has recently introduced a new dealer agreement (generating some criticism from dealers in the process) to give it some measure of control over the standard of after-sales service and support. They claim it will help to weed out unsatisfactory dealers or else improve their performance in customer support.

Proper back-up is one of the key factors behind Apple's success story, and a spokesman stressed that solving customer's problems is a priority.

Apple's own technical support team handles more than 1,500 queries a month (they can be reached on 0442 60244) and are happy to do so. However, that job should be handled in the first instance by the dealer.

It is important to note, from our experience, that most dealers are both helpful and knowledgeable, and if they don't know an answer they know where to go to find out. It is in their own long-term interests to do this.



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PEELINGS 11 magazine (Feb 1983) compares SNAPSHOT with Wild Card and Crack-Shot:

"Overall, with one of the supported RAM cards, SNAPSHOT is the best buy."

"The copy procedure is perhaps the easiest and clearest of the three cards."

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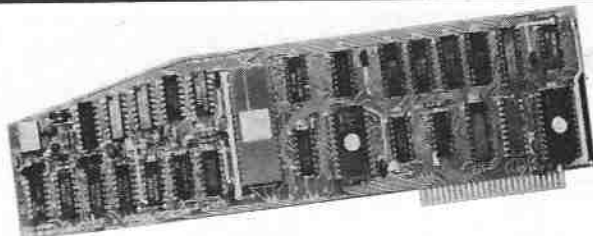
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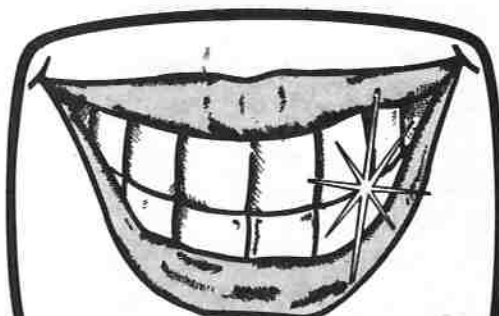
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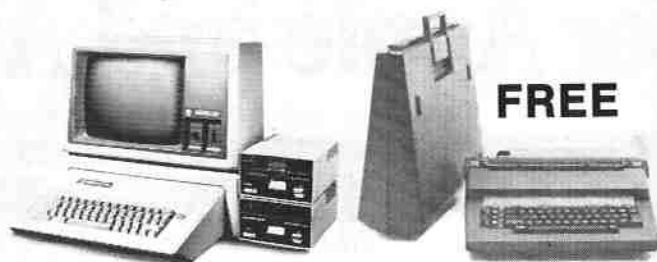
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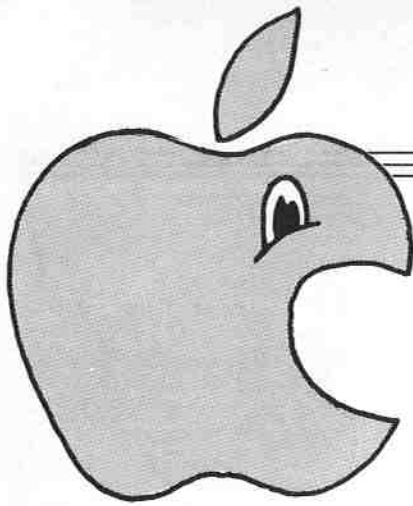
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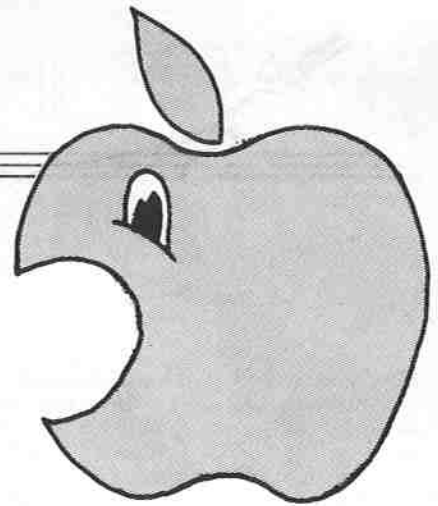
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A touch more magic . .

IT was with great interest that I read Mr Nick Levy's Visicalc article in the October issue of *Windfall*, in which he described "A technique with a touch of magic". He was right! It was undoubtedly magic, writes **R. Gear-Evans**.

The procedure he described, was, if I may summarise, as follows: One could create a series of labels in a Visicalc format, save them to disc using the PF routine, that is print file to disc, reload that file using /SL—normal storage load—and, abracadabra, the file which was not supposed to be loaded was, and the labels

had turned themselves into formulae! Magic, I am sure you will agree, but the best is still to come.

In order to describe the process it would probably be better illustrated if an example formulae were given and the procedure explained. The formulae in this case is for example: > W10: # +E10.

The > is a sort of GOTO instruction. The W10 is the Visicalc address to which the following formulae is to be placed.

The : is the separator between the two parts of the formulae.

The # is the crucial instruction, to sum the result of the previous calculation and place it in the formulae as an unique number, rather as if one had entered a new formulae the result that existed in cell W10 plus a new formulae (E10).

The +E10 is the instruction to add E10. In summary one would find in W10 the formulae : an unique number +E10.

Terrific one thought, one could consolidate data until the cows came home.

However if, like me, you have an 128k Visicalc memory expansion board the size of the datagrams expand accordingly and I found that I could not get any more than 254 lines (equating to A1-A254) of formulae into a PF file.

If I tried to use column B to provide additional formulae, I found that I could not find the link from one column to another, so that when the PF file was loaded I obtained a large amount of buzzing.

Furthermore, because the original entries were labels, one could not use the replicate facility for numbers, and therefore one was involved in a very laborious process of entering each individual entry.

It was about this time that I bought Applewriter II, and while exploring its facilities I discovered that I could create a

PF file for Visicalc by using the word processing language (WPL). The results were that I was not subject to laborious entering of formulae, I could use a sort of replicate facility, the program could be larger than 254 lines, it did not buzz when loaded into Visicalc, and once set up could be used to produce numerous different models.

The listing of the program is in Exhibit I. It is not in any way meant to be a totally bug-free sophisticated procedure, but merely a "shot" indicating what could be done.

The process is really quite simple: On [P] DO Title, or whatever name you save the WPL program under, the routine will provide you with, as it were, the first Visicalc column of your model.

Once you have completed this to your satisfaction, you could then save it to disc under, for example, PF Driver, and then using the [F] facility convert the Visicalc column address, using our example above,

W and E into X and F respectively, and then add the result to the PF Driver file using [S] PF Driver+. Don't forget that Visicalc only uses labels/addresses in upper case.

The possibilities for linking Applewriter to Visicalc does not stop here. With the use of the WPL facility one can produce other menu driven routines to produce for example, budgets. Account codes and descriptions for departments can be loaded and values can be phased over any period by creating the formulae for that category prior to loading into Visicalc for the actual number crunching.

Finally, Mr Levy has opened the door with the description of his "Touch of magic". Could it be that the combined use of Applewriter and Visicalc, with a little bit of imagination, may result in a "Touch more magic?" But then isn't that what magic is? — imagination!

```

IT
[V] [Q] [V]
[ND]
PPR VISICALC CONSOLIDATION ROUTINE
VISICALC DRIVER FILE FOR CONSOLIDATION PURPOSES.
PPR THE SYSTEM IS THE SAME AS
REPLICATING DOWN A COLUMN IN VISICALC.
PUSH PRESS RETURN =SA
PPR YOU WILL BE GIVEN PROMPTS TO ENTER
THE FIRST FORMULA WHICH MUST BE IN THE FORMAT OF PUSH
SAMPLE 1- =X(X) : +X(X)
PUSH PRESS RETURN =SA
[ND]
[GO] START
PUSH ENTER RANGE FROM 1- =50
PUSH TO 1- =90
PUSH 50
PUSH 90
LOOP 1
PUSH *A
PUSH 50:50
PUSH *A
PUSH (X) / (Y) /
PUSH
PUSH
PUSH LOOP 1
PUSH
PUSH DO YOU WISH TO ENTER
ANOTHER RANGE Y/N ? =50
PUSH 50/50/V
PUSH
PUSH 50:50
PUSH
PUSH
[V] [K] [V]
PUSH ENTER THE FORMULA =SA
[V] [K] [V]
PUSH 50:50
PUSH 50:50
PUSH
PUSH SAVE THIS TO DISC DRIVE II USING A FILE
NAME OF YOUR CHOICE:
[V] [K] [V]
PUSH
PUSH
PUSH ENTER FILE NAME 1- =SA
[V] [K] [V]
[V] [K] [V] SA,50
PPR END OF PROGRAM
  
```

Exhibit I

Taking Apple Darts a step further

THIS program from **Dave Eckersall**, of Cheltenham, follows from the last paragraph of the introduction of the darts game in the March edition of *Windfall*, which suggested that anyone with a voice box could use it to report the scores. It uses the Mutek voice card, Voxbox, which is a phoneme synthesizer.

Mostly it consists of an extension to the original program and only three lines in the original program need to be altered.

The first is in line 890 where "NUMB" is set to the total that the player scored and then the subroutine is called which gives the score.

The second is in line 990 where "LOMEM:16384" has been added to protect the hi-res page 1 screen from being overwritten.

The third alteration is in line 1100, where the initialisation subroutine is called at the start of the program.

The subroutine at line 2000 sorts out the score and fills an array with the numbers of the required phrases. The loop at the end of the subroutine sends each phoneme associated with each phrase to another routine which gets the Voxbox to produce speech.

The subroutine at line 2200 reads the phonemes needed for each phrase into an array and it also sets the location needed for the Voxbox to produce speech. "Y2" is set to this location assuming that the Voxbox is in slot three. This can easily be changed for other slots.

The data statements at the end of the subroutine are the list of phonemes required for each phrase. I have used 20 phrases. The first 13 are for the numbers 0 to 12. Phrase 14 is the word "thir" so that it can be used for 30 as well as 13. Phrase 15 is the word "teen" which can be used for all numbers between 13 and 19. Phrase 16 is the word "fif" which can be used for 50 and 15. Phrase 17 is the word "twenty". Phrase 18 is the word "ty" to use with numbers such as 40,135 etc. Phrase 19 is the word "hundred" and phrase 20 is the word "and".

With these it is possible to make phrases for any numbers from 0 to 180.

Each data statement is in two parts. The first is the first number which refers to the number of phonemes in that phrase - including the 63 at the end - and the second is the rest of the numbers which are for the phrase itself. All phrases must end with the number 63 to stop the Voxbox delivering any more than just the one phrase.

Once the program is running the only difference from the original is that the score is spoken at the end of the player's three throws.

One thing more. There is no provision for getting a "bull" out, and I think there should be as most competition darts allows this. Therefore line 800 should be altered to read:

```
800 T = T + S: IF T = SC(M1,1) AND
S < > Z AND (R > 80 OR R < 5)
THEN GOSUB 570: GOTO 910
```

```
890 NUMB = T: GOSUB 2000: NEXT M1
990 LOMEM: 16384: HGR : HCOLOR=
3: TEXT : HOME : PRINT TAB(
10)"A P P L E - D A R T S"
1100 GOSUB 120: GOSUB 2200
2000 REM SORT OUT NUMBER
2002 CD = 0
2005 IF NUMB = 100 THEN CD = 2: C
%(1) = 1: C%(2) = 18: GOTO 21
60
2010 IF NUMB > 99 THEN CD = 3: C
%(1) = 1: C%(2) = 18: C%(3) = 1
9: NUMB = NUMB - 100
2020 IF NUMB = 10 THEN CD = CD +
1: C%(CD) = 10: GOTO 2160
2030 IF NUMB = 11 THEN CD = CD +
1: C%(CD) = 11: GOTO 2160
2040 IF NUMB = 12 THEN CD = CD +
1: C%(CD) = 12: GOTO 2160
2050 IF NUMB = 13 THEN CD = CD +
1: C%(CD) = 13: CD = CD + 1: C
%(CD) = 14: GOTO 2160
2060 IF NUMB = 15 THEN CD = CD +
1: C%(CD) = 15: CD = CD + 1: C
%(CD) = 14: GOTO 2160
2070 IF NUMB > 13 AND NUMB < 20 THEN
CD = CD + 1: C%(CD) = NUMB -
10: CD = CD + 1: C%(CD) = 14: GOTO
2160
2080 IF NUMB > 19 AND NUMB < 30 THEN
CD = CD + 1: C%(CD) = 16: GOTO
2140
2090 IF NUMB > 29 AND NUMB < 40 THEN
CD = CD + 1: C%(CD) = 13: CD =
CD + 1: C%(CD) = 17: GOTO 214
0
2100 IF NUMB > 39 AND NUMB < 50 THEN
CD = CD + 1: C%(CD) = 4: CD =
CD + 1: C%(CD) = 17: GOTO 214
0
2110 IF NUMB > 49 AND NUMB < 60 THEN
CD = CD + 1: C%(CD) = 15: CD =
CD + 1: C%(CD) = 17: GOTO 214
0
2120 IF NUMB > 59 AND NUMB < 100
THEN CD = CD + 1: C%(CD) = INT
(NUMB / 10): CD = CD + 1: C%(C
D) = 17: GOTO 2140
2130 GOTO 2150
2140 NUMB = NUMB - INT (NUMB / 1
0) * 10: IF NUMB = 0 THEN 21
60
2150 CD = CD + 1: C%(CD) = NUMB
2160 FOR X = 1 TO CD: FOR Y = 1 TO
AZ(C%(X),0): P = AZ(C%(X),Y):
GOSUB 2170: NEXT : NEXT : RETURN
2170 POKE Y2,P
2180 FOR X2 = 1 TO 75: NEXT
2190 RETURN
2200 REM READ IN ARRAYS FOR PHON
EMES
2210 DIM AZ(19,10): Y2 = 3 * 16 +
49280
2220 FOR I = 0 TO 19: READ AZ(I,
0): FOR J = 1 TO AZ(I,0): READ
AZ(I,J): NEXT : NEXT : RETURN
2230 DATA 4,13,51,13,63
2240 DATA 4,45,50,13,63
2250 DATA 4,42,55,55,63
2260 DATA 4,57,43,44,63
2270 DATA 4,29,38,53,63
2280 DATA 5,29,21,34,15,63
2290 DATA 5,31,10,25,31,63
2300 DATA 6,31,1,15,35,13,63
2310 DATA 5,6,33,42,3,63
2320 DATA 5,13,8,34,13,63
2330 DATA 4,42,1,13,63
2340 DATA 7,5,24,59,15,2,13,63
2350 DATA 6,42,45,59,24,15,63
2360 DATA 3,57,58,63
2370 DATA 4,42,44,13,63
2380 DATA 4,29,11,29,63
2390 DATA 7,42,45,59,13,42,41,63
2400 DATA 3,42,41,63
2410 DATA 9,27,50,49,13,30,23,9,
30,63
2420 DATA 5,21,13,30,3,63
```

The extended listing for the original Apple Darts program

THIS routine from John Blaiklock, a fifth form pupil of Norwich, should prove useful in many games situations. Especially noteworthy is the routine (\$6025-\$6047) to calculate the base address from the Y co-ordinate. It is shorter than that used in the January Thinktank article and April's hi-res text routine.

Handy routine for hi-res programming

THIS short machine code routine (below) is in place of "one of those commands that would have been in Applesoft if only there was more room". It is similar to the lo-res SCRIN function except that it is for the hi-res screen. The X and Y co-ordinates are POKEd into zero page along with the screen number and details about the relevant pixel are returned.

The program is completely relocatable and self contained and therefore can be used from any language or even another machine code program.

First the X co-ordinate is divided by 7 to find how many bytes along the screen the point is, then the starting address of the row is derived from Y. Finally the relevant byte is loaded and details returned.

The details returned are:

Whether the dot is on or off (1 or 0).

The status of the appropriate colour bit (1 or 0).

The program is at location \$6000 (24576 decimal) in the listing. This is fairly safe, but if in doubt it can be relocated without any changes to the program being necessary. It will even fit into page 3.

The program was written using the DOS Toolkit assembler, but for those without an assembler it can easily be loaded from the monitor (CALL -151 from Basic)

To save the program type:

```
BSAVE HIRES SCREEN,  
A$6000, L$ 70
```

To use the program from basic load it by:

```
BLOAD HIRES SCREEN
```

then POKe in the co-ordinates and screen

number. For address \$6000 when

X = x co-ordinate

Y = y co-ordinate

**S = screen number (1 for HGR,
2 for HGR2)**

then type the following directly or from a program:

```
POKE 237, S*32: POKE 252, Y:  
POKE 238, X-((X>255)*256:  
POKE 239, (X>255): CALL  
24576
```

The result is obtained by:

Colour equal to: PEEK (255)

The pixel equal to: PEEK (254)

The zero page locations used are:

\$ED-\$EF, \$F9-\$FC, \$FE, \$FF

None of these locations are used by the monitor, Applesoft, Integer or DOS.

POKEing in the meaningless numbers will not do anything dangerous, but the result will be irrelevant.

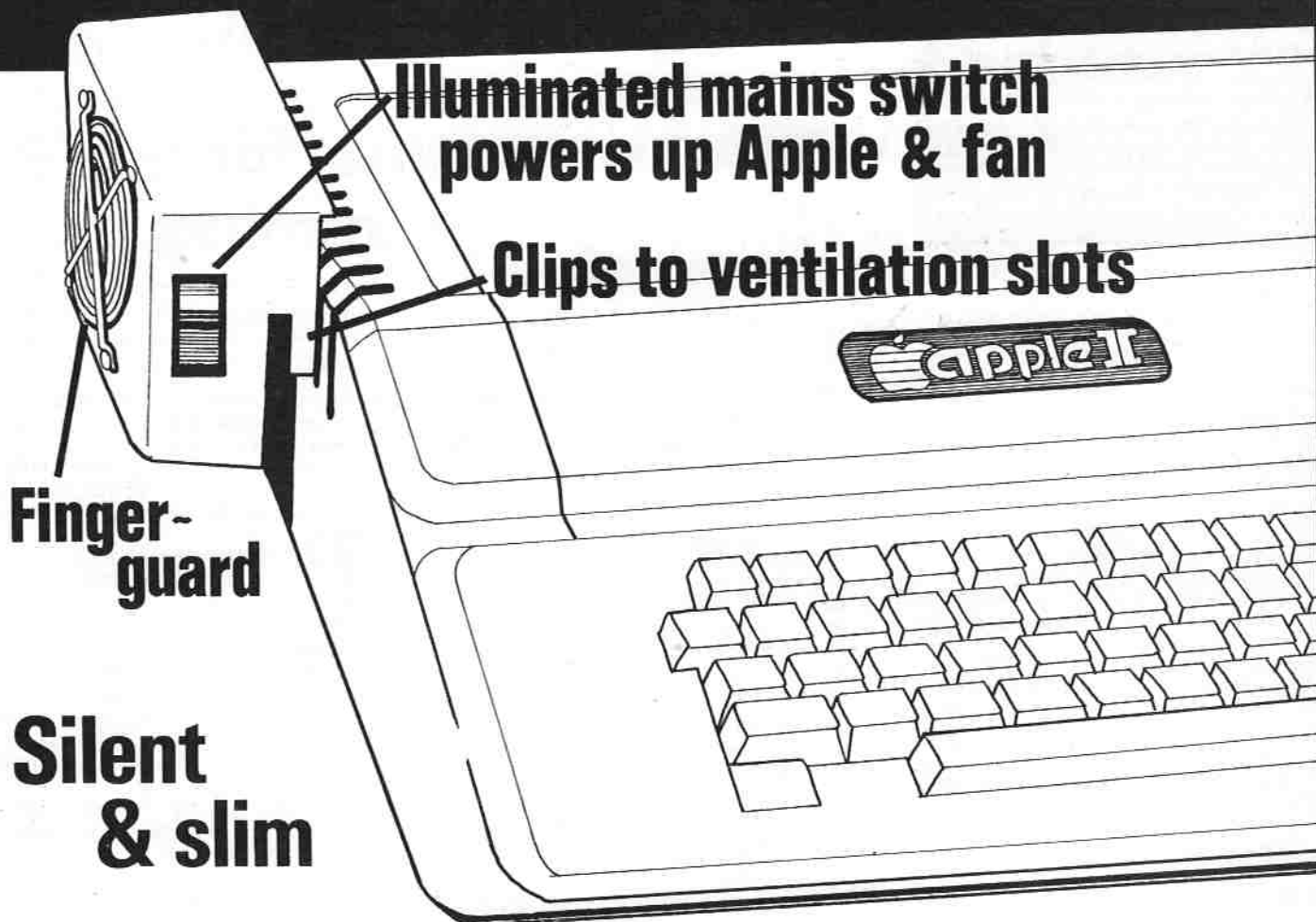
```
SOURCE FILE: HIRES SCREEN
NEXT OBJECT: FILE NAME IS HIRES SCREEN.OBJO
6000: 0A FF 53 ASL A COLOUR
6001: 0A FF 54 ROL A
6002: 0A FF 55 ROL A
6003: 66 FE 56 ROR PIXEL ;BASE ADRS LO
6004: A5 FF 57 LDA COLOUR
6005: 29 1F 58 AND #1F
6006: 09 E9 59 ORA OFFSET
6007: 85 FF 60 STA COLOUR ;BASE ADRS HI
6008: 61 *
6009: 62 *LOAD BYTE FROM SCREEN
6010: 63 *
6011: A4 F9 64 LDY HBYTE ;BYTES ALONG SCREEN
6012: B1 FE 65 LDA (PIXEL),Y ;FROM SCREEN
6013: 85 FA 66 STA SCRBT
6014: 67 *
6015: 68 *FIND COLOUR BIT
6016: 29 80 69 AND #80
6017: F0 02 70 BEQ COLSTOR ;OFF
6018: A9 01 71 LDA #01 ;ON
6019: 85 FF 72 COLSTOR STA COLOUR ;FINAL RESULT
6020: 73 *
6021: 74 *FIND NUMBER TO SEPARATE PIXEL
6022: 75 *
6023: 76 *
6024: A0 00 77 LDY #00
6025: A9 01 78 LDA #01 ;RIGHT MOST PIX
6026: C4 FB 79 NEXT BEQ REMAIN ;NOT VAL TO AND
6027: F0 04 80 NEXT BEQ PIXAND ;MOVE TO PIX ON LEFT
6028: 0A 81 81 ASL A
6029: CB 82 INY
6030: D0 FB 83 BNE NEXT
6031: 62 84 *
6032: 85 *AND & STORE PIXEL RESULT
6033: 25 FA 86 AND SCRBT
6034: F0 02 87 AND PIXSTOR ;OFF
6035: A9 01 88 LDA #01 ;ON
6036: 85 FE 89 COLSTOR STA PIXEL ;FINAL RESULT
6037: 60 91 90 PIXSTOR STA PIXEL ;BACK TO BASIC
6038: 60 91 91 RTS

*** SUCCESSFUL ASSEMBLY: NO ERRORS

6017 ADD HORIZ FF COLOUR 6054 COLSTOR F9 HBYTE
6018 HORIZ EE HORIZ 6021 LAST 6008 LOOP
6019 NEXT 6019 NEXT ED OFFSET 6062 PIXAND
6020 FE PIXEL 6068 PIXSTOR FB REMAIN FA SCRBT
6021 FC VERT

EA OFFSET EE HORIZ EF HORIZ F9 HBYTE
FB SCRBT FB REMAIN FC VERT FE PIXEL
FF COLOUR 6008 LOOP 6017 ADD 6019 NEXT
6021 LAST 6054 COLSTOR 605A NEXT 6062 PIXAND
```

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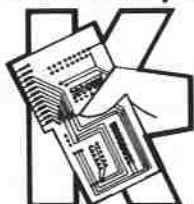
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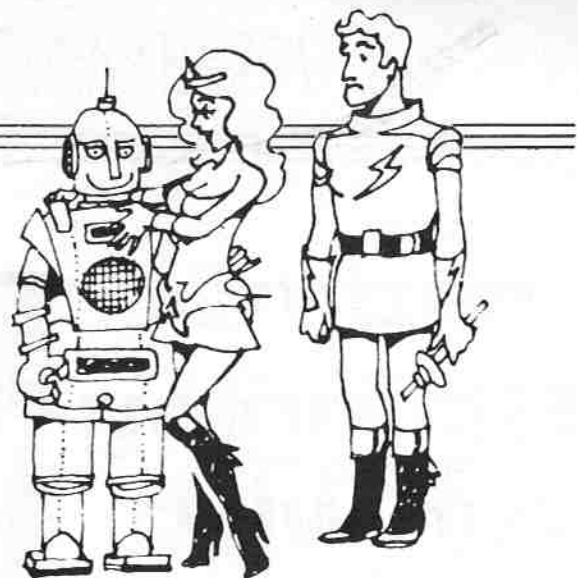
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Live long enough, and you could win a spy-type T shirt

GXPRHQN dplktjv os gball? No, it's not the typesetter getting his revenge for all the corrections I made to the last set of proofs, nor is it a £1,000 phone bill type of computer "error." It's just my way of capturing the attention of all you amateur cryptographers out there, especially those of you with a sharp eye and a swift reaction.

Why should I do such a thing? Well, to put it bluntly, I'd like to tell you about a great game from Penguin Software called *Spy's Demise*.

While sipping your vodka martini one day in the Bangkok Hilton, you overhear two KGB employees talking about a message which their cryptologists have been unable to decipher. Each component of the message is kept on a separate floor of the diplomatic mission in Pyongyang. The possible rewards to the person who

could assemble the puzzle and solve it would be enormous, and you therefore set out to do just that.

If this sounds like the setting for an adventure game like *Kabul Spy*, then think again, because *Spy's Demise* is an arcade game. Your task is to cross each floor of the building, avoiding the guards who are moving up and down. If you can make it to the top of the screen you are given a line of 16 characters — the first part of the puzzle. Once you've copied it down you resume the game with a slightly shorter building. This makes it even harder to dodge the guards.

Reaching the top of each building yields another 16 characters and another, even shorter, building. The encrypted message contains instructions on how to claim a real prize of a special *Spy's Demise* T shirt. Penguin will give a T shirt

to the first person from each US state, each Canadian province, and each other country who solves the puzzle. At the time of writing only *one* of these had been claimed and that was from one of the States, so the UK field is still wide open.

Even if you can't solve the puzzle, you can still have a great time playing the game. The faster you can cross a floor, the more points you gain. There are also occasional flashing decoder rings which are worth bonus points. You start with five lives and lose one each time a guard catches you. You get an extra life each time you get to the top of the building.

The game can be played on keyboard or joystick, with only two keys being needed (the two arrow keys) to control movement left or right. The graphics are really nice, and all events are accompanied by a sound of some kind. The sounds can be toggled off if you get fed up with them. The top three scores are saved to the disc, along with the initials of the person who achieved them. The game also has the usual pause facility via the ESC key.

The message adds a whole new dimension to the game. I've filled pages with attempts to crack the code — all to no avail so far. Also, the attempt to get another line of the message sustains interest in the game for amazing lengths of time.

If anyone *does* crack the code and win the T shirt, please let *Windfall* know, or better still send a photo. We'd love to see what it looks like. Meanwhile, as we used to say in the I-Spy club, "odhu ntinggo".

Cliff McKnight

QUICK SPINS

Jawbreaker: Eat all the sweets in the candy store but beware the grinning faces trying to pull your teeth out. An arcade game where you have to move fast if you're going to keep your teeth clean. (Sierra On-Line)

The Alien: This deadly foe will metamorphose to more and more deadly forms as time goes on. Can you find it and save the ship, or will you have to self-destruct the ship in desperation? Can you use the skills of the seven crew members to complete the mission? (Microcomputer Games)

Ultima II: Create a character and discover the wild and dangerous world of *Ultima II*. Can you defeat Minax, or will

the enchantress wreak her revenge on mankind? A fantasy role-playing game through time and space. (Sierra On-Line)

Trick Shot: Play pool on your Apple, and if you can't manage that use the disc of trick shots to amaze your friends. Build your own repertoire of trick shots. Package also includes snooker, billiards, open table, and three ball. (Innovative Design Software)

International Gran Prix: Five road circuits including Oulton Park, five speed manual or automatic transmission (with or without cruise control), eight levels of difficulty, hairpin turns, speeds to 198 mph, vroom, vroom, crash! (Riverbank Software)

Title: *Spy's Demise*
Author: Alan Zeldin
Publisher: Penguin Software
Requirements: None stated

Stunning fun with alien invaders

AFTER all these years of having to kill aliens, blow them to smithereens or generally mangle them, it comes as a change to play a game where you're only allowed to stun them. Unfortunately, in *Teleport* the aliens don't show you the same courtesy. If they catch you, you're dead.

The aliens are teleporting into your dimension and your mission is to stun the poor, confused things and carry them to their own dimension via the infinity door. Of course the odds are stacked against you, otherwise it would be no fun at all. For a start, you have a low energy supply so you can only stun one at a time. That wouldn't be too bad, but the infinity door keeps moving to another random location, usually just before you reach it.

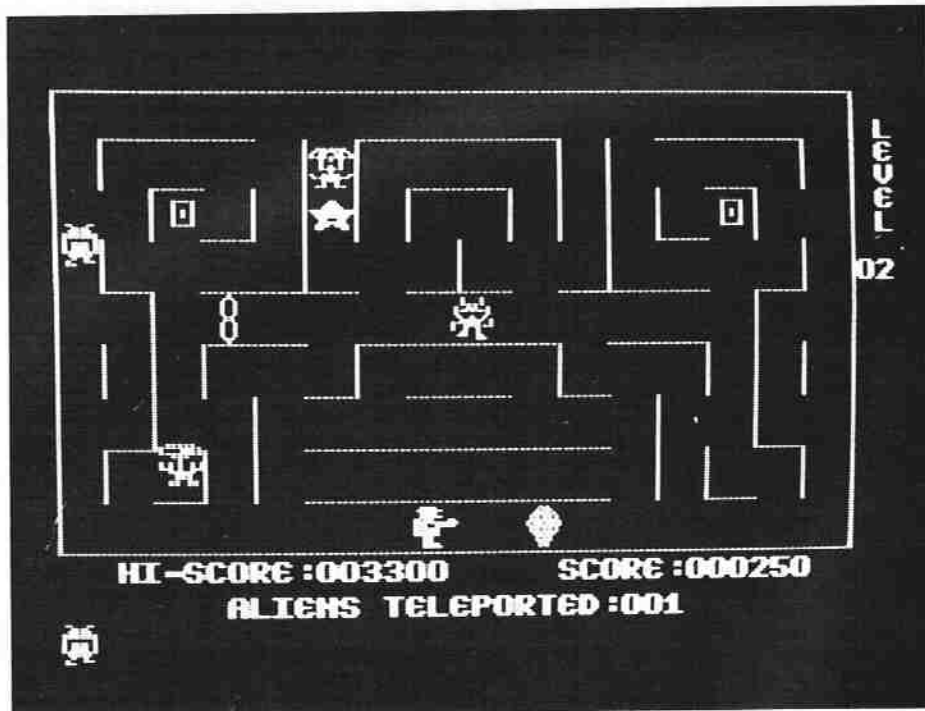
Active aliens are deadly, so you have to avoid them. They have a tendency to go for you, but being confused they are not too bright, otherwise you wouldn't last a second. They teleport one at a time, but it's not unusual to have five or six on the screen at one time.

Teleport is organised into levels, with 10 aliens per level. You have three lives and can receive a bonus life at the end of particular levels. Each level contains a different maze to make things a bit harder and to give more corners in which to trap you . . . until you get to level 9, where there is nowhere to hide - no maze whatsoever!

By level 11 the mazes start repeating, but a variant which first appears on level 5 keeps life interesting. On level 5 the last alien speeds up, and on level 7 the last two speed up. Hence, although level 11 looks like level 1, your chances of getting through it are less.

On each level there are also two teleport doors which, if you enter, place you at a random point on the screen. Of course this random point may be just in front of an active alien, or the teleport may provide your only possible escape from converging enemies. Sometimes the infinity door and the teleport coincide so you can't dump a stunned alien without teleporting, unless you wait until the infinity door moves again.

Occasionally a star appears on the



screen. If it is a happy star, then you can collect it and gain extra points to the tune of "Twinkle, twinkle, little star". If it is a mean star you must avoid it or it will cost you a life.

The game can be played on keyboard or joystick, but as usual I preferred keyboard. Joystick feels a little sluggish and it seems easier to change direction on keyboard. Sounds can be toggled on or off and the game can be paused. Although colour is used, you don't lose anything in monochrome.

Once you have completed a level you may start at the beginning of that level in the next game. However, I have two complaints about this facility. Firstly, it only works up to level 9, which means that even if you complete level 11 you have to start back at the beginning of level 9. Secondly, your level of achievement isn't saved to the disc, so each time you boot the disc you automatically start at level 1.

One of the more interesting facilities is the volume control. There are eight possible settings which means that you can play quietly without having to lose the sound altogether. The instructions also mention something called "Votrax Speech Synthesis". It looks as though the game will talk to you if you have a Votrax card in slot 2. I can't wait to get one of those.

As you can see from the picture, the graphics aren't over-complex despite the description of the game I've given. However, what the game lacks in visual impact it more than makes up for in habit-forming ability. It's one of those games that start off being infuriating because the man doesn't seem to change direction quite fast enough, but gradually you get used to it and all of a sudden you're hooked.

The more I think about the voice synthesis, the more I'm fascinated by the

possibilities. For example, add the idea of a voice recognition system and soon we won't be able to stun the aliens even; we'll have to talk them into returning to their own dimension. "Ere, you can't park that spaceship there, it's more than my job's worth to let you park there. Move along now, there's a good alien!"

Cliff McKnight

Title: Teleport
Author: Mike Abbot
Publisher: Cavalier Computer Corp.
Requirements: None stated

A sort of

YOU know how people keep saying that one day books will be a thing of the past? Well that day may not be too far away, because *Prism* from International Software Marketing is a book on a disc. However, it is no ordinary book. The obvious comparison to make is with Kit Williams' *Masquerade*, but instead of one real prize *Prism* has three.

The story is about the theft of the three ancient Keys of Color (yes, it's American) and the adventures of young Hubert whose lot it is to seek them in the monstrous kingdom of Yolsva, Plane of Darkness. That's all I'm going to tell you about the story, because if you're interested you'll want to read it yourself.

The presentation of the story is very similar to the traditional format of a book. Pages of text are interspersed with hi-res graphics pages which illustrate the story, although in *Prism* the graphics are nicely

Beer Run – catch as catch can . . .

FROM the impression given by Beer Run, working in the Sirius Building is a bit like going to a Liverpool match – all these beer cans keep dropping on you from out of nowhere. In the case of Beer Run your job is to catch them rather than avoid them.

My first impression of Beer Run was that it was like Apple Panic, but the similarity is largely visual. There are a series of levels connected by ladders of various lengths, and there are two varieties of nasties, but you must avoid them at all costs otherwise they knock you off the ladder and you fall back to level one (not surprisingly losing one of your three lives on the way).

The beer cans are being dropped by Artesians and although you get points for catching the cans you are *really* trying to catch Artesians. They like to stay above you, so an elevator is provided – if you can get to it. Unfortunately, the elevator keeps moving position and it isn't always going your way.

Although some Artesians stray into the Sirius Building, most of them are next door in the Olympia Brewery. The only way you can get there is to get to the top of the Sirius Building and then catch the rope trailing from the Sirius blimp. This will deposit you on the roof of the Olympia Brewery and you can then start to work your way down to the basement.

Points are scored by catching beer cans or kegs which occasionally appear, and big points are scored by riding the elevator in either direction. Enormous points are scored by catching the rope on the blimp on its first pass over.

The ladders are tricky because you

can't always go the way you want to on them. They automatically take you up unless you are at the top of one, in which case you can go down one level. If you want to continue downward, you have to find another ladder top.

This means that there are only three command keys, the two arrows for moving left and right and the space bar for climbing, starting the elevator, catching the kegs, and catching the rope. You can also sit back and use either game paddle (or a joystick), in which case the button does the work of the space bar.

So I sat on a crate of brown ale and tried to get to the top of the Sirius Building. After a few bottles it didn't seem to matter that I couldn't make it past level 20. After a few more bottles, I looked up Artesian in my dictionary and had a laugh at the French connection which beer fans will appreciate.

Beer Run is deceptively difficult. If you like this kind of thing, you are likely to find yourself cursing while being unable to resist another game. After playing it for some time and trying to develop strategies which cope with the random elements, I have managed to get into the Olympia Brewery but I've not made it to the basement yet. Also, I think the only Artesians I've seen are attributable to an excess of brown ale.

Cliff McKnight

Title: Beer Run
Author: Mark Turmell
Publisher: Sirius Software
Requirements: 48k Apple II Plus

Limber up your green fingers

THERE are millions of varieties of psychotherapy around. One of them, called Primal Therapy, involves something called the Primal Scream as a "release" mechanism, and adherents go off for a quick Primal when they feel the need.

Why am I telling you all this? Well, once again Cavalier have come up with a game containing a great noise – it sounds like a terrific scream which breaks up at the end – and it reminds me of Primal Therapy.

Of course, given the context of Bug Attack, it could be Percy Thrower just after he's discovered the dreaded blight on his roses. The bugs are on the loose and they're eating your gardens.

You have three gardens (cactus, clover and flower) and there are three kinds of bugs (ants, millipedes and medflies). You, in true Kafkaesque style, have metamorphosed into a beetle armed with a limitless supply of stingers. Strangely, though, you only have so much "fuel" and the bugs, far from being defenceless, throw knives at you.

Cutting through the entomology and horticulture, Bug Attack is a single-tank arcade game with three levels of difficulty and three frames per level. It can be played on paddle/joystick or keyboard, but for once I preferred joystick. This was because it seems to have been written for left-handers, with A and S being used for lateral movement and spacebar being used for firing. There is no option to change the control keys. The ESC key provides a pause facility, and the sounds can be suppressed when you get fed up hearing the scream.

The bugs each have their own noise or tune and pattern of animation, and if you make it to the higher levels you have to deal with the Master Millipede and the Queen Medfly, neither of whom are particularly friendly. You'll probably need your two spare lives if you make it this far.

Bug Attack can be recommended as a no-nonsense arcade game. If you've ever wondered what a combination of Space Invaders and Gardeners' Question Time would look like, it could be the game for you. Mind you, if you wonder about things like that, maybe you need Primal Therapy too!

Cliff McKnight

Title: Bug Attack
Author: James L. Nitchals
Publisher: Cavalier Computer Corp
Requirements: Apple II with disc drive

walking talking book

animated. Using the right-arrow key takes you forward a page, and using the left-arrow key takes you back a page.

Like Masquerade, the story has many levels of hidden meaning containing clues to the whereabouts of three real keys. In this case the keys are solid gold and each is embedded with a precious stone. Unlike Masquerade, you don't have to go digging to find the keys. They have been hidden in three separate locations in the United States.

If you think you have solved the clues, you can write to ISM. If you are correct, "you will be provided with transportation by the Creators of Prism to claim the prize (always assuming no one gets there first!)."

A card accompanies the disc for you to fill in your name and address. If you send it to Prism, they will inform you when the keys have been discovered and how the

puzzles were solved. As far as I know, none of the keys have been found yet so let *Windfall* know if you find one.

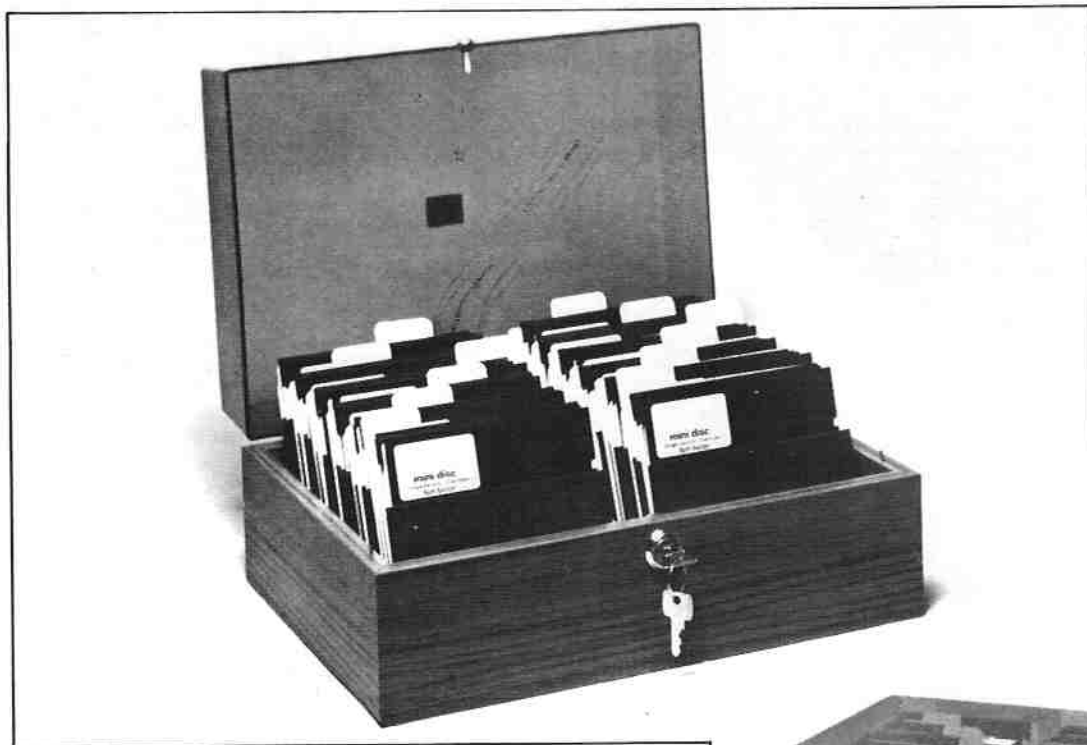
ISM is developing three more Story-discs, so they obviously feel there is a future in the idea. In the case of Masquerade, I found Kit Williams' pictures were worth the cost of the book. With Prism, I think the likely market is much more the puzzle solver than the casual art lover. Maybe when books are a thing of the past, people will feel the same way about a hi-res graphics page.

Cliff McKnight

Title: Prism
Authors: Mark James Capella and Ronald N. Roberts
Publisher: International Software Marketing
Requirements: Apple II or II+

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Printer control technique

i Under certain conditions it can be undesirable or impossible to use the Basic PR# or Monitor CTRL-P commands.

Examples are printing from an assembly language program or from the DOS Toolkit's hi-res character generator. In the last instance, issuing A PR# 1 command successfully terminates your use of the HRCG by rerouting the video output to the text screen.

These problems can be overcome by directly accessing the I/O hooks.

The following two routines are machine code substitutes for PR#1 and PR#0.

The address \$C100 is valid only for a printer whose interface card is in slot 1. If, for example, the card is in slot 3, the appropriate value would be \$C300.

The Basic equivalents of the two routines are:

PR#1	PR#0
====	====
Poke 54,0	Poke 54,240
Poke 55,193	Poke 55,253
Call 1002	Call 1002

When running the HRCG the printer can be activated by the usual PR#1 or the Applesoft routine given

here. To stop printing type:

```
PR#0
Poke 43603,24:Poke 43604,143
```

If the pokes are executed in immediate mode, it is important that they are typed as a multiple statement line.

The values 24 and 143 are valid only if the HRCG is loaded directly below the normal HIMEM: in a 48k system.

If the HRCG is loaded somewhere else, the correct values can be determined by running the HRCG and PEEKing the appropriate values at locations 43603 and 43604.

Haldo de Villiers

PR#1

====

```
LDA #$00 ;lo-bit $C100
STA $36 ;mon output reg (low bit)
STA $AA53 ;dos output reg (low bit)
LDA #$C1 ;hi-bit $C100
STA $37 ;mon output reg (hi bit)
STA $AA54 ;dos output reg (hi bit)
```

PR#0

====

```
LDA #$F0 ;lo-bit $FDF0
STA $36
STA $AA53
LDA #$FD ;hi-bit $FDF0
STA $37
STA $AA54
```

i Don't be too hasty to switch off your Apple if it hangs, or if you want to reboot. If you must switch it off in order to put it on again, leave it for at least half a minute between operations.
This is to protect the on/off switch and the power pack.

i This is more of an Apple plea. If you are writing machine code to reside at \$800 please either start it at \$801 or on existing zero byte \$800.
The idea is to leave a zero here so that on RUNNING a Basic program immediately afterwards there will be no SYNTAX ERROR message.
Max Parrott

Applesoft manual errors

i There is a mistake on page 137 of the Applesoft reference manual. The name of the string variables, both simple and array, should be the other way around, that is the first byte should be positive, the second negative.

Also two types of error are omitted by the Applesoft reference manual on page 136. They are:

Error code	Error type encountered
\$ 95	Illegal direct
\$ D2	Cant CONTINUE

Ajay Kumar Agrawal

```
100 F$ = "TWOUP"  
110 D$ = CHR$ (4)  
120 PRINT D$"OPEN"F$  
130 PRINT D$"WRITE"F$  
140 PRINT "POKE 44573,44:POKE 44  
712,76:POKE 44713,186:POKE 4  
4714,174:POKE 44734,16:POKE  
44746,219:POKE 44772,42"  
145 PRINT "TEXT:HOME"  
150 PRINT "CATALOG"  
160 PRINT D$"CLOSE"F$  
170 PRINT D$"LOCK"F$
```

LOSING OUT IN PASCAL

i Beware when writing Pascal programs using an 80 column card. The card usually adds a RETURN after the 80th column has been filled.

However the Pascal BIOS has no idea where the end of the screen is, so when the program is run on the standard Apple 40 column screen the RETURN is not added. As a result, all the text after the 79th column and before the next RETURN will be lost.

T.N. Thompson

```
100 HOME : INPUT "STARTING ADDRE  
SS ";SA  
110 INPUT "LENGTH ";LN  
120 INPUT "LINE NO ";LI  
130 D$ = CHR$ (4): PRINT D$"OPEN  
TEMP": PRINT D$"DELETE TEMP  
": PRINT D$"OPEN TEMP": PRINT  
D$"WRITE TEMP"  
140 PRINT " ";LI;" DATA ";: FOR  
I = SA TO SA + LN - 2: PRINT  
PEEK (I);",": NEXT : PRINT  
PEEK (I);":":  
150 PRINT " FOR AD = ";SA;" TO "  
;SA + LN - 1;" : READ BYTE:  
POKE AD,BYTE:NEXT"  
160 PRINT D$"CLOSE TEMP"  
170 HOME : VTAB 12: PRINT " EXEC  
TEMP": HTAB 1: VTAB 11: NEW
```

Machine code to Basic

This program, by **Mike Glover**, converts a short machine code routine already in memory into a line of Basic.

Two column CATALOG display cuts need to scroll

i For anyone using FastDOS, the following patch will produce a two-column CATALOG display to eliminate or reduce the need to scroll. Similar utility programs for DOS 3.3 will not work with FastDOS since the CATALOG routine is both displaced and different.

Run the Basic program as listed. The product is a text file named TWOUP containing the patch. The command EXEC TWOUP will thereafter both apply the patch and display the reformatted CATALOG without disturbing any program in memory. Subsequent CATALOG commands will, of course, give the new format.

As FastDOS displays the number of free sectors on a disc, I have judged the individual file size to be least essential and each 20 character file display is restricted to locked/unlocked symbol, file-type, 17 characters of filename (more than sufficient in most cases) and an editorial space.

If the display appears staggered, press the RESET key - your screen width was set to less than 40. If printing the CATALOG, set print width to 40, 80 or 120 to give 2, 4 or 6 column printing respectively.

For a similar EXEC file to undo the patch (that is, if rebooting is inconvenient and an individual file size is needed) change the filename in the Basic program to, say, ONEUP and substitute line 140 as follows:

```
140 PRINT "POKE 44573,22:  
POKE 44712,189:POKE 44713,193:  
POKE 44714,181:POKE 44734,29:  
POKE 44746,214:POKE 44772,21"
```

Subsequently, EXEC ONEUP/TWOUP as required.

R.P. Brown

FOR many months I had been increasingly intrigued by the idea of having a word processor. All those words appearing as if by magic on the screen . . . that little flashing square shooting all over the place to bring paragraphs from other pages . . . checking the spelling and inserting names and addresses of people I didn't know into personalised letters . . . what a fascination! I had to have one.

But could I really justify such a glorified piece of paper and pencil? What could I use it for? I assumed this curiosity would be just a passing fancy, and with any luck would finally go away.

However, it didn't go away, and as I didn't have any other expensive hobbies, no Rolleiflex, no Quad hi-fi, no carbon filament fishing rod, no Yamaha organ or anything - I finally succumbed!

I bought an Apple II. I have been using it for a couple of months and it's driving me crazy. Is that par for the course? Insanity in eight weeks? "This bloke is nuts," you must be saying, "because everyone knows that the Apple is brilliant."

Well, I can't agree with that. I am just an ordinary sort of fellow, quite bright I reckon, but no computer genius - I still spell program programme. So when the engineer came to take my cheque and install the machine, out of every box he removed a beautiful piece of hardware and a manual. All the bits of hard and firmware (you see, I'm learning!) he hooked together to give me a system. All the manuals he piled on the desk - to give me 1821 closely printed A5 pages to read.

Undaunted, I started work. My logic had been simple. I couldn't afford a business word processor at anything upwards of two and a half thousand pounds. I didn't know enough to risk a two hundred quid engineering solder job, and I wanted to keep some options open, like using Pilot. So in front of me were manuals for the Apple, Applesoft, DOS, Videx, Zardax, Digitek, Epson, parallel interface, Philips video monitor, Visicalc and Pilot.

As I had used Pilot before and was familiar with the first few pages of Zardax, I started with the word processing. The disc had been setup, so I booted it. Drive 1 lit up, whirred and stopped. OK. Press "S" for setup, any other key to continue. Tap the space bar. Drive 1, red light, whirr, whirr, 10 seconds, 20 . . . 30 . . . 45 . . . 60.

Open the manual and read: "It takes about 30 seconds to complete the boot



magic
on the
screen

**- or the easy way to
insanity in eight weeks**

process".

Look in the DOS manual: "If booting doesn't work . . . re-read the manual carefully - that cures 90 per cent of all problems."

It is now two minutes, and the disc is still whirring round. Read on: "You'll have to press the RESET key to stop it (normally this is a BAD idea)".

I panic. My disc is still going round. Does the bit I have just read mean that it is OK for an uninitialised disc to be stopped with RESET but not for a disc with something written on it? No idea, no option. Press RESET.

I tried the other disc and that worked all right so I tried the first one again.

No joy, press RESET. I carried on working with the back-up. All went well and I was very impressed with the facilities offered by the package and the 80 column screen. After writing some short pieces I turned to the printer.

I entered a range of print instructions according to Zardax rules and hardly anything worked properly. Back to the manual.

Tucked away in the back flap was a piece of A4 paper entitled "Errata" and tucked away in that was another instruction: "Simply insert the following line into SETUP." So I entered the Main Menu and looked for the way in. There ain't no way in!

Mike, the engineer who had installed the machine, explained to me on the phone how to use DOS to list the SETUP programme, unlock it, add the required line, and BINGO! - I'd got my print - well, some of my print - instructions to work.

Now my interest was aroused. Could I print the Pilot programmes I had written at Christmas? I have a dot matrix printer and it is in slot 1, so it should work as the Pilot printing arrangements are for a Silentyte in slot 1.

I put the relevant discs in, ran the programs, pressed "P" for print and waited. One second . . . click, buzz, silence. Why won't it work? That's not a rhetorical question, by the way. I still don't know the answer.

But - and this is the most important point - I don't know why the manuals

don't tell me the answer.

Other answers not given in any of the manuals are why the printer, if asked to print something from page 2 of a document, can apparently remember from the top line of page 1 that the right margin is 125 but forgets that it is supposed to be using condensed print, and why, if it has been printing double-width characters and is given the single-width instruction, it suddenly slips into the condensed typeface. Sad.

The reason underlying this kind of problem seems to be that the hardware and software come from different manufacturers, whose primary concern is to match the electronics and make the equipment work. Having done so, they can market their products as being designed for use with a particular system, but each manufacturer then produces a manual for his product and the manuals don't square with each other.

A few examples might support my point, because I don't want readers or suppliers to think this is just another of the easily written "knock the manuals" pieces.

Let's look at the way the manuals deal with the Ascii code. You must remember that since I was looking mainly for word processing facilities in the first instance, I had no idea what the code meant. I now realise that every damn thing that moves in my system is using it.

The Zardax manual doesn't mention it. All the formatting and printing instructions are given as simple keystrokes, which I think is the best way of doing it since the average Pom likes to know what to press. However, there could be additional reference pages matching the Zardax commands to the Ascii code.

The Epson manual has the direct manner of a Japanese technical college lecture. It is fairly easy to grasp at the unpacking stage, but gets quite complex later. For instance, my printer kept chewing up the paper until I found "Do not lock the release lever" hidden away in a note on page 26. Control codes are given in a form which makes no sense to me, because you can't, sorry, I can't (as far as I can tell) use the Ascii decimal codes for all the instructions to the printer.

Even from within a Basic programme a DOS instruction has to have the ESCape bit in CHR\$(n) form followed by a letter or number in quotes.

Do I sound like a drowning man? I am certainly out of my depth! I have just been

picking bits out of various sample programs and trying them out. Sometimes they work, sometimes they don't.

Apple manuals are generally well thought of, but even in these the Ascii information is inadequate, because on page 138 of the Applesoft reference manual a neat chart gives just about everything required except the particular bit I need, which is the full meaning of each character so that I can match it up to the bits left out of the Epson Interface Kit manual.

What I have been trying to do is to use

By ROGER GLANVILLE

Applesoft and DOS commands to gain total control over my printer for the purposes of Zardax. But I have been running into a lot of problems which I am absolutely certain are fairly simple, but which I am not trained to solve. Surely the routines could be included in the manuals in keystroke form?

The Videx manual gives some Ascii information, but this time it takes the form of a grid relating the characters to decimal and binary equivalents. How will I ever find out what SOH, ETX, BS, etc. mean? BEL I can manage!

Of course, having a Videx card is great for the 80 columns on the screen, but adds to the complication slightly by offering alternative methods of obtaining upper/lower case displays.

For fun, I copied into the Apple the listing of a graphics program in a home computing magazine, but as I had the Videoterm card installed I decided to put all the screen instructions in lower case.

I can hear from the chuckles that you are all ahead of me again! It left me either with text and no graphics on the monitor or with reflections in graphics and gobbledegook in text.

Yet I have found no reference to the fact that the lower case instructions would not work.

This idea of using programs published in magazines is very helpful to the slow learner like me. Having established that the graphics program's printer routine worked with the Epson - although it had been written for the Silentye - I lifted

that bit out and tacked it on the end of another short program, but it wouldn't work.

So, back to the manuals to find out what all this POKE -12528,7 was about. They don't say.

For sound though, you POKE around in the -16336 area. It says in the Applesoft manual that you can obtain higher notes by increasing the speed of the loops, but so far I have only managed to get lower notes.

I was impressed to hear the Apple version of Boris Christoff coming from the two inch speaker. Kiri Te Kanawa must be in there somewhere, but she's eluding me at present!

To return to word processing however, reminds me that I want a routine for counting the words in an article. I assumed that I could arrive at a good approximation by counting the spaces. Apparently, Zardax stores its texts as text files, and I have tried retrieving them using the sample programs in the DOS manual. In this venture only partial success can be reported, because among the words on the screen was a load of junk I didn't write - lots of ?????s and REENTERS.

I don't think I can win with that one.

The upshot is that I am very happy with the system, but extremely frustrated with some aspects of the manuals. On page one they all talk to me as if I am an absolute beginner.

For example: "This manual was in the accessory box. This box should also contain the Apple's power cord (the cord that plugs into the outlet on the wall)."

That's a pretty simple start, matched by the Videx approach: "Is the TV monitor turned on? Is it plugged into the power outlet?"

And the Zardax introduction: "Zardax is an easy-to-use word processor and text editor for the Apple II Plus computer."

I found all these words helpful, comforting and reassuring when I started.

My frustration is that by the time the writer of the manual arrives at the back of his book he thinks he is dealing only with the highly skilled programmer who speaks fluent hex, assembler and machine language. There must be many others, like me, who are thrashing about in the dark trying in a very hit-and-miss way to make procedures work.

The guides and reference books cope then with the beginners and the brilliant. But what about us average manual workers? 🍎

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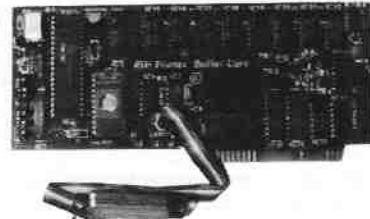
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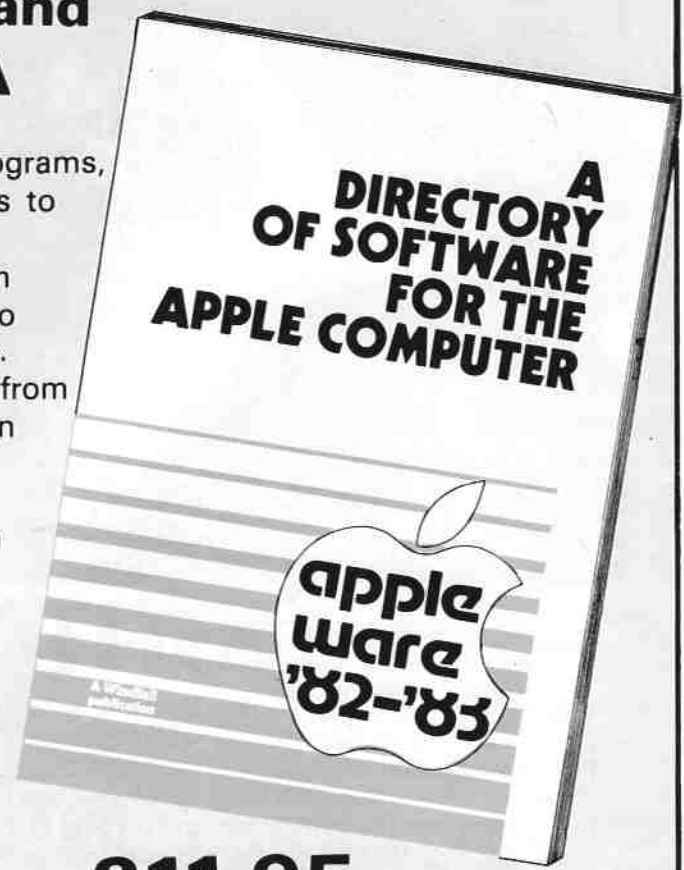
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ONE of the topics which doesn't seem to have been covered in *Windfall* is copying, despite the fact that the magazine carries adverts for copy programs. In view of this, I thought readers might like to hear about my limited experiences.

I am one of the lucky few who has access to an Apple quite often and don't have to use it for work all the time. I therefore play quite a few games and like to encourage my children and their friends to do the same.

Now once I've paid out something in the region of £18 for a game, the last thing I want is for one of the little dears to corrupt it in some way. I know that most software houses have replacement policies, but since most of the discs originate from America this can cause several complications.

For example, many manufacturers charge a handling fee for corrupted discs and this requires getting a dollar draft from the bank. The cost of doing this can be almost as much as the handling fee. Once you have parcelled the disc and draft, you go to the post office where you have to fill in a Customs declaration, remembering to give the value as zero. Unless the manufacturer is wise to the "zero value" tactic, he will enter the cost of the game on his Customs declaration and you may be charged import duty when the replacement eventually arrives.

The key word here is *eventually*, because this process can take a minimum of three weeks and is likely to take much longer. Also, you may not have been able to work out how the disc was corrupted in the first place, so you have no guarantee that it will not happen again!

Of course, if you had a copy of the disc none of this would be necessary because your master would be safe in a cupboard somewhere, just waiting to be recopied in the event of disaster.

I have probably just trotted out all the standard excuses in favour of copying, so to add some balance I ought to mention the counter-excuses. The main one, of course, is piracy. Having taken a back-up copy, there is nothing to stop me taking another copy for a friend, and another for his friend, and so on. Ultimately, the loss in revenue means that either the manufacturers and retailers are put out of business



By MIKE GILBERT

or the price of games goes through the roof.

Of course, as the price increases, so does the temptation to make pirate copies – a good example of positive feedback.

I don't pretend to have the answer to this dilemma. Making the games cheaper might be one way, because that would possibly encourage more people to buy the original, with all the nice packaging, rather than trying to pirate them.

Providing a separate back-up disc (I believe the Apple Special Delivery Software range does this) at least means that you can still play the game while the

corrupted disc is being returned.

I would now like to describe my experiences with some of the commercial copy programs. After all, COPYA can't cope with any of the protection schemes, so successful copying requires something more sophisticated.

The programs I have used are Copy-Write, Locksmith 4.1 and Copy II Plus, and I have also used Snapshot and Wildcard.

Copy-Write is the oldest, having been around for several years. I've have had my copy for a few years and retain a fondness for it despite the fact that it will no longer cope with many of the sophisticated security systems. I think what I like about it is that using it to inspect the contents of a track is quite easy – I tend to use it now as a viewing utility. However, the manual was not at all helpful when I was new to

**To copy or not to copy
... that is the question**

computing.

Buying Locksmith was a major advance because along with the disc came a list of commercial discs and instructions on how to copy them. I have since received an updated list, but this suffers from the same fault as the original. Many of the instructions are supplied by Locksmith users and are not vouched for by the manufacturers – not surprisingly since none of the user-supplied instructions I have tried have worked!

I also had a problem with one of the manufacturer's instructions. Having followed them to the letter, the screen started to fill with numbers, so I thought it was working. However, the numbers continued to appear until I stopped the machine eight hours later. Nothing in the instructions suggested this might happen, and needless to say the operation was not a success.

As with Copy-Write, the documentation accompanying Locksmith leaves a lot to be desired. The description of the user-changeable parameters is by admission "of a highly technical nature" and is therefore of very little use to the average user. I have also had trouble discovering what a particular parameter does.

In contrast, Copy II Plus is just over half the price of Locksmith, yet the manual is superb. I learned quite a lot from the section on disc hardware and recording

schemes. There is a nice section explaining the various types of protection schemes and how they have developed, and the description of the program parameters is quite good.

Copy II Plus also contains several useful utilities, including an "undelete" function, and, like Locksmith, comes with a list of instructions for copying various packages. However, many of these are user-supplied and don't work. I would have thought it was easy for a manufacturer to check such lists rather than degrade their product by including useless information.

Of course one problem now is that by the time a copy program appears the games manufacturers have already worked out new and more devious methods of protection. Consequently new copy programs appear and the cycle begins again.

The main result of this cycle is that a lot of time is invested in protection/copying and this time has to be paid for by – you guessed it, you and I, the software-buying public.

Packages like Snapshot and Wildcard are different. They are a combination of hardware – a board which fits in any available slot – and software to control the system. They do not copy a disc track by track, in fact they don't copy a disc at all! What they do is nicely described by the

name "Snapshot", since they take a record of what is in memory and dump it to a disc in binary form. Reloading the binary dump effectively reloads the program.

The drawback with these packages is that they can only cope with programs which do not need to re-access the disc once loaded. This rules out virtually all adventure games and many modern arcade ones too. Another drawback is that many games have a title screen which appears for a short time before the game itself is loaded from the disc, and a memory dump of the game does not contain an image of the title screen.

Incidentally, I gather from recent editions of *Windfall* that the new IIe model has no slot 0. I wonder if a new version of Snapshot will now appear, because the one I tried needed connecting to a language card in slot 0. Wildcard has no such connections, so may be compatible with the IIe.

As an amateur then, I have to put in a fair bit of effort to copy a game disc these days. My conscience is clear though, because I know why I am backing up discs and I know they don't go any further. I hope I have prompted you to think about copying, and I would be interested to read alternative views.

Editor: Correspondence on this controversial topic is most welcome. 🍏

16 EXTRA KEYS TO YOUR APPLE

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Manchester scientists have been using microcomputers outdoors for the last three years. Here they explain how an Apple II has been adapted to work from a battery and describe how it has stood up to working outside.

By

W.T.C. SOWERBUTTS and R.W. MASON

The Apple is quite happy in

the great outdoors

THE undoubted versatility of the Apple II is amply demonstrated by the wide range of uses to which it has been applied. However, like most desktop models it is designed to operate from a mains power supply, and the way it is packaged really only makes it suitable for inside use.

Think of all the additional ways it could be used if it could operate outside from a battery power supply. It can. An ordinary Apple II can be adapted to work from a battery, and is sufficiently robust to use outside if packaged appropriately.

Most of us are conditioned to think of computers as delicate pieces of electronic equipment, a view fostered by futuristic looking cabinets enclosing what look like television screens made of glass, a material which we know from our everyday life can break easily.

However, apart from the screen there is little difference between a micro-computer and, for example, a radio/cassette recorder. Both consist of one or more printed circuit boards, sets of keys or switches and some form of electro-mechanical recording mechanism.

We are all familiar with portable radio/cassette recorders and happily take them almost anywhere. The portable versions only differ from their non-portable counterparts in being packaged appropriately and battery powered.

As mentioned in the June 1982 edition of *Windfall*, a number of us in the Geology Department of Manchester University use an Apple II as the heart of a geophysical surveying system. It is powered by a car battery and packaged so it is weather-proof and can be trundled over rough and boggy ground.

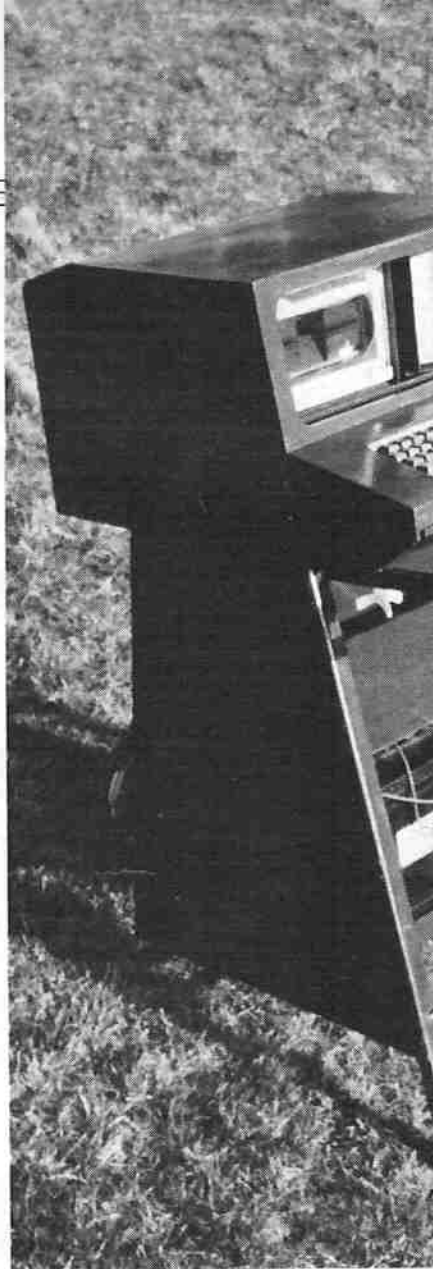
There are two ways in which an Apple II can be powered from a battery. One is to use an inverter to generate mains voltages and supply them to the power switching unit inside the Apple II and VDU in the normal way. The switching unit generates ± 12 and ± 5 volts DC and powers the computer and disc drives. Most VDUs operate from 12 volts DC and a transformer is used to derive this from mains.

The other way, which is the method we

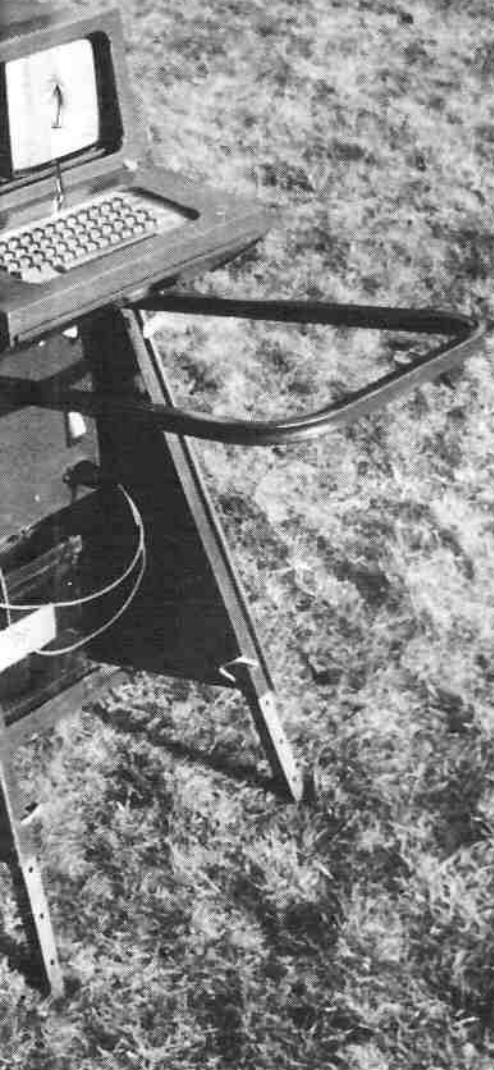
use, is to generate the ± 12 and ± 5 volts DC directly from a battery using a different type of inverter, and supply these to the computer and VDU directly, bypassing the switching unit in the computer and the transformer in the VDU.

The circuit diagram of our inverter is shown opposite. It is a conventional push-pull type running at 300Hz. The transformer is a rebuilt standard mains transformer rated at 100VA. The outputs are rectified, smoothed and regulated in the usual way. They are connected directly to the existing Apple II power rails via a 6-pin socket mounted on the back of the Apple II cabinet.

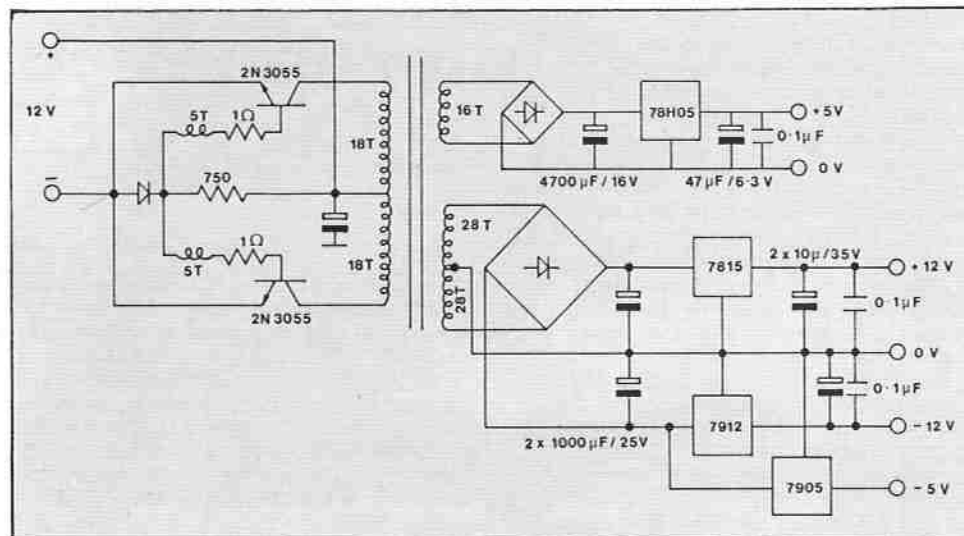
This arrangement, with the two alternate supplies connected in parallel, means that the computer can still be used with a mains supply, and no changes to con-



An Apple II adapted floppy disc drive and clamped to the trolley provide the power.



ed for use outside. The processor cabinet, one and small VDU are housed in the top case. This is valley which houses a car battery and inverter to



Circuit diagram of the inverter used to provide power for the Apple II from a 12 volt battery

nectors are required when changing between power supplies.

One requirement of the MOS memory used in the Apple II is that the -5V supply should appear first at switch on and disappear last. This feature is not specifically designed into the inverter but no problems have occurred due to this possible shortcoming. The current drain is about three amps rising to four amps when a disc drive is operating, so a battery with a reasonably large capacity is necessary.

A car battery is ideal. We use an ordinary rechargable lead-acid one of 40 amp-hour capacity. When fully charged this lasts seven to eight hours, generally reckoned to be one working day.

The first indication of low battery power is a reduction in the image size on the VDU. The computer and disc drive

continue to operate normally for at least five minutes after this initial indication. This is usually sufficient time to either make a dignified stop to operations or to connect another charged battery in parallel with the first.

The Apple IIe uses the same power switching unit as the earlier model, requires the same DC supply, but takes less current. It can therefore be powered from a battery in the same way as the earlier model.

This method can, of course, be used regardless of whether the Apple is used inside or outside. Not only does it enable the computer to be used where there is no mains supply, but it suggests a way in which it can be used in those parts of the world where the mains supply is unreliable.

The fact that the processor, VDU and disc drives of an Apple II system are separate units rather than all mounted in a single case is a mixed blessing. On the one hand, if it needs to be transported regularly from place to place, having three or more separate units can be a nuisance. On the other hand, it leaves to the user the choice of size and type of VDU and number of disc drives, as well as how they are arranged.

Our aims when considering how to adapt an Apple for outdoor use were to make a system which was as light and compact as possible, but sufficiently strong and weatherproof to stand up to rough field use and a range of weather conditions. A purpose-built wooden case was made to house and protect the processor cabinet, one floppy disc unit and a 7 inch VDU, and essentially keep them strapped together.

The case is made in two parts that hinge at the back and clamp together at the front. The processor cabinet sits in the bottom part and the disc drive in a special box and VDU are mounted in the top-part.

The special inner box for the disc drive is lined with plastic foam and fitted with a separate hinged clear plastic front door. This was done because it was anticipated that the drive would be the part of the system most likely to become damaged if not well protected from vibration and dirt.

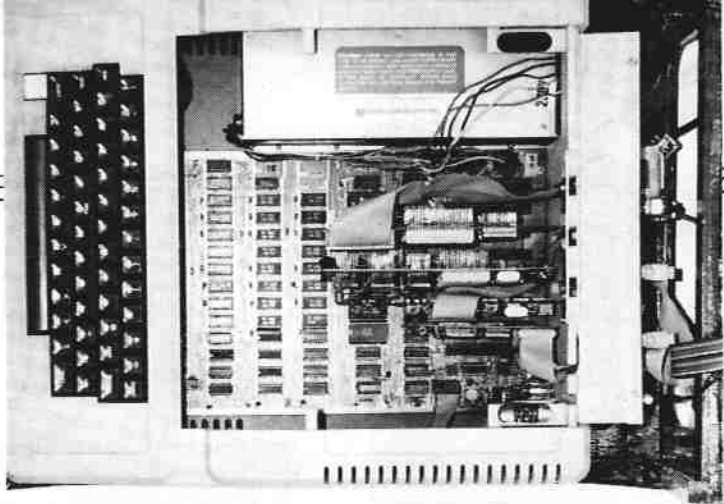
The individual units can be accessed for replacement and repair when the two parts of the case are hinged open. All external connections to the computer are made via a flap on the back of the case.

In order to be able to make connections without having to remove the top of the processor case, a panel has been made from aluminium sheet and mounted to extend from the back of the processor case. This serves the same purpose as the metal plate for mounting D-type sockets provided on the back of the Apple IIe.

All the optional connections to the main processor printed circuit board are made to sockets mounted on this extension panel. These include connections to the disc drive and interface cards, and games socket. A socket to take power derived from the battery is also included. A mains socket is mounted on the back of the case so the computer, in its case can be used with a mains supply in the ordinary way.

The inverter used when the Apple II is powered from a battery is a self-contained unit about the same size as a car battery. If an Apple II is to be used in a vehicle or

APPLICATIONS



The extension panel mounted on the back of the processor cabinet. The power lines from the battery powered inverter are spliced to the wires taking output from the mains power switching unit to the main circuit board.

some other protected position it need not be in a special case. It can simply be connected to an inverter and then to the 12 volt supply.

Our main application for the Outdoor Apple entails taking it to inaccessible places, and moving it about when switched on. In order to be able to do this easily a separate small trolley was built. A car battery and inverter fit inside the trolley and the Outdoor Apple clamps on top. The trolley is fitted with handles and a large front wheel so that the whole unit can be pushed along over rough or boggy ground. By making the handles collapsible and the wheel retractable, the size of the trolley has been kept small. The trolley and Outdoor Apple will fit in the back of an ordinary hatchback car for transport by road.

Our conclusion, reached after using an Apple II at a wide range of outdoor sites during the past two years, is that it works perfectly outside from a battery power supply. Furthermore, it works

satisfactorily in hostile outdoor conditions if elementary enhancements are made to the normal protective casings and mountings.

An Apple II was chosen for use in our geophysical surveying system because of its good screen graphics, its ability to operate efficiently with a single small floppy disc unit, and the ease with which a range of external devices can be connected to it.

Although the paddle controls are not used for the surveying application, three of the annunciator channels are used to switch on and off a bank of three coloured

lights. The lights are like traffic lights, and used for communication. Amber means the computer is ready for surveying to proceed, green shows when measurements are in progress, and red means stop, the computer is busy.

Using the lights a person distant from the computer can operate a geophysical instrument being monitored by it without the need for a second person at the computer relaying instructions. This example serves to demonstrate that the wide range of built-in facilities provided on an Apple II can be used to advantage outside just as well as they can inside.

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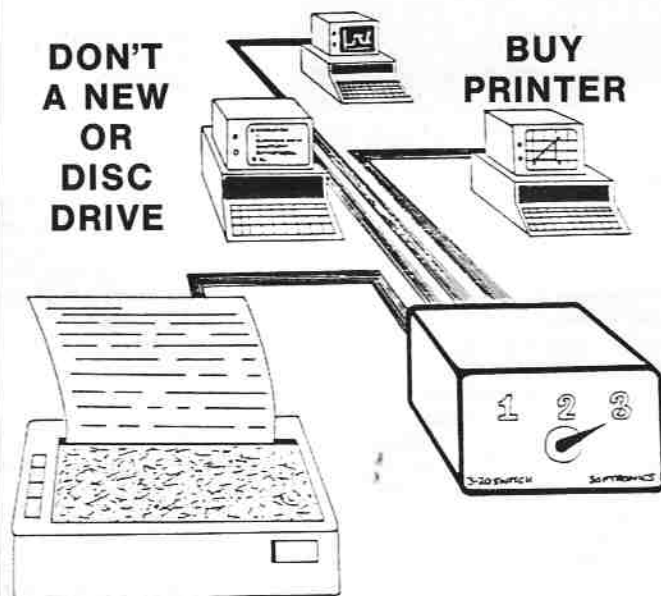
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You really can't go wrong with a word processor package at £35 which offers all this and shift key, too

WILDWORD is a word processing package costing just £35 – the lowest priced Apple package on the market. So what has been left out to keep the cost down?

For a start, no 80 column card means that you are limited to the 40 columns of the Apple screen, but you save the cost of an extra card from around £80 for the IIe and up to £200 for the II Plus and Europlus. As I've used Format 80 and this product comes from the same company, Elite Software, I wondered how friendly it would be in practice.

I have a personal beef against word processing packages where you can't use the Apple shift key just like a conventional typewriter. Although extras are available for packages like Wordstar, they should be included in the price.

Inside the Wildword manual I found a device just like the one used in Format 80. Plugging into the games socket and then to two of the bars underneath the Apple keyboard, it serves to convert the shift key to operate just like a typewriter. All this in a word processing package under £40!

Wildword's capabilities come into five distinct categories.

Entering text – or using Wildword as a typewriter.

Format text – editing and formatting a page.

Disc access – using floppy discs to save and recall text.

Mailing list – creating a database of names and addresses which can be used to produce customised letters or a mailing list.

Print text – producing hard copy from the text on disc.

After loading Wildword you see the words "Disc access" and two question marks. Now you can remove the disc from the drive. The message "Select a page" appears. Wildword is a paged-based word processor. Type in H and the message

"Lines per page – 60" appears. This is the default setting. Now you enter the length of the page you want. If you try to enter a figure higher than the default a high pitched noise is heard and the message "Error" appears.

After typing in the length of page required you are asked for the number of characters per line. The default here is 72. After entering this figure you see a small L in the top left hand corner of the screen. There's a mirror image of the L at the bottom of the screen. Alongside the L is

By NEVILLE ASH

the figure 01 and on the right hand side an arrow pointing downwards. 01 indicates the number of the line and L marks the left hand side of the page. The arrow marks the centre of the page.

Press the shift key for capital letters in the normal typewriter way at the same time as pressing the letter, and capitals appear on your screen. With keys which have special characters, the letter or figure appearing on the bottom half of the key will appear in capital letters.

Wildword has wordwrap so you don't need to press return at the end of a line, but it doesn't work if the word is more than nine letters long. To make corrections use the back space key.

There is logic in the choice of keys for the controls in Wildword, with T for setting tabulation plus CTRL. Using CTRL-T again can cancel the tabulation once you've finished. Changing the position of the tabulations is simply done using the right arrow key.

Though this is a word processor working without an 80 column card you can have a page wider than the width of the standard Apple screen. Just press CTRL D, go back to disc access, and indicate a full page measuring 60 lines by 72 characters. Press RETURN twice after pressing H and Wildword will automatically take you through to using a normal page.

As this program can't display a full size page at one time the display shows either the left hand or right hand side. As you type and get to the end of a line on the screen, the right hand part of the page is shown and the cursor returns to the left. A total of 20 lines can be displayed at any one time.

Some special characters can't be typed directly from the Apple keyboard. There are two types – ones for which the Apple has no special keys, like the square brackets, and control keys which send special details to the printer. Type CTRL N and the unobtainable characters can be seen. There are 10 of them, and you can see them by typing the appropriate number after CTRL N.

CTRL-C clears all the tab stops and CTRL-D transfers you to disc access, the point to start using Wildword. CTRL-F takes you to the formatting section of Wildword, while CTRL-S places an inverted * on the page and is used with the mailing list facility.

As a check on the user once you get to the bottom of a page, the message "End of Page" appears. And if you attempt to type off the end of the page, you can't. Wildword transfers you to disc access for a new page. You are also forced to save the completed page before starting on a new one – a good safety method.

Formatting, or sorting the text out the way you want, has a range of control

WILDWORD

codes each prefixed by CTRL.

A displays the other side of your full size page, B deletes a character, C centres the text and D takes you back to disc access. E takes you to the Enter Text mode.

F is for inserting spaces at the cursor position and G for global – the word Global appears and all commands now act from the cursor to the end of the page. This is a very powerful command and you need to use it with care.

CTRL-I lets you insert a line, while J stands for justify. K stands for compressing all the multiple spaces and operates when two or more spaces are found. L sets line mode with all commands operating from the cursor to the end of the line. Most of these commands are logical as

the first letter of the command is the letter you press after CTRL.

A useful feature on such a cheap word processor is the facility to find strings and completely replace them all the way through the text. So if you wanted to replace Apple with Orange, just type :Apple:Orange:

The Disc access section lets you transfer to other sections of the program, like formatting and entering text, to the mailing list and printing.

The second function is to send commands which refer to disc storage, such as saving pages of text. Errors are shown up by a high pitched noise and the command is disregarded. Single key commands here are also logical, with the letter of the command usually matching the

letter pressed.

Wildword can store up to 17 pages on a single 5¼in floppy disc. The mailing list facility lets you produce letters with the addresses individually matched in – quite a feature for a budget priced product – by putting the \$ sign in front of the name and address in the appropriate position in the text.

If you are satisfied with seeing just one half of the page at a time, then Wildword is a good buy. After all you can print out a normal page. The only drawback is not seeing it all on the screen at one time before you print it.

But this is a small price to pay for a word processor at £35 which has the shift key option to work like a typewriter.

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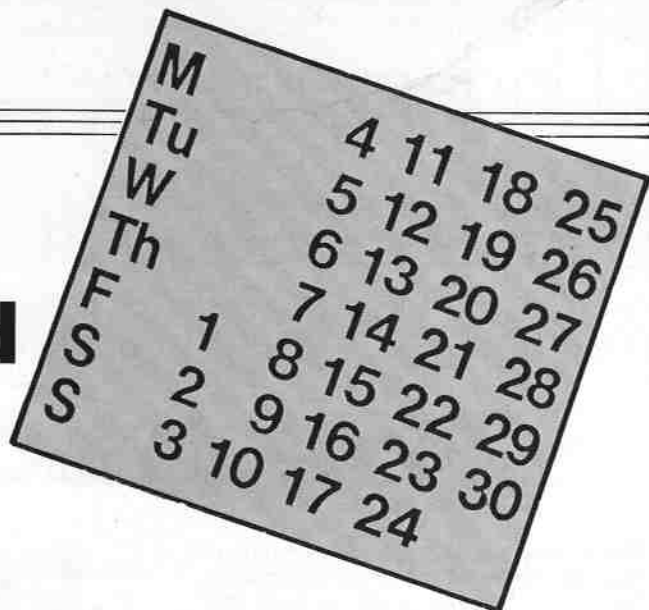
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DATES

Economical aid to database management



ALL database systems use dates as an important part of their functioning. Many of the fields within a record hold date information, and a common search facility requires listing records which need to be brought to the user's attention on a specific date. Numerous methods of storing dates are used but since the number of records which can be stored depends upon the length of each record a considerable saving in space, and consequently a larger number of records, can be saved in a database if the date can be reduced to the smallest number of bytes possible.

To save a date as it is normally presented, ie with no encoding, will require a minimum of six bytes. If spaces or slashes are used to separate the day/month/year a further two bytes are needed. Since there are only 35,525 days in one century it is possible to convert any date to just two bytes. This represents any date as the number of days since the first of January that century.

An additional benefit of this method is that testing for dates which lie within any month becomes a simple arithmetic function which can be performed directly without having to resort to testing strings. The disadvantage of encoding data is the overhead required in software for encoding and decoding. In some instances this advantage can be lost through the routines being time consuming as well as costly upon available memory.

The following routine, which converts dates to two bytes, and the second routine, which converts the two bytes back to the relevant dates, is short (277 bytes) and fast. Encoding takes 0.0025 seconds and recovery 0.0017 seconds!

There seem to be as many ways of representing dates as dates themselves, ranging from the purely numeric with numbers for day/month/year through Roman numerals for the month to using letters for the month. This last method is probably the least ambiguous and it neatly avoids the strange American system of putting the month first so that you do not know whether it is the sixth of March or the third of June. I favour this method for its unambiguity, although it does take a little more machine code to sort out the month value.

Unfortunately the wise sages who invented the calendar did not think of us poor programmers and not only in-

troduced a really silly number of days for a year but forgot to invent a standardised month length and, to add insult to injury, invented that iniquitous bane of logical thinkers, the leap year! All these nasties have to be taken into account, or you might find that the system becomes convinced that you were born on a leap day that never existed. Fortunately they must have forgotten that they could have made life even more difficult if they had not made each century year a leap year.

The Applesoft program accepts input of the date and does some simple error checking. If the format is obviously wrong it will request you try again. Once it is satisfied with the input string it pokes the Ascii values directly into a buffer and calls the conversion routine. Further error

By GEOFF STRATTON

checking is done throughout the conversion and if an error is detected, ie a day value in excess of the number of days in that month, an error flag is set and the conversion aborted. The Basic program tests the flag, and if it is set a request is made to try again.

If the conversion was successful the Basic "date string" of two bytes is derived by peeking the relevant values in the buffer. For a direct decimal value to be obtained any hex/decimal converter will furnish the result. Alternatively one could stick with Basic and multiply the value obtained for ASC(RIGHT\$(DATES,1)) by 256 and add it to ASC(LEFT\$(DATES,1)). Conversion back starts with poking the ASC value of DATES back into the buffer and calling the recovery routine.

For the sake of clarity and nice formatting the final part of the routine separates the day, month and year by "-". If you prefer spaces or any other character just change the relevant byte.

TO see how fast the system is, append the two Basic routines and type in any date. If it is valid it will be converted, recovered in A\$, POKEd back (in different locations; note - no cheating!), converted back, recovered again in A\$ and printed out at the bottom of the screen. If all has gone well the two dates should match.

I'm afraid that my timings of 4.2 milliseconds are for the machine code parts,

and so you will find that the whole routine is slowed down by the snail-like pace of Applesoft doing its thing on the strings. Still don't blink too slowly, or you may miss it.

Assembly has been done using the Applesoft Workshop Assembler and apart from the location of the buffer areas, the data blocks for number of days and month letters it is completely relocatable.

```
5 REM *****
  *
  * DATE CONVERSION
  *
  * BY GEOFF STRATTON
  *
  *****

10 TEXT : HOME : PRINT CHR$(4)
  "BLOADDATE.OBJ0"
20 N$ = CHR$(0) + CHR$(0) + CHR$(0)
30 VTAB 12: PRINT "DAY/MONTH/YEAR
  REQUIRED": PRINT : PRINT "
  FORMAT- DAY(NUMBER/S)": PRINT "
  MONTH(THREE LETTERS
  )": PRINT " YEAR(NUMBER
  S)"
40 PRINT "DO NOT USE SPACES": PRINT
  : PRINT "IE:- 1JAN80 30SEP
  09"
50 VTAB 10: CALL - 868: VTAB 10
  : HTAB 10: INPUT "DATE ":A$:
  :L = LEN(A$): IF L < 6 OR
  L > 7 THEN PRINT "FORMAT ER
  ROR": GOTO 30
60 IF L = 6 THEN A$ = "0" + A$

70 REM
  CONVERT DATE TO TWO
  BYTE VALUE

80 A$ = MID$(A$,1,2) + CHR$(0)
  + MID$(A$,3,3) + CHR$(0)
  + MID$(A$,5,2) + N$: FOR
  A = 1 TO 12: POKE 20479 + A,
  ASC ( MID$(A$,A,1)): NEXT
  : CALL 20492
90 IF PEEK(20489) THEN PRINT
  "INVALID DATE": GOTO 30

99 END

100 REM
  CONVERT TWO BYTE VALUE
  BACK TO DATE

110 A$ = CHR$( PEEK(20490)) +
  CHR$( PEEK(20491)): POKE
  20487, ASC(A$): POKE 20488,
  ASC ( RIGHT$(A$,1)): CALL
  20788

120 A$ = : VTAB 23: FOR A = 0 TO
  8:A$ = A$ + CHR$( PEEK(20
  480 + A)): NEXT : PRINT A$
```

Turn to Page 80

Understanding the Epson Part I

The Ascii answer to numeric confusion

THE quality and diversity of print options coupled with excellent graphics capability have made the Epson easily the most popular printer for Apple users.

However the manual, which may well have been confusing when first written in Japanese, is downright incomprehensible in translation. For the Apple user worse is to come. The sample program routines published for your guidance are written for a TRS-80.

Two major factors contribute to the difficulty many Apple users have when trying to use the special features of the Epson.

The first is that the commands recognised by the Epson are first seen by other system programs and may well be filtered out. The second difficulty lies in the fact that the Epson requires that you send numeric information in terms of its decimal Ascii value rather than as a number.

When you type a key at the keyboard or print a character from a program, a number of different system programs all take a close look at the character. In some cases they recognise it as a command, gobble it up and never pass it on to the next level. Among these sentinels or filters are:

The monitor – If you are in the "direct mode", that is typing at the keyboard, then the monitor will be looking for certain characters, including ESC (Ascii 27), CTRL H (Ascii 8) and CTRL U (Ascii 21). When these keys (plus some others not mentioned) are seen they are treated as commands, and as such are not passed on to the output routine. For this reason it would be pointless to try sending the sequence ESC K (turn on normal density bit image) directly from the keyboard. All that would happen is that the monitor would obediently move the cursor one place to the right.

DOS – If the Disc Operating System is active then every command is also seen by the DOS command interpreter. It is watching for the sequence CR (Ascii 13) CTRL D (Ascii 4) and, when it sees it, gobbles up the CTRL D and tries to in-

terpret the characters following as a DOS command.

The printer card – This, too, is a trap for the unwary. Most printer cards (but not Epson's 8132 card – more on this later) recognise at least CTRL I (Ascii 9) as a command character and do not pass it on to the printer. Instead they try to interpret the characters following the CTRL I as a command – CTRL I 80N says "set up for a

machine code routine which will enable you to bypass DOS, the monitor, Applesoft and even the printer card so that you really can send any character you choose from a program or the keyboard to the Epson.

For the moment let's discuss the problems of those users who have the printer card manufactured by Epson. If Epson made life difficult for Apple owners

By MIKE GLOVER
and
CHRISTOPHER ROPER

column width of 80 characters and do not echo back to the Apple screen."

Of course this means that if you try to send CTRL I through a printer card which recognises it as a command, not a lot will happen. So the sequence ESC C CTRL I (set form length to 9 lines) even if we force it past the monitor input routine by outputting the ESC code – ie PRINT CHR\$(27); "C"; CHR\$(9) – will still fail, as the printer card will intercept the CTRL I. One way of dealing with this problem is to toggle the command character if the printer card allows it.

You should consult your printer card manual for information on this, but generally the sequence CTRL I CTRL B would mean that from then on CTRL B would replace CTRL I as the command character. You can change it back by sending CTRL B CTRL I. From this it follows that CTRL I CTRL B CTRL I CTRL B CTRL I is a long winded way of sending CTRL I through the printer card! Little wonder that only the most determined users have really come to grips with their printers.

Next month we will describe a short

by requiring control characters for printer commands, they compounded the problem by ignoring standard Apple printer card protocols when designing the firmware (control program burnt into EPROM on the card) for the 8132.

We first became aware of problems when users complained that Visicalc blew up after printing, or that their data base program ceased tabbing after column 40, plus a few other nasty habits. Without getting too involved in the details, the biggest mistake Epson made was to require the user to POKE certain addresses to control the features of the card.

This is fine if you are writing your own programs and have the sort of mind that can say I want to dump hi-res page 2 (bit 1) in INVERSE (bit 5) so if I POKE 1912 + the slot with 2 + 32 and then send CTRL Q it should all happen. Similarly, to set a column width of 80 requires you to POKE 1657 + slot with 80. Fine if you can, but from a commercial software package the chances are that you will need to send a sequence of control characters.

Most packages follow standard Apple conventions and call for a set-up string

* Mike Glover is known to Windfall readers as author of a series of articles on machine language programming. He runs the Leicester Computer Centre, which has become known as a dispensary for confused Epson owners.

Christopher Roper is a freelance author and consultant, who actually uses an Epson for writing books and articles.

Applewriter II / Epson type /// - glossary file

Print Mode Key on/off Turn on Turn off What to type on / off

Enlarged	W/X	[W^A	[W^@	^V[[W^A^V	/ ^V[[W^@^V
Emphasized	E/F	[E	[F	^V[[E^V	/ ^V[[F^V
Double	G/H	[G	[H	^V[[G^V	/ ^V[[H^V
Superscript	R/T	[S^@	[TCH	^V[[S^@^V	/ ^V[[TCH^V
Subscript	S/T	[S^A	[TCH	^V[[S^A^V	/ ^V[[TCH^V
Underline	U/V	[^-^A	[^-^@	^V[[^-^A^V	/ ^V[[^-^@^V
Condensed	C/D	^D	^R	^V^D^V	/ ^V^R^V
Combinations					
Emphasized/ double	A/B	[E[G	[F[H	^V[[E[G^V	/ ^V[[F[H^V
Enlarged/ condensed	K/L	[W^A^D	[W^@^R	^V[[W^A^D^V	/ ^V[[W^@^R^V

Misc

Print a half with the sequence ^O]S^@1^H]S^A2]TCH^R

1/2 line spacing can be set/reset with the sequence ^A^R / ^A^L
 If you change the line spacing, set Page interval to 44 from 66.

NOTES

- ^ means that the following letter is a control character.
- For example, if you see ^V hold down the control key and type V
-] means press the ESC key. If you use Applewriter //e then only one press of the ESC key will be required (see what to type)

Glossary file by J L Balmer & Mike Glover

such as CTRL I 80N, which, of course, the Epson card doesn't understand. The best way to overcome the problem is to use an alternative card such as the Grappler or a Wizard. The latter has a buffer which can accept over 32,000 characters from the Apple and gets on with the printing while you do something else.

This is cold comfort if you do have the 8132 card, but you can still make life a lot easier by changing the EPROM to one which obeys standard Apple printer commands, and also adds some easy-to-use graphics commands such as CTRL I G2 I (G for graphics; 2 for hi-res page 2; and I for inverse. This EPROM, written by Mike Glover, is not only available from Leicester Computer Centre but also many of the Epson distributors.

Users of CP/M and the 8132 card also have a small problem - it won't print! To fix it is quite easy, and is explained in most, but not all, of the Epson printer card manuals. The following is the dialogue between the operator and CP/M.

CP/M	Operator
A>	DDT
DDT VERS 2.2	
-	SDD2F (SAD2F)
DD2F 3E	31
DD30 DD	
-	^C

This version works with 56k CP/M. If you have the 44k version use the address in the brackets, that is AD2F instead of DD2F. Once this patch has been made the print commands will work until you switch off your Apple. To fix CP/M permanently it is necessary to change this byte on the disc. Use a disc utility like Zap from Bag of

EXAMPLES OF PRINT MODES

Normal

Emphasized Normal

Double Normal

Emphasized Double Normal

Enlarged

Emphasized Enlarged

Double Enlarged

Emphasized Double Enlarged

Superscript: $y = ax^2 + bx^2 + cx + d$

Subscript: $y_{max} = D_2 + 2.103$

Normal Underlined

Condensed

Enlarged Condensed

(Emphasized Condensed not available)

Double Condensed

(Emphasized Double Condensed not available)

Condensed Superscript: $y = a^2.28-1.0000$

Condensed Subscript: $I_1 = I_1 - N_1$

Mixed Subscript and Superscript: 1/2

MARGINS

Margins must be reset when using various modes. The maximum number of characters per line is as follows:

Normal	80
Enlarged	40
Enlarged Condensed	60
Condensed	132

Understanding the Epson

This is an example of the type of printing the really determined user can achieve with an Epson MX 80 and a word processing package. This example was created using Applewriter II.

Next month we will show you how to use 'Bit image printing' to create extra characters such as... #0

Pictures are also possible



and you can even make the Epson sign your name!

Mike

Tricks to seek out the byte pattern and change it.

If, like us, you use Applewriter II (or any other word processor that allows glossary or macro files) then you might like to set up a glossary file containing these printer commands. Follow the instructions in your manual for setting up a glossary file, but here is how we do it with Applewriter II.

For example, the command required for an enlarged character set is ESC W CTRL A.

Type **W**. This will be the keystroke, which will henceforth summon enlarged printing mode.

CTRL V allows you to type in control characters.

ESC W (If you have an Apple II plus without the shift key hardware modification, you will have to strike ESC twice.) This sends Ascii 27 followed by Ascii 87 to tell the printer to use the enlarged character set.

CTRL A sends Ascii 1 to the printer. If we had used CTRL @, Ascii 0, the enlarged mode would have been turned off.

CTRL V toggles Applewriter II out of its control character input mode.

This procedure can be followed for all the commands set out in the table on the previous page. You then SAVE the file in the normal way and load it as a glossary file. This glossary is quite specific to the

Epson type III.

The appearance of Apple IIe while this article was being prepared added yet another twist to the story. Applewriter IIe refuses to allow you to type Ascii (0), which is CTRL @. Where you see CTRL A and CTRL @ try 1 and 0, respectively, instead. For example, to turn off underlining, use the sequence ESC-0.

Good luck.

● We have looked at the problem in general and, in particular, at the difficulty of using a word processing package. Next month, we will look more specifically at the question of writing programs with embedded printer commands. ●

Less work but it's not for beginners

APPLE CIRCUIT 1.0 is a package of interlinked menu driven programs enabling the user to both design and analyse electronic circuits.

Almost any circuit can be derived for use by the programs since they are based on the use of equivalent circuits.

The package runs on a 48k Apple II together with a firmware card or the language system. Output is via a VDU or printer. Most printers can be supported since alphanumeric characters are used in the plotting routines.

The software itself comes as two discs (master and backup) and documentation which includes examples of the use of the programs. I was disappointed however since some of the programs had bugs which prevented the proper utilisation of this otherwise very useful package.

Apple Circuit 1.0 is not for beginners to electronics. A reasonably detailed knowledge of circuit design is required before it can be used to best advantage, although the examples, both on the discs and in the documentation, go a good way towards helping.

Input to the programs can be made directly from the keyboard or from a previously saved text file loaded from disc. The input is in fact a list of components, or parts, together with an indication of their place in the circuit by means of from . . . /to . . . co-ordinates. These co-ordinates define the junctions (or nodes) of one or more components.

When the programs are run the nodes of the circuit are established from the entered co-ordinates and a network matrix is formed on which the calculations and analyses are conducted.

The programs will analyse circuits in terms of:

1. Frequency response.
2. Tolerance effects.
3. Worst case performance.
4. Production variations.
5. Component optimisation.
6. Node voltages.
7. Component power dissipation.

The package is in two main sections, *AC analysis* and *DC analysis*, separate files being generated for each. *AC Analysis* can support up to 60 components and 30 nodes, while *DC analysis* supports up to 80 components and 40 nodes.

Changes in circuit design (component value, type or position) can be readily accommodated. Typing in the replacement component invokes a sort routine which establishes the connections within

By MIKE LEES

the circuit and generates a new network matrix.

Unfortunately (in the review copy) this sort routine chose to modify other components in the circuit in addition to the one intended, thus completely corrupting the data. Attempts to correct this had a knock-on effect which swiftly reduced the data to complete chaos.

On occasions *DC analysis* had the habit of almost ignoring an otherwise satisfactory keyboard input and this resulted in impossible values during the *node voltage* analysis program. However, if the circuit parameters are entered correctly without any modification the power of this package becomes apparent.

Particularly effective are the *part effects* and *worst case* and *trial run* and *test limits* programs. These use standard techniques to establish the degree of variation in performance to be expected from the circuit, given the various parameter tolerances.

Part effects and *worst case* takes the worst case tolerances of all the components, power supplies, input voltages, etc and calculates the output voltage of the circuit. Additionally, the percentage effect on the output voltage of the individual circuit parameters is indicated.

Trial run and *test limits* does a Monte Carlo analysis on the circuit which in effect takes components, as one would on a production line, and calculates the performance using random variations of the component tolerances. The number of trial runs may be specified, the results being statistically summarised and may be used to specify the test limits of the circuit.

The *optimise a part* program is

particularly useful. It asks for the circuit output voltage to which a specified component is optimised then proceeds to calculate the value of the component, replacing the old value with the new, if required, in the data file.

Voltages and powers calculates the voltage appearing at each node of the circuit and also the power dissipation in each DC component.

A program *change output node* is available which enables the user to specify any node as the output node but care must be exercised as this routine may cause errors in the data file. By changing the output node, programs such as *optimise a part* and *frequency response* can be made more flexible by operating on any node in the circuit.

Frequency response and *nominal output* are two programs which calculate the output voltage (for a specified input voltage) at a specified frequency or range of frequencies.

Frequency response allows the user to specify an upper limit, a lower limit and a step increment for the frequency. The output is a table which indicates output volts, decibels and phase shift for each of the specified frequencies. An option is given to plot the data, in which case it may be output to the VDU or to a printer.

Nominal output is the same as frequency response except that the output is given at one frequency only.

I regard Apple Circuit 1.0 as a potentially very useful tool which goes a good way towards eliminating the tedium of iterative design procedures which are characteristic of electronic circuit design. I say potentially since, as indicated, the package is spoilt by the software bugs which are almost impossible to overcome.

Apart from the bugs, however, the user of this package could design, with a little practice, electronic circuits with a fair degree of confidence that they would work satisfactorily without resorting to a great deal of benchmarking. ☐

Ways of overcoming problems with CHAIN

I AM working with a 48k Apple II, and wonder if someone can help me with a programming problem.

I wish to chain in a selection of programs from disc (and ultimately from a RAM card) according to a menu choice. All the programs require access to the same variables, and it therefore seems clear that the CHAIN program provided by Apple is the method to adopt.

However, all the programs are fairly long, and some require access to HGR2, resulting in confusion, with the program variables running into HGR2 etc.

I would like to set LOMEM to 24576 and thus store all the variables above HGR2, while continuing to store each program below HGR2 whenever it is in use. Unfortunately, CHAIN seems to override LOMEN, and stores the variables in the normal place, immediately after the program it has just loaded.

Is there any way to make the CHAIN program store the program variables at a specified location rather than immediately after each program? (Other solutions, such as making all my programs load in above HGR2, are no use, as there is not enough room for my largest program, all the variables and DOS in the 24k, which is above HGR2.) — **Aileen Beattie, Steel Castings Research and Trade Association.**

● It is important to bring the inadequacies of CHAIN to the attention of other Apple users.

CHAIN overrides LOMEM:, because it stores the variables from program 1 immediately after program 2 before executing the first line of program 2. Therefore it doesn't know about LOMEM: being moved. One answer to the problem would be to write a program similar to CHAIN which would execute in the first line of program 2 and move the variables up in memory to start at your required LOMEM:. However, there seem to be two simpler ways of tackling the problem, although they will cost some disc space.

The first, which will also involve some programming time, is to write each variable out to disc at the end of program 1 in the form of a TEXT file which is to be READ in at the start of program 2, after setting LOMEM:.

The second method involves no extra programming. Forget about setting LOMEM: in each program and instead LOAD each in turn into memory. After LOADING each, type in the following in the immediate mode and then SAVE each program. The line to type is

POKE 175,0:POKE 176,96

The object of this is to set the end of each program (\$AF,BO) to immediately after HGR2, On a subsequent CHAINing

problems with CHAIN

the variables will be stored from 24576 upwards. After SAVEing each program the number of sectors occupied on the disc will increase to 90, which precludes having too many on a RAM card but gives a fair chance on a standard floppy. — **Max Parrott.**

Programs for tots

I HAVE been reading the articles on educational uses of the Apple and am surprised that there has been no review — since my subscription — of applications for young pre-school children.

If you consider that a child would readily learn from a computer if he could understand what was happening, but at three or four many children cannot read, and so miss the value of a computer.

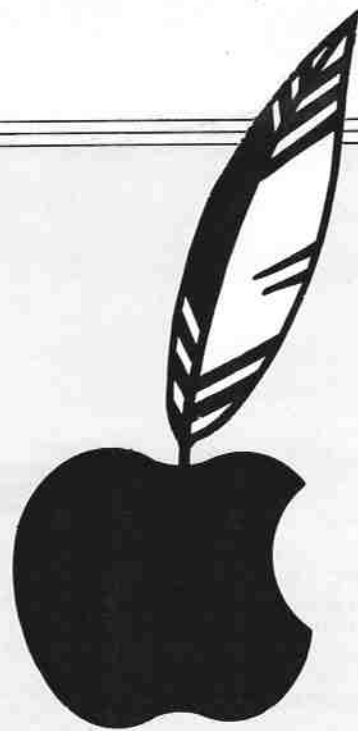
I have a classic example in my 4½ year old son, who sits with me running Wizard and Princess and I read each caption to him. I must, however, admit that he solves many problems well before me!

I have made my own attempts at programs for the children, but they are very basic, and I am sure your more brilliant readers — that is, those who understand PEEKs and POKEs, maybe — can come up with helpful programs.

I trust this might generate an exchange among your readers of how best to use the computer with non-readers. It could even help dysletic persons. — **Peter Ballard, Hong Kong.**

Cheery Maxwell

I have used Pilot Animation extensively and have never come across the problems described in Windfall (Feb. 1983, page



29). My Animation disc boots with a second Pilot Disc in drive 2, though I cannot imagine why anyone would want to put one there.

Also Maxwell (bless his little cotton socks) walks across my screen perfectly well and waves most cheerily as advertised. Sure enough, the Animator program lies to you if you try save a file on write-protected disc.

The problems reported with Pilot Animation may be examples of a very much more general problem with Pilot. I have had consistent problems copying discs, and have on two occasions managed to wipe my lesson disc just by following the instructions on the screen.

I do not know the source of these errors. It could be the unreliability of the Apple itself or tatty discs or a hiccup in the Pilot system. Whatever it is, the cure is to remove your valuable discs, turn off the Apple, and start again. Applesoftly yours. — **Tony Cook, Dept of Biology, New University of Ulster, Coleraine.**

Machine code snag

IF you insert the DOS 3.3 System Master disc in a Disc II drive, switch on the Apple II Europlus and type:

```
RUN RENUMBER
return
LOAD COPYA
&F2000
&H
LOAD COPYA
&F1000
&M
```

the computer nearly always hangs.

This seems to be a bug in a very well known program. How can it be avoided? It seems that &M spoils the end of the program with highest line numbers. — **Marcel Mané, Barcelona.**

● The reason it hangs is that COPYA is

not just a Basic program – it has machine code embedded in it. RENUMBER doesn't know this (or doesn't recognise this) and so it gets lost! – **Max Parrott.**

Wordstar printers

I WOULD be very grateful if you could pass on this query to T.N. Thompson, the author of the recent report on Wordstar, in the hope that he can solve my printer problem.

I have a 64k Apple as follows:

Slot	Card
0	Andromeda 16k RAM
1	Epson parallel card to MX80
2	CCS serial to Diablo 1620 printer
3	Videx videoterm
4	Z80 Softcard
5	Disc interface

There are no problems with the screen or using the Epson printer, but I can find no way of driving the Diablo. It seems a reasonable requirement to have both a draft and letter quality printer, so I would have expected to be able optionally to use either printer.

Totally outside Wordstar I can access the Diablo from CP/M as the PUN: device (also PTP:, UP1:, or UP2:), but any attempt to set up PUN: to be a Wordstar device, that is TTY: fails to output to the printer.

Can it be done, apart from moving the CCS card to slot 1? – **G. Fitton, Meat Research Institute, Bristol.**

● Mr Fitton is quite correct that driving two printers is totally beyond the capabilities of standard Wordstar on the Apple. The main problem is not Wordstar's, but the CP/M BIOS implemented for the Apple, which imposes quite rigid physical device assignment.

Thus the PUN: device must be in slot 2 and is not easily accessible to Wordstar. If you must use this card from Wordstar, a custom driver will have to be written and incorporated into the main program by way of the INSTALL program. Not the easiest, or cheapest, solution by a long way.

With the Apple computer the physical device TTY: is, in fact, a serial device located in slot 3. If a serial device recognised by CP/M is placed in slot 3 it is automatically treated as the terminal device.

One way around the problem of printing to the PUN: device is to select disc output when printing a file. This has the effect of putting the file into another disc file in the format of the finished document.

When all your printing has been put into disc files they can be concatenated into a single disc file ready for dumping to the printer by using PIP.

A point to remember is that Wordstar uses the high bit of certain characters to define them as special characters. By using the [Z] parameter in PIP, these high bits can be reset ready for the printer.

Using this method a document will print out on the printer but the control characters used to access the special features of your printer will print out as normal characters, instead of activating the features. Obviously this wastes the facilities of a letter quality printer.

When the software can't cope, as in this case, a hardware solution must be devised. The logical way round this problem is to have both printers connected to the same interface in slot 1.

My first thought was to the CPS Multifunction card or to the Prometheus card, both of which have a serial and parallel interface on the same card which can be selected by means of phantom slots.

After a little more consideration the idea of buying an extra card for the Apple bus seemed to have a few drawbacks. It would make both your existing interfaces redundant and the new card could become redundant should you change your system in the future.

A better solution would be something like Consolink's Sooper Spooler. This device is external to the Apple, accepts either serial or parallel input and outputs either serial, parallel or both, all under either soft or hardware control.

The software controls can be accomplished through a printer initialisation string given to through the USR1: printer patch in Wordstar during INSTALLation, or it can be switched by hand as and when desired. – **T.N. Thompson.**

Apple on remote control

I WOULD like to run a remote keyboard from my Apple II to an upstairs room in my house. While this is only a short distance, I should like to use as few wires as possible and have therefore considered serial data transmissions like RS232/V24, the interfaces for which could be employed in the Apple for other purposes.

It is not my intention to buy ready made interface cards as I have electronic experience and am capable of reading circuit diagrams and building the circuits on boards. However, after obtaining chip data on 8251A and studying the Apple's Interfacing Book by Titus Larsen & Titus (Blacksburg Group) I feel that I can build the RS232S but have doubts about the remote keyboard end and what is needed.

I have thought of copying the Apple keyboard circuit but have had thoughts about "initiating" the 8251A without a

processor at the remote end.

This is probably using a sledgehammer to crack a nut, but I should like to learn about RS232 and operate practically at some time, hence my initial ideas providing the remote keyboard, plus a serial interface to use.

Can you please suggest or provide advice on circuit diagrams and reading material, or if you think I am totally wrong suggest how I could at least do the remote keyboard as this is the prime consideration. The distance from Apple to "remote" could be 10-12 metres and as previously stated, uses as few wires as possible – **G.T. McDermid, Maidstone.**

Dear Micro . . .

If you had a "Dear Marje", page these would be suitable problems – the same old questions needing the same old answers. Please answer these whimpers from my heart.

Program running; minor hitch; cannot restart with GOTO to retain data since 005 instructions result in "NOT DIRECT COMMAND". All data has to be reentered when program is reRUN. Question: Is there a miracle POKE?

Plain listing paper: Are there standard sizes and qualities, and who is a good supplier?

Same problem for tractor fed labels. Printing of computer paper in small quantities – who and how much?

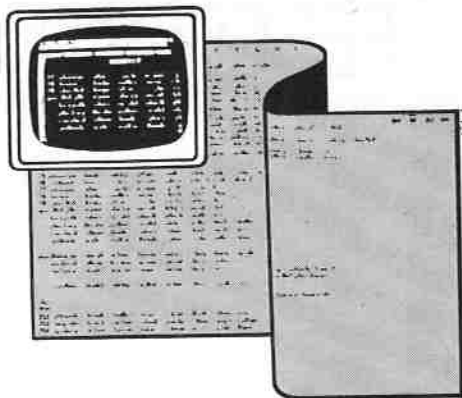
Where can someone with no money browse and try programs or games to know what to save for?

Here is a hint for games readers in return. Paper Tiger 460's board mortally ill and repair man quoted £340 for new board. I phoned Integral Data in the States, who supplied an exchange board for \$89 and were very helpful. – **C.J. Palmer, Wimbledon.**

● Without more details of your program structures we are unable to speculate with any precision as to the cause of your problems. We would suggest that the correct use of the ONERR GOTO facility available in Basic would enable you to trap the odd minor hitch while leaving your program and data intact. The ONERR GOTO is described on page 81 of the Applesoft Manual. The "Neat Syntax Sifter" in February's Windfall may prove of interest.

With reference to your query regarding supplies for your printer, paper etc., being bulky and weighty is best bought locally. Your best bet is to peruse the adverts in various computer magazines.

Probably the best way of seeing programs is to join a local user group, or failing that, to find a friendly dealer.



Super Expander opens up new Apple II horizons

DID you know that in Visicalc Advanced Version there is a command /A (the A standing for attributes) which has 40 subsets? (/AD, /AE, /AH etc.) By using these commands you can protect the content of a cell from being overwritten, even hide its content, and you can have negative numbers in brackets and so on.

Now why should all these attributes be of interest to you considering that VC Advanced Version is not available and unlikely to be available for Apple II users? The good news is that a new VC utility disc has been produced by Vergecourt which will enable you to apply many of these attributes on your Visicalc models on Apple II.

You can only use this disc however if you have installed in your Apple II at least one of Vergecourt's Ramex 128k expansion boards. The board itself costs under £300 and it is as easy to install as inserting the game paddles in your Apple II. Adding this board will give you 136k user memory for your VC models compared, for example, with 18k user memory if you use VC with a 48k Apple.

The disc is known as the Super Expander 80.2 and basically it is a pre-boot VC disc. The software (ie the disc) is primarily designed for users who produce large VC models - in the order of 100k plus, or even double that size (provided your Apple has enough memory to contain such large VC models) - but it can also be used for small VC models.

If you use it for large models you have to dedicate one or more VC data discs per model. You first initialise the disc with /SE instead of with /SI, and you save your model with /SK (K for keep) instead of with /SS. If your model has to be con-

By NICK LEVY
Principal,
Interface Management

tained in two discs you can install part of the model on one disc and the rest on another. When you load your large model you load it with /SM (M for mount) instead of with /SL.

Now do not walk away from your computer while your 100k+ VC model is being loaded. Loading such large models only takes about 20 seconds (the same also applies to saving the model). Do not expect however the same miracle when you recalculate large models. Depending on the complexity of the formulae used, this can take a few minutes, which, relative to the short loading time, appears a time-consuming operation.

You can use the Super Expander 80.2 also with /SS, /SL and /SI, and so store several VC models on one disc, but the saving and loading with /SS and /SL will not be so fast and you are forever committed to using your VC data disc in conjunction with the 80.2 pre-boot VC disc.

This also means that if you used the 80.2 to save a small VC model with /SS and then transfer a VC data disc containing a copy of that model to someone who has not got the 80.2, that person will not be able to load your model on his Apple unless it has been enhanced to work with 80.2.

So what do you get in return to com-

mitting yourself to using the 80.2? First of all you can now create VC models with different column widths (see Exhibit I). If, for example, you have in column A row headings which read "Opening Work in Progress" and other row heading of similar length, you would normally have to type "Opening W", then move the cursor to the next cell and type "ork In Pro", move to the next cell and complete the entry by keying "gress".

With the 80.2 you can set column A to 24 characters (without affecting the width of the other columns) and each one of your long descriptive row entries will be contained in a single cell.

Incidentally, writing long descriptive row and column entries could occupy a large part of whatever user memory is left in your Apple after the Visicalc program has been loaded, so if you are working with a 48k Apple keep your descriptions brief and leave yourself more memory for data and formulae. Only when you have added memory to your Apple can you afford to make your headings more descriptive.

The Super Expander 80.2 has to be seen in order to be appreciated. After all, how can you exhibit in an article a VC model with hidden cells? Or that cells can be dedicated to accepting either labels or values, or that cells containing formulae can be protected from being overwritten, or that the cursor can be programmed to jump from cell to cell in a pre-determined sequence, skipping over any cells which do not have to be altered.

It is like setting and using the tab key on a typewriter, but with the added advantage of being able to skip automatically, in a pre-determined sequence, from row to row, as well as from

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1) GAMMA'S MANUFACTURING														(Modified)
2) Worksheet For The Year Ending 31st. Dec.														BS Presentation)
3)														
4)		Unadjust.			Adjusted				1	2	3		3	3
5) Ledger:		Trial	Adjust-		Trial	Post			Mfg.	P&L	Balance		Balance	Balance
6)		Balance	ments:		Balance	To..			Cost	A/C	Sheet		Sheet	Sheet
7)														
8) Cash		4475Dr			4475Dr	3			0	0	(4475)		4475	4475Cr
9) Debtors		3530Dr			3530Dr	3			0	0	(3530)		3530	3530Cr
10) Allow. For Bad Debts		125Cr	75Cr		200Cr	3			0	0	200		(200)	200Dr
11) Open. Finished Goods		6030Dr	1720Cr		4310Dr	3			0	0	(4310)		4310	4310Cr
12) Open. Work In Progres		2560Dr	590Cr		3150Dr	3			0	0	(3150)		3150	3150Cr
13) Open. Direct Material		2210Dr	550Cr		2760Dr	3			0	0	(2760)		2760	2760Cr
14) Prepayments		750Dr	400Cr		350Dr	3			0	0	(350)		350	350Cr
15) Buildings And Plant		54545Dr			54545Dr	3			0	0	(54545)		54545	54545Cr
16) Accum. Depreciation		13840Cr	2000Cr		15840Cr	3			0	0	15840		(15840)	15840Dr
17) Creditors		3250Cr	300Cr		3550Cr	3			0	0	3550		(3550)	3550Dr
18) Accrued Liabilities					0Cr	3			0	0	0		0	0Cr
19) Corp. Tax Payable					0Cr	3			0	0	0		0	0Cr
20) Share Capital		45000Cr			45000Cr	3			0	0	45000		(45000)	45000Dr
21) Retained Earnings		5050Cr			5050Cr	3			0	0	5050		(5050)	5050Dr
22) Sales		51000Cr			51000Cr	2			0	51000	0		0	0Cr
23) Direct Labour		14500Dr	220Dr		14720Dr	1		(14720)	0	0	0		0	0Cr
24) Material Purchases		16000Dr	220Cr		15860Dr	1		(15860)	0	0	0		0	0Cr
25) Selling Expenses		4100Dr			4100Dr	2			0	(4100)	0		0	0Cr
26) General Expenses		3560Dr	50Dr		3610Dr	2			0	(3610)	0		0	0Cr
27) Factory Overheads		4675Dr	320Dr		4995Dr	1		(4995)	0	0	0		0	0Cr
28) Interest Expenses		50Dr			50Dr	2			0	(50)	0		0	0Cr
29) Clos. Finished Goods			1720Dr		1720Dr	2			0	(1720)	0		0	0Cr
30) Clos. Work In Progs.			590Cr		590Cr	1		590	0	0	0		0	0Cr
31) Clos. Materials			550Cr		550Cr	1		550	0	0	0		0	0Cr
32) Deprec. Factory D/H			1800Dr		1800Dr	1		(1800)	0	0	0		0	0Cr
33) Deprec. Gen. Expenses			200Dr		200Dr	2		0	(200)	0	0		0	0Cr
34) Bad Debts			75Dr		75Dr	2		0	(75)	0	0		0	0Cr
35) Accrued Pay Superv.			30Dr		30Dr	1		(30)	0	0	0		0	0Cr
36) Corporation Tax		1200Dr	300Dr		1500Dr	2		0	(1500)	0	0		0	0Cr
37)														
38)		0Cr	0Cr		0Cr									
39)														
40) Cost Of Goods Mfg.....								(36265)	39745	(3480)			3480	3480Cr
41)									(36265)	3480			(3480)	3480Dr
42)														
43) Net Income.....										3480	0		0	0Cr
44)														

Exhibit I ... produced with the aid of the Super Expander 80.2

column to column.

How often did you wish you could set the figures in your VC model to show three decimal places or just a single decimal place? Well, with the 80.2 you only have to key in /F3 or /F1, and your figures will show three decimal places, or just the one decimal place - in the same way as /F\$ shows two decimal places. So much for those 80.2 attributes which have to be seen in a live demonstration in order to be appreciated.

The 80.2 allows you to add a two letter prefix and/or suffix to a value cell without affecting the manipulative properties of the numbers in the cells containing the labels. For example, \$1000, DM1000 (Deutschmark), 35.67% are all legitimate VC values when used with the 80.2. Negative figures are given special treatment. You can have negative figures appearing in brackets, or by keying /FC you can have all negative figures appearing with a Dr suffix and all the positive figures with a Cr suffix (see Exhibit I).

If you are used to working with Visicalc

and plan to use the 80.2 utility disc as well you had better change some of the VC habits you developed while using the program. For example, if you save a file which already exists on your disc VC asks you if you want to replace it. You will probably answer with Y followed instinctively by RETURN. If you do that with the 80.2 in memory you wipe out the old version of the file you want to replace,

NICK Levy's review of Multiplan (Windfall, March 1983) was based on his use of the American version of the package run on an Apple II Plus.

Now that a British version of the package is available he is planning a second review to find out whether the new Multiplan has any extra features and is any easier to use on the Apple IIe.

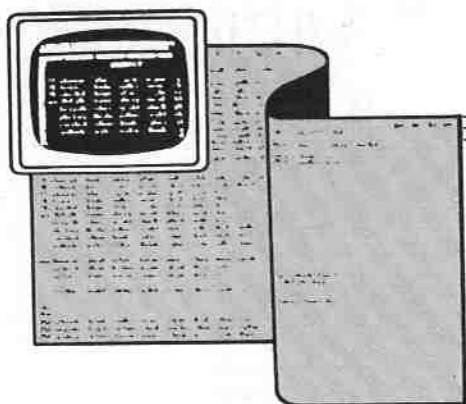
without replacing it with the updated version. What you should do is note the prompt on your screen asking you "File for saving: All or part?" Unless you answer with A or P before pressing RETURN you will loose the file on your disc.

Fortunately while the updated version is still on your screen you get another opportunity to save the file. The odd thing is that only seasoned VC users are vulnerable to making such mistakes.

Another aspect of using VC with the 80.2 is that experienced VC users will have to get used to waiting for eight seconds after clearing the screen with /CY before the new VC screen appears.

To alleviate your anxiety while waiting for the new screen to appear, you get a "SETTING UP" message on your screen.

It was a pleasure to work with a VC utility disc that gave me variable column width. However, when I tried to insert an extra column at the beginning of a VC model with variable width columns all the



wide columns in the model suddenly narrowed while all the narrow columns expanded. I suppose that's typical of life. You solve one problem and the solution creates new ones.

Fortunately, it was fairly easy to reformat the widths of the affected columns, but I was never sure what the original size of most columns were before the new column was inserted. Perhaps we could have in a future update of 80.2 a flag next to the cell reference in the Entry Line showing the cell size, as it appears in Supercalc.

Another one has to get used to is that when using the 80.2 and loading a VC file, previously saved with /SS, the flags on the Entry Line (the first row on the VC screen) shows that every cell containing a formulae is protected. This, in fact, is not so. The protection comes into effect only after you press /GP (global protection).

To find out if the entries in a VC model on which you are working are protected press a key at random. If the cell is protected pressing the key will produce a "pip". If you don't hear that sound just cancel your entry with ESC ESC or CTR C, and enter the protect command.

If your data discs containing VC models are to be used on Apples which do not have the Vergecourt Expansion Board, you must not work with the 80.2. To partially overcome the lack of the 80.2 capabilities you could consider using the Super Expander 80, the predecessor of the 80.2.

This utility disc can also be used for Keeping (Saving) and Mounting (Loading) 100k+ VC files in 20 seconds, and it has the protect command which protects formulae and labels from being accidentally overwritten. But it does not have the other facilities described above which are incorporated in the 80.2.

Note that the facility to protect VC calculations can only be saved on /SK files, not on /SS files. So when loading a /SL file don't expect any of the entries you protected before saving the file to disc to be still protected after loading.

Note also that the protect command only protects the content of a cell from being blanked or overwritten. Unlike the protection command in Supercalc, you cannot protect a cell from being destroyed when replicating an empty cell into what you thought was a protected cell.

The manual for Super Expander 80.2 contains over 60 pages. The author has obviously envisaged that users will only concentrate on studying pages 4 and 5, which provide adequate information on

how to use the utility, so he added a codicil which should be heeded by every user - read the tips and hints given in Chapter 9, for they could save you a lot of aggravation.

Super Expander 80 and 80.2 works with most 80 column boards and this enables you not only to have 80 columns on your screen but also to print Visicalc models with upper and lower case lettering. Here again you have to see the difference in appearance between a VC model using capital letters only and one using upper and lower case before you can conclude which is more pleasing to the eyes and makes reading easier.

I have therefore presented Exhibit I in upper and lower case and Exhibit II, which has identical column and row titles, in capital letters only. Appendix C, which is supposed to demonstrate how VC with the 80.2 can be used as a word processor, was unfortunately missing from the manual.

Exhibits I and II show printouts of Visicalc models in a format that most Visicalc users would not believe could be done. They were, of course, produced with the aid of the Super Expander 80.2. As you can see, we have columns with different widths, and entries were made in upper and lower case.

Columns B,C,E and N have either a Cr or a Dr suffix after each value. These columns were formatted with /FC so that every negative number entered automatically receives the Dr suffix and every positive number has a Cr attached. Column E = Column B + Column C, and the suffixes are created automatically according to whether each sum total is positive or negative.

Columns I,J,K and M were formatted with /F(), so they show negative numbers in brackets and positive numbers properly aligned below bracketed figures.

Leaving the formatting aspects of the VC models, what functions do these models fulfil? I called these models "From trial balance to balance sheet". Column B in Exhibit I shows an unadjusted trial balance presented in a single column.

The Dr suffixes mean that the entry would have normally appeared on the left hand side of a ledger (or that the figure is negative, i.e. a deduction) and the Cr suffixes imply that the amount would appear in the right column if written in a two column ledger.

Any final adjustments are then entered in column C and the adjusted trial balance is then calculated in column E. A narrow

column D was created in Exhibit I for tutorial purposes only.

Column G is what the art of accountancy is all about. Here the accountant decides whether the adjusted trial balance entry of each of the ledgers (column E), should be posted direct to the balance sheet (No.3), or to the P&L a/c (No.2) or to manufacturing cost (No.1). By entering 1, 2 or 3 in column G all the postings and all the allied calculations arising from it will be done automatically.

And provided each of columns B and C is in balance, that is, each column totals to 0, everything else will also balance automatically, however many adjustments and posting changes the accountant wants to make.

Exhibit II shows the effects of making five changes in Exhibit I. £5,000 and -£5,000 were entered in rows 8 and 9 in column C. Then the accountant decided that the entries in rows 28,32, and 33 of column E should be posted direct to the balance sheet, implying that these expenses would be deducted from future profits, and so improving the current year's profit! So the accountant enters 3 in rows 28, 32, and 33 of column G, overwriting the previous posting instruction.

Press 'I' - the model is in the manual mode - and hey presto, you have new entries in rows 8 and 9 in column E. The net income goes up from £3,480 to £5,530 (cell J43). The balance sheet, the P&L a/c and the Mfg cost statements are all updated, and everything balances perfectly at a stroke of a key.

Because some accountants prefer to see credit balances of any ledger accounts on the left hand side of the balance sheet and debit balances on the right I have replicated column K into M and N, and changed the negative figures to positive and positive to negative (Drs were changed to Crs and vice versa).

Anyone buying a micro will be well advised first to get to know the software he is going to use and then acquire the computer. Buying the machine first is like buying answers to questions you never asked, subsequently not being able to get the answers to the questions you want to ask. The second approach could be in the long run an expensive exercise.

Suppose you wish to know whether to get a micro on which you can run Visicalc. How can you find out more about Visicalc assuming that you are a first time com-

A	B	C	D	E	F	G	H	I	J	K	L	M	N	
1) GAMMA'S MANUFACTURING										(MODIFIED				
2) WORKSHEET FOR THE YEAR ENDING 31ST. DEC.										BS PRESENTATION)				
3)	-----													
4)	UNADJUST.		ADJUSTED				1		2		3		3	
5) LEDGER:	TRIAL	ADJUST-	TRIAL	POST	MFG.	P&L	BALANCE	BALANCE	BALANCE	BALANCE	BALANCE	BALANCE	BALANCE	
6)	BALANCE	MENTS:	BALANCE	TO..	COST	A/C	SHEET	SHEET	SHEET	SHEET	SHEET	SHEET	SHEET	
7)	-----													
8) CASH	4475Dr	5000(-)	525Cr	3	0	0	525	(525)	525Dr					
9) DEBTORS	3530Dr	-5000(-)	8530Cr	3	0	0	8530	8530	8530Cr					
10) ALLOW. FOR BAD DEBTS	125Cr	75Cr	200Cr	3	0	0	200	(200)	200Dr					
11) OPEN. FINISHED GOODS	6030Dr	1720Cr	4310Dr	3	0	0	(4310)	4310	4310Cr					
12) OPEN. WORK IN PROGRES	2560Dr	590Dr	3150Dr	3	0	0	(3150)	3150	3150Cr					
13) OPEN. DIRECT MATERIAL	2210Dr	550Dr	2760Dr	3	0	0	(2760)	2760	2760Cr					
14) PREPAYMENTS	750Dr	400Cr	350Dr	3	0	0	(350)	350	350Cr					
15) BUILDINGS AND PLANT	54545Dr		54545Dr	3	0	0	(54545)	54545	54545Cr					
16) ACCUM. DEPRECIATION	13840Cr	2000Cr	15840Cr	3	0	0	15840	(15840)	15840Dr					
17) CREDITORS	3250Cr	300Cr	3550Cr	3	0	0	3550	(3550)	3550Dr					
18) ACCRUED LIABILITIES			0Cr	3	0	0	0	0	0Cr					
19) CORP. TAX PAYABLE			0Cr	3	0	0	0	0	0Cr					
20) SHARE CAPITAL	45000Cr		45000Cr	3	0	0	45000	(45000)	45000Dr					
21) RETAINED EARNINGS	5050Cr		5050Cr	3	0	0	5050	(5050)	5050Dr					
22) SALES	51000Cr		51000Cr	2	0	51000	0	0	0Cr					
23) DIRECT LABOUR	14500Dr	220Dr	14720Dr	1	(14720)	0	0	0	0Cr					
24) MATERIAL PURCHASES	16000Dr	220Cr	15860Dr	1	(15860)	0	0	0	0Cr					
25) SELLING EXPENSES	4100Dr		4100Dr	2	0	(4100)	0	0	0Cr					
26) GENERAL EXPENSES	3560Dr	50Dr	3610Dr	2	0	(3610)	0	0	0Cr					
27) FACTORY OVERHEADS	4675Dr	320Dr	4995Dr	1	(4995)	0	0	0	0Cr					
28) INTEREST EXPENSES	50Dr		50Dr	3(-)	0	0	(50)	50	50Cr					
29) CLOS. FINISHED GOODS		1720Dr	1720Dr	2	0	(1720)	0	0	0Cr					
30) CLOS. WORK IN PROG.		590Cr	590Cr	1	590	0	0	0	0Cr					
31) CLOS. MATERIALS		550Cr	550Cr	1	550	0	0	0	0Cr					
32) DEPREC. FACTORY D/H		1800Dr	1800Dr	3(-)	0	0	(1800)	1800	1800Cr					
33) DEPREC. GEN. EXPENSES		200Dr	200Dr	3(-)	0	0	(200)	200	200Cr					
34) BAD DEBTS		75Dr	75Dr	2	0	(75)	0	0	0Cr					
35) ACCRUED PAY SUPERV.		30Dr	30Dr	1	(30)	0	0	0	0Cr					
36) CORPORATION TAX	1200Dr	300Dr	1500Dr	2	0	(1500)	0	0	0Cr					
37)	-----													
38)	0Cr	0Cr	0Cr											
39)	-----													
40) COST OF GOODS MFG.....					(34465)		39995		(5530)		5530		5530Cr	
41)							(34465)		5530		(5530)		5530Dr	
42)	-----													
43) NET INCOME.....							5530		0		0		0Cr	
44)	=====													

Exhibit II ... again with the Super Expander 80.2

puter user? You could study the excellent manual that comes with it, but it is a fact that many managers find it hard going, and even when they get over the more difficult parts they fail to discover such things as the repeat command (/) or the significance of working with VC in manual mode (/GRM), and hardly make an effort to study and appreciate the immense practical applications of using any of the logical functions in the VC program.

Now a new Visicalc training program has recently arrived from the United States and I would have no hesitation in recommending it to anyone beginning to learn Visicalc. It is called Cdex Training for Visicalc, and is sold for about £50. Unlike the VC manual this is a computer aided instruction package which puts messages for you on the screen such as "FANTASTIC JOHN (or whatever you call yourself) YOU ARE TRULY A WIZARD WITH FORMULAS", when all you did was to type correctly +C5*C6.

I have a vested interest in teaching Visicalc and other electronic spreadsheets, but I have no shares in the Cdex Corporation. However when I first saw the package I liked it so much that a thought crossed my mind that perhaps I should buy the corporation (I must have been truly brainwashed by a well known TV advertisement to get such an idea into my head).

The package provides an excellent foundation course for learning Visicalc. It is ideal for complete beginners who must be prepared to devote to it at least eight to ten hours. I must emphasise that it is no more than a superb foundation course, and that there is much more to learning Visicalc than learning the foundations. If they bring out anything like it for more advanced users of Visicalc it could put me out of work.

However, why not try it for yourself. Ask a dealer to load disc No. 1, select item E from the menu, and just follow instruc-

tions. I make this suggestion because the package consists of three discs and a manual and it is not so easy to know where to start.

As managers begin to realise the wisdom of "Never mind the hardware, feel the software", they will accept that learning to make the best use of any good piece of readymade software for a micro must inevitably cost several times more than the cost of the software itself.

Look at it this way, if Visicalc had been custom made for your company it would have probably cost you tens of thousands of pounds. You wouldn't then be reluctant to spend £1,000 or so to training your staff to make the best use of it.

So just because Visicalc is relatively cheap this does not make any difference to the cost of having to learn how to make the best use of it. If you have to teach Visicalc to complete beginners don't begrudge the cost of investing in the Cdex training package. ●

Generating bar indicators

PREVIOUS articles in Windfall have included subroutines for the display of graphs and histograms (ref 1,2). These types of displays are particularly valuable for expressing the relationship between two variables or for comparing a single attribute of a number of groups of data. Data that is time dependent can, of course, be displayed in a graph or histogram that demonstrates its dependence, but this form of display (ay,t graph for example) is limited in one crucial respect, best illustrated by an example.

In a program that simulates population growth the student is requested to enter the parameters that control growth, and then observe the population/time curve that is plotted by the program. Having entered the parameters the student discovers that his simulation shows little change in population until the time period is almost complete and further information could have been obtained if a longer time period had been selected. In this case the program could have been improved by providing a continuously updated graphic representation of population without any time limit.

This type of display could find similar applications in simulations where any variable needs to be updated and continuously displayed. For example, the display of remaining fuel in a game, the indication of volume and pressure in a process control simulation, the display of voltage or current in a simulation of an electrical circuit and so on. Secondly, such a display might be of value in providing an update of data obtained from an external device via an analogue to digital converter.

The selection of a suitable format for the display of this type of open-ended data stream requires little more than consideration of the devices that surround us now. Admittedly, modernists might claim that it is sufficient to print out the digital value in normal numeric form. Without wishing to enter the analogue/digital debate, I remain to be convinced that the trend to digital displays is an unequivocal improvement. Where the data must be recorded the digital display is clearly superior, but where one wishes to observe the approximate values, particularly if

they are changing rapidly, an analogue display is of considerable value. Panel meters, null balance devices (such as tuning meters), level indicators, LED peak level displays (in the current generation of cassette recorders) and flowmeters are all examples of an analogue output giving an approximate measure of the status of the system under observation. Is it more important to know that the tuner is tuned to 95.23 MHz or that the station is locked in accurately?

In programs that require a similar degree of approximation to a variable, several types of display could be

(54200— and 54400—). Listing 1 (54000—) is the subroutine that draws in the outline of the indicator, putting tick marks every 10 per cent along the vertical axis and showing the zero position if required; this subroutine is common to bar or solid bar displays. Listing 4 shows the alterations to listings 2 and 3 that must be made in order to produce the display shown in Fig 1 rather than Fig 2 and Fig 3. Note that in common with other routines given in this series, this subroutine set cannot be used in isolation, needing

50000 Graphics initialisation routine (3)

51100 Area initialisation routine (with line 51200 deleted see ref 2)

A brief description of the subroutines listed here is given below.

54000 Draw indicator area

Listing 1 will draw in the outline of the indicator. Six variables must be supplied to this subroutine. Four of them (XL,XU,YL,YU) define the position on the screen occupied by the area; in the leftmost bar of Fig 1 for example the values are XL=20:XU=40:YL=10:YU=180. These variables have exactly the same meaning as in the other subroutines in this series.

The final two variables supply the upper and lower values of the quantity to be displayed in the indicator area (LY,UY) and are not restricted in terms of magnitude or sign (i.e. the area could be used to display values between -100 and -50 by giving these two variables the values LY=-100:UY=-50). These six values are essential for all three of the routines shown here and are best established by use of the multiple area initialisation routine (51100 ref 1).

54200 Draw indicator bar

Listing 2 will draw a solid bar, the value of which corresponds to the value of the supplied variable IV (indicator value) in relationship to the limits described by the total height of the bar (supplied by LY and UY). Naturally, the subroutine ensures that the value of IV does not exceed the limits described by LY and UY; if this is the case the error will be signified by a single "bleep" (control-G) and no bar will be plotted.

54400 Erase indicator bar

Since the display was originally conceived for the purpose of continually

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employed. A diagram of a panel meter could be used, but the approach that is described here uses a bar display of one of two types. The first simply indicates the value of the variable by displaying a horizontal line that moves vertically (Fig 1) while the second uses a solid bar similar in appearance to the level displays on modern hi-fi equipment (Fig 2). As usual, the incorporation of other graphics routines that have been the subject of earlier articles makes "inverse" displays equally feasible (Fig 3).

As with the other routines that have been developed it is worth considering a minimal set of specifications for the subroutines that display output similar to that seen in Figs 1-3.

- It should be possible to set up this type of bar indicator anywhere on the high resolution screen.
- There should be no restrictions on the range of values that are displayed by the indicator.
- Since the values displayed by the indicators are to be updated continuously, some provision must be made to permit selective erasure of the current bar before a new value is to be displayed.

The subroutines to produce solid bar displays are given in listings 2 and 3

ERRATUM

In "Displaying histograms on the Apple" by Robert J. Beynon (Windfall March 1982 No. 9 pp 28-29) Listing 1 line 53120 ZY = LY/(UY-LY) * (YU-YL) + LY should read 53120 ZY = LY/(UY-LY) * (YU-YL)

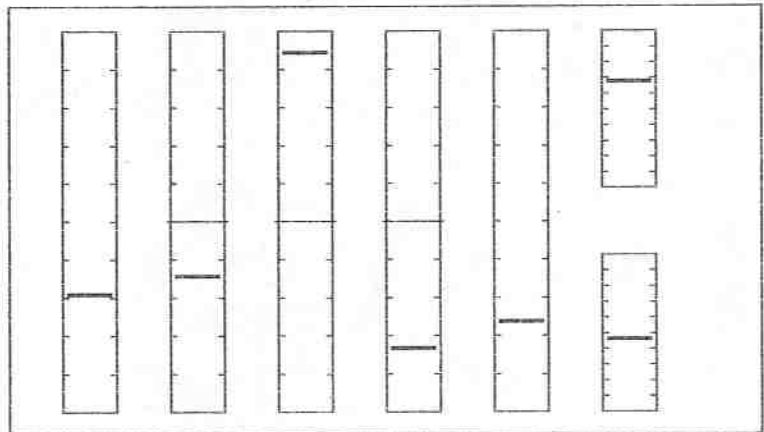


Fig 1. Complex 'bar indicator' display using a single horizontal bar to indicate values. Note the zero lines on some of the bar areas.

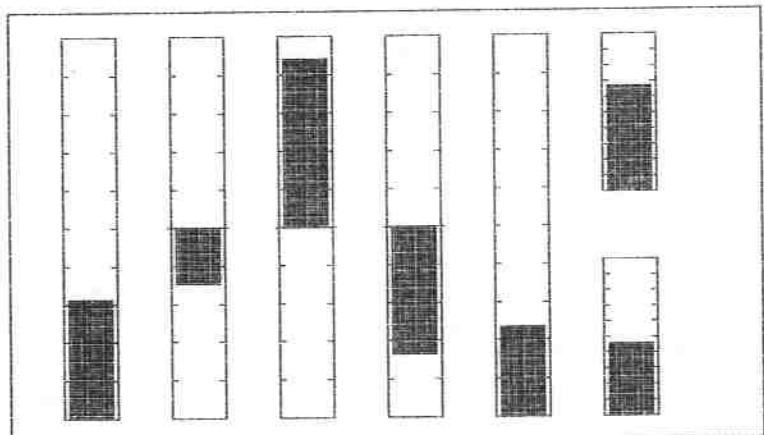


Fig 2. Bar display identical in style to Fig 1 but using solid bars from zero to the parameter values to represent the variables.

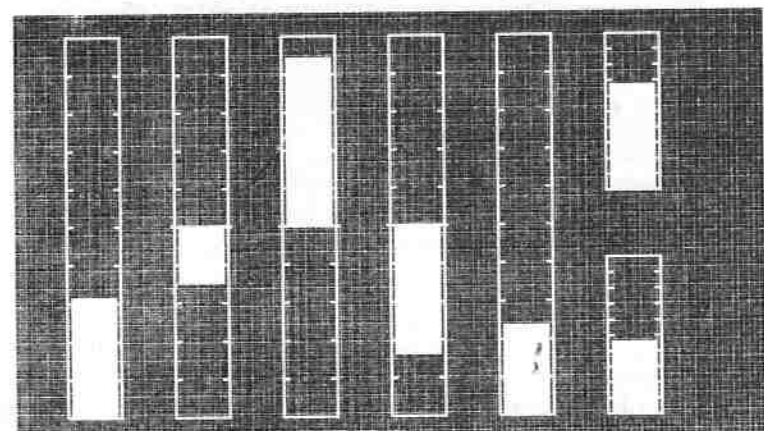


Fig 3. Output identical to Fig 2 but using the inverted display, easily selected by use of the graphics initialisation routines (ref 3).

updating a variable, it was necessary to provide for erasure of the indicator value. This could be attained by erasing the whole of the graphics page but would have been time consuming. The alternative, of simply erasing the current bar, is simpler provided that the value (IV) is not altered after drawing but before erasing! Lines 54400— provide for such selective erasure of the bar. Again, the value of IV is checked to ensure that it will not be plotted outside the current range.

Alternative line numbers

Listing 4 gives a set of eight lines that must replace the lines in listings 2 and 3 if single horizontal bars are required (Fig 1). The first four are needed to replace the lines in the drawing routine, the second four are the replacements for the erase bar routine. Note that the selection of this type of display requires the use of a new local variable BB in addition to ZY and HI. Users should refrain from using these variables outside the subroutines.

Use of the subroutines is extremely straightforward and consists of three steps:

1. Set up the display area on the screen (XL,XU,YL, YU) and the real limits of the values (LY,UY)
2. Set up the value (in user terms) to be displayed as the variable (IV) and draw the bar (GOSUB 54200)
3. Maintain the same value of IV and erase the bar if required (GOSUB 54400)

Listing 5 gives a simple demonstration of the use of the subroutines, drawing a sequence of bars of random height and erasing each one after a small delay. Note that this demonstration requires no use of the graphics initialisation routine. The screen area and the real limits are instead set up as simple variables (lines 40 and 60). Clearly if several displays were to be drawing at the same time it would be simpler to assign these six values in the multiple area subroutine and call them with, for example a straightforward

```
AR=2 : GOSUB 51100
```

The principles behind the production of this type of display are essentially the same as those employed in the histogram routines given in a previous article (ref 2). The strength of the output that is produced by this set of subroutines lies in the ability to display data in a

continuously updated fashion such as the metabolic simulations that I am developing at the moment.

The intracellular concentrations of different but interrelated metabolites can be monitored in a continuous fashion, allowing the student to investigate the effect of alteration of the parameters of the simulation on the levels of these metabolites. It should not prove difficult to discover alternative ways of using the displays in other applications.

References

1. Beynon, R.J. (1982) *Windfall, February (No.8) "High resolution graph drawing"* pp 38-41
2. Beynon, R.J. (1982) *Windfall, March (No. 9) "Displaying histograms on the Apple"* pp 28-29
3. Beynon, R.J. (1982) *Windfall, January (No. 7) "Touring Apple's memory map"*

GRAPHICS

Listing 1

```
54000 REM          DRAW INDICAT
      DR
54010 REM          NEED XL,XU,Y
      L,YU:PLOT
54020 REM          LY,UY
      :USER
54030 :
54040 :
54050 HPLLOT XL,YU TO XL,YL TO XU
      ,YL TO XU,YU TO XL,YU
54060 :
54070 FDR TI = YL TO YU STEP (YU
      - YL) / 10
54080 HPLLOT XL,TI TO XL + 2,TI: HPLLOT
      XU,TI TO XU - 2,TI
54090 NEXT TI
54100 :
54110 : REM          DRAW ZERO LI
      NE IF NEEDED
54120 :
54130 IF NOT (LY < 0 AND UY > 0
      ) THEN 54160
54140 ZY = LY / (UY - LY) * (YU -
      YL)
54150 HPLLOT XL - 1,YL - ZY TO XU
      + 1,YL - ZY
54160 RETURN
```

Listing 2

```
54200 REM          DRAW CURREN
      T INDICATOR
54210 REM          NEED IV
54220 :
54230 IF IV < LY OR IV > UY THEN
      PRINT CHR$(7);: GOTO 5431
      0
54240 HI = IV / (UY - LY) * (YU -
      YL)
54250 ZY = LY / (UY - LY) * (YU -
      YL)
```

```
54260 :
54270 FDR L = XL + 2 TO XU - 2
54280 HPLLOT L,YL - ZY TO L,YL -
      ZY + HI
54290 NEXT
54300 :
54310 RETURN
```

Listing 3

```
54400 REM          ERASE CURREN
      T IND
54410 REM          NEED IV (IND
      VALUE)
54420 REM          MUST BE FOR
      CORRECT AREA
54430 :
54440 IF IV < LY OR IV > UY THEN
      PRINT CHR$(7);: GOTO 5457
      0
54450 HI = IV / (UY - LY) * (YU -
      YL)
54460 ZY = LY / (UY - LY) * (YU -
      YL)
54470 :
54480 IF RIGHT$(G$,1) = "B" THEN
      HC = 4: GOTO 54500
54490 HC = 7
54500 HCOLOR= HC
54510 FDR L = XL + 2 TO XU - 2
54520 HPLLOT L,YL - ZY TO L,YL -
      ZY + HI
54530 NEXT L
54540 :
54550 IF HC = 4 THEN HCOLOR= 7:
      GOTO 54570
54560 HCOLOR= 4
54570 RETURN
```

Listing 4

```
1 REM          ALTERNATIVE LINE
      S IN SUBROUTINES
2 REM          FOR SINGLE BAR R
```

```
ATHER THAN SOLID BAR
3 REM          REPLACE FOUR LIN
      ES IN EACH SUBR.
4 :
5 :
6 :
54270 BB = YL - ZY + HI
54280 HPLLOT XL + 2,BB - 1 TO XU -
      2,BB - 1
54290 HPLLOT XL + 2,BB TO XU - 2,
      BB
54300 HPLLOT XL + 2,BB + 1 TO XU -
      2,BB + 1
54510 BB = YL - ZY + HI
54520 HPLLOT XL + 2,BB - 1 TO XU -
      2,BB - 1
54530 HPLLOT XL + 2,BB TO XU - 2,
      BB
54540 HPLLOT XL + 2,BB + 1 TO XU -
      2,BB + 1
```

Listing 5

```
5 REM DEMONSTRATION
10 REM HGR2/FULL/BLACK BKGND
20 B$ = "P1/F/B": GOSUB 50000
30 REM SET UP AREA
35 REM NOTE INVERSION (LINE45)
40 XL = 20:XU = 40:YL = 10:YU = 1
      80
45 YL = 191 - YL:YU = 191 - YU
50 REM REAL LIMITS
60 LY = 0:UY = 100
70 REM DRAW AREA
80 GOSUB 54000
90 REM DISPLAY
100 IV = RND(9) * 100
110 GOSUB 54200: REM BAR
120 FDR DL = 1 TO 200
130 NEXT DL: REM DELAY
140 GOSUB 54400: REM ERASE
150 GOTO 100
```

THE WILDCARD – IT COPIES!

What is the WILDCARD?

It is a peripheral card that copies memory to disc. With the WILDCARD you can backup just about any core resident program – including 64K software.

What do I need to use the WILDCARD?

48K + any RAM card + DISC drive. Just plug the WILDCARD into any slot – no straps, no chip pulling.

What sort of copy does the WILDCARD produce?

A standard DOS 3.3 disc that when booted restores your original program. Many programs can be turned into standard 'BRUN' able binary file that can be transferred to hard disc drives or other disc formats. BASIC programs can be recovered as standard A/S file.

Do I need the WILDCARD to use the copies?

No, and in some cases you don't even need a RAM card.

Additional features:

Screen displayer – display, blank, recover each screen.

Built in disassembler – displays code and text, to the screen or printer.

Auto patcher – finds DOS, resets RESET, etc.

Wildcard price **£99** + VAT (£113.85)

16K RAM cards **£70** + VAT (£80.50)

Available from Peter & Pam and SBD Software or your local dealer.

ELITE SOFTWARE COMPANY

2 Almorah Road, Heston,

Middlesex, TW5 9AD.

Telephone: 01-572 0453



Keypad can help the handicapped

A TOUCH sensitive keypad now on the market should be of particular help to the young or handicapped computer user.

The Prefax 100, about 37cm square and 3.5mm thick with a 29.5cm square touch area, consists of 100 keys arranged in a 10 x 10 grid. The border around the edge of the grid allows overlays to be stuck or clipped onto the Keypad.

Distributors Pete and Pam say the board will withstand severe handling and can be used or mounted at any angle. The touch surface, which requires only light pressure to operate, is plastic film which can easily be wiped clean. The Keypad is connected to the Apple II with a 1 metre length of ribbon cable.

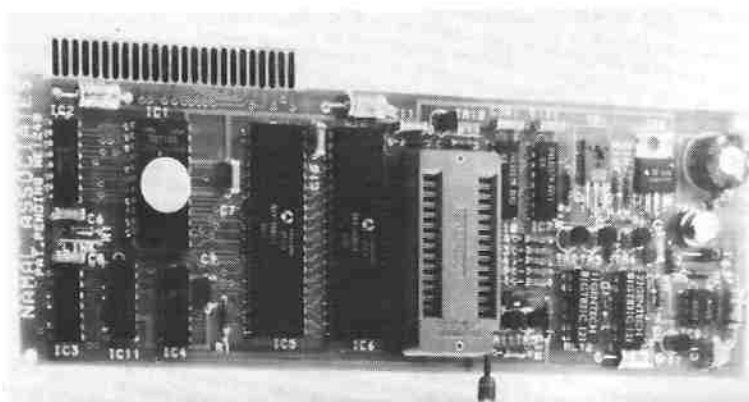
The key grid can be covered with the user's own overlay which can be varied to suit the type of application required. These can be made by printing or painting any symbols, such as large alpha-numeric characters, braille, specialised symbols or pictures onto ordinary A2 sized paper.

Under software control any touch key can be assigned any value or notation thus freeing any user from the limitations and restrictions of a conventional keyboard. This opens up a completely new applications field for the Apple II with young or handicapped users.

The keypad costs £98.50.
Tel. 0706-227011.

Packages for the IIe

A CANADIAN company, Solidus International, has opened an English office to distribute its range of software for the Apple II and IIe.



The Romblo 1248 EPROM blower

Using new methods of packing and storing information, Stockfile, the stock control component, can store over 3,000 parts on a single floppy disc. It can handle up to three discs at a time, giving a maximum capacity of nearly 9,500 parts.

It takes two seconds to retrieve any part regardless of the number of stock items stored, claims Solidus.

Five master reports are incorporated but there is also a report generator which allows users to define reports in their own formats. These reports may include calculations, multiple lines per part and up to three levels of sub-total.

Stockseller, the sales system, runs with Stockfile and provides invoicing, customer accounting with up to 1,750 customers, sales ledger and sales and profit analyses.

Stockmaker, a parts explosion system, permits manufacturers to plan production based on the stock levels of component parts. About 1,000 assemblies and from

5,000 to 23,000 components can be held, depending on the size of the part number and the number of drives being used.

Solidus was selected by Apple as a test site for the new IIe, and its packages run on both the II and the IIe. Each module costs £350.

Tel. 01-688 5164.

Eprom blower

A VERSATILE EPROM blower for the Apple, the Romblo 1248, will program all commonly used 24 and 28 pin EPROMs, of the type 2508, 2516, 2532, 2564, 2716, 2732 and 2764 or any pin com-

patible 5 volt EPROMs.

A special feature is the on-board software which does not require disc drives and speeds up the operation.

The Romblo is slot independent and has software selectable programming supply - 25V or 21V. It can read, verify and examine the status of EPROMs, verify programming, verify status before programming and has a stop-list feature to examine errors.

It costs £95 from Namal Associates.
Tel: 0223-355404.

Apple dumplings

RELEASED in the United States is the Apple Dumpling series of parallel printer interface cards for graphics printers by Microtek.

The Dumpling-GX is a non-buffered, no memory card which interfaces with all major graphics printers, as well as the PMC, Data South, Mannesmann Talley, and the new Apple printers.

The Dumpling-64 is an expanded version which allows a user upgrade from '0'k to 64k, or is available from the manufacturer in 16k increments.

The D-64 uses all standard hi-res dual page graphics manipulation routines, as on the GX, but with additional features such as remote pause print to interface with other hardware equipment, remote resume printing, a remember mode so constant resetting of the Dumpling's parameters is unnecessary, and a space compression facility.

The latter only allows 1 byte of Dumping memory to be used for up to 255 bytes of Ascii spaces. This gives spread sheet and word processing applications four to five times more memory density.

Up to an effective 300k of spread sheet memory can be compressed into a single board, says Microtek. Price of the interfaces starts at \$199.

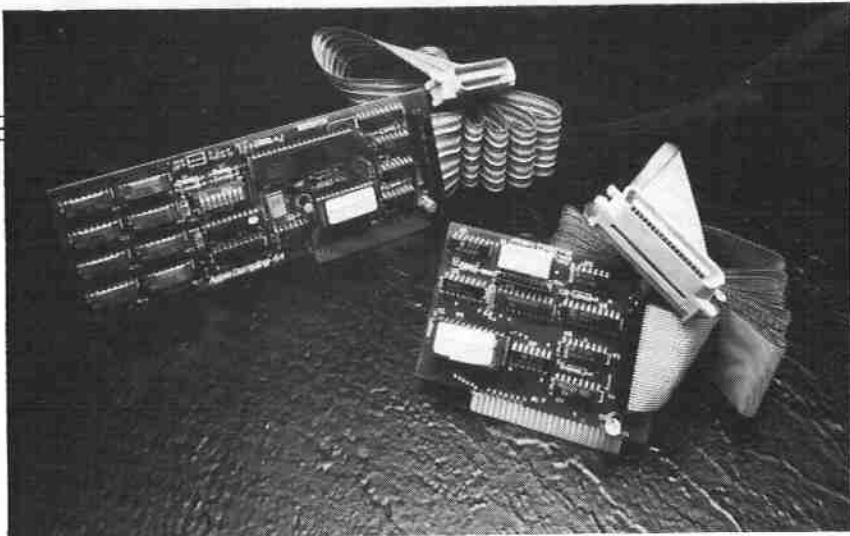
Tel: (0101) 800-854 1081.

Forecasting system

A MODELLER has been added to the TABS range of accounting packages. It is described as a flexible and convenient forecasting system.

The user can define each model to his exact specifications, varying the size, structure and method of calculations according to individual requirements.

Each model is in the form of a matrix, each position within it having an associated formula and value. The formulae for each position range in complexity from simple text and figures to



Apple Dumpling interface cards

complex mathematical functions using the values of previous squares.

Models may be merged together, rows, columns and rectangles being taken from several models either to form a new model or to enhance an existing model.

The package can be integrated with other TABS sales and purchase ledgers, nominal ledger, management accounts, job costing and payroll modules.

This is achieved by taking the values of the analysis numbers of each module and specifying their position within the model. The values are cumulative, so if several values are designated one position its value will be the total value of all the figures entered.

Printing options include printing the complete model, with all values, printing the complete model with associated formulae, or extracting data for plotting graphs. When printing the complete model, the width of each column is user defined and can vary from one column to the next.

The module includes a ready defined matrix which will appear on the screen when the module is booted up. This can be used, amended or overwritten as required. Price: £250.

Tel: 0264-58933.



Keep it neat

UP to 12 floppy discs can be stored in the Disk Tidy, a book format holder with separate pockets for each disc. The unit can be stored flat but incorporates a strut so that it can be stood upright for easy access to the discs when in use.

A replaceable register/work log is included in the package which is supplied in a plastic wallet for additional storage protection. The Disk Tidy costs £5.90 from James Burn Oxford.

Tel: 0865-880 458.

Cobol for Apple III

THE most widely used programming language for commercial and administrative data processing applications is now available for the Apple III. Apple III Cobol is a complete software development for compiling, testing, de-bugging and executing standard Cobol programs.

Programs are created using a conventional text editor. An optional source program listing can be generated and the package includes many compile and execution time options.

With the animation option the Cobol programmer does not have to be aware of the internal representations of either source code or data. The Apple III screen is used as a window into the source Cobol program, and as the animation proceeds the cursor moves from statement to statement showing which is being executed.

Contents of variables can be changed, break-points set and speed of execution varied. Apple says this means it is not necessary to have a printed listing in order to de-bug a program.

An extension to Apple III Cobol is the Forms-2 package which provides facilities to help in the design and development of interactive applications. The package runs on an Apple III with a minimum of 128k RAM, although the animator option requires 256k, and at least one external disc storage unit. It costs £299 from Apple dealers.

Future prospects

A PROGRAM which gives an integrated picture of a business's future without programming and formulae has been released by Ashton-Tate.

The Bottom Line Strategist is a business/project forecasting program which allows a user to test the viability and consistency of business assumptions.

In 15 minutes, claim distributors Pete and Pam, one can be running pre-written sophisticated models to develop financial and marketing strategies for products or services. Simple, direct input of your basic assumptions is all The Strategist needs to

track and analyse an intricate business scenario.

On knowing assumptions, The Strategist analyses the viability and profitability of the project and gives the choice of displaying graphically, or plotting on printer, 11 different types of financial and marketing forecasts.

The program checks to see if assumptions are legal and consistent. If they are not, it will indicate which assumptions are inconsistent and in what key business assumptions input screen they are defined.

The Bottom Line Strategist then computes and displays the sales and marketing forecasts, the financial forecasts, the depreciation and tax shelter forecasts, and the payback period, the break-even point, and the extreme cash flow and net present value.

The package costs £275.

Tel: 0706-227011.

Lab checks

WITH the introduction of XAD2 from Xcalibur it is now possible to measure

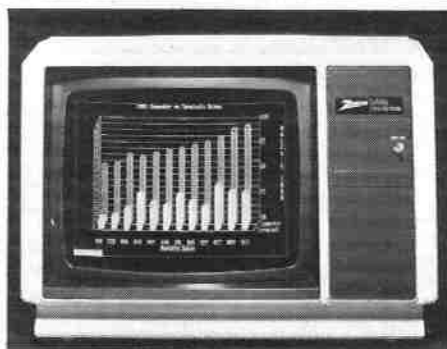
low-level plant and laboratory signals direct into the Apple. It provides low level signal measurements and computer-controlled gain on a single Apple card.

Features include two channels of differential input, programmable gain integrating A/D conversion, and three channels of 0-5 Volt 12 bit A/D conversion. Price: £99.

Tel: 0604-21051.

Pascal routines

THE Pascal Foundation from Style Systems is a powerful programming aid and a sophisticated operating system. It is



RGB video and a wide bandwidth are incorporated in the ZVM-134 colour monitor from Zenith Data Systems.

The unit has a 13in diagonal screen with 25 lines by 80 characters display and a pixel resolution of 680 dots by 480 lines. Zenith says this results in impressive graphics and extremely clear copy.

It weighs 30lb and has a built-in handle to improve its portability. Cost: £440.

Tel: 01-837 6332.

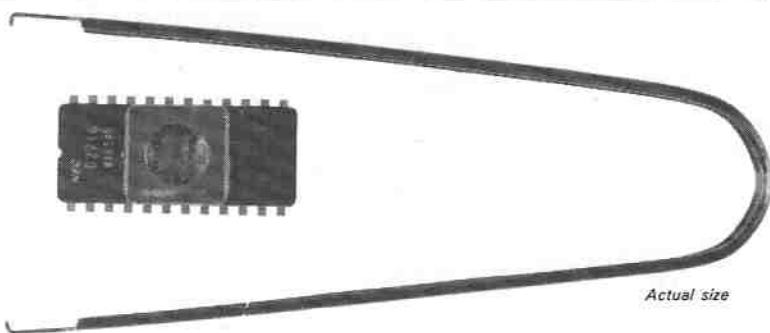
Enhance your word processing with our lower case generator

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

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

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

(Users of the older Applewriter I should note that a modification is needed



Actual size

before the program can use the generator. We can do this for you if you send a COPY of your program, together with the additional sum of £2.50.)

Enhance YOUR Apple screen with the Windfall lower case generator – but don't delay sending in your order. This special introductory offer expires on April 30.

Please supply I enclose cheque Paid by credit card
Windfall Lower Case Generator(s) at the special introductory price of £25.

Name

Address

..... Signed

Credit card

Number

Expiry

.....



Send to: Windfall, FREEPOST, Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY. No stamp needed if posted in UK. Introductory offer expires April 30, 1983

a set of routines which runs on any machine which supports UCSD Pascal in a single or multi-user environment and which gives many additional features to the Pascal programmer.

These include routines for all screen handling techniques, report writing and data validation, automatic record level lockout for multi-user software and a Pascal ISAM routine which can accommodate a multi-user operating environment.

Security levels are assignable to both users and programs, a configuration program allows a user to tailor the system to his own requirements as well as allowing him to control local area networks from a distance, and up to 16 separate applications can run as one complete menu driven system, each application retaining its own menu.

Style claims the package reduces time spent on the repetitive aspects of programming, screen layouts, report formats and user responses are standardised and all software written with the routines is upward compatible. No modification is required to transfer the software from a single to a multi-user environment.

Pascal Foundation runs on all types of Apples and the Zynar Cluster One network. A single user program costs £450 and the multi-user package £1,250.

Tel: 0254-51051.

Text formatter

A TEXT formatting program which provides true proportional printing and other text editing features to enhance the appearance of a printed page, has been released by Lifeboat Associates.

Magicprint can print texts composed by most CP/M-compatible word processors including Wordstar and Peach Text, using proportional printing by allocating character-by-character spacing according to the width of each character.

In addition to such standard special-effect word processing as bold face, underline and overstrike, Magicprint also provides four modes of justification, free-form page numbering and titling and automatic footnoting.

The program offers more than 50 formatting commands, such as multi-column printing with two, three or more full proportional columns, micro-centering, rightflush, and accenting to make word processing easier and more productive.

For page numbering and titling Magicprint is not limited by the constraints of the word processor. By putting commands in the text it is possible to change line length, page size and so on, at will, without having to re-format every paragraph on the screen.

Magicprint costs £130. The manual can be bought separately for £15.

Tel: 01-836 9028.

The Voice
Input Module



Your VIM has ears

TALKING to your Apple may be a sign of overwork. Having your Apple talk back is a sign of developing technology.

Recently launched in the United States is the Voice Input Module which converts the spoken word to commands or data.

Manufacturers Voice Machine Communications claim the VIM gives a voice input capability to any existing Apple II application without programming – from VisiCalc to Applewriter II – and allows voice as well as keyboard entry. They claim it offers near perfect word recognition – better than 98 per cent – for about \$800.

The VIM package includes the Apple II compatible circuit board, a voice utility program on disc, microphone, user manual and the necessary cables and connectors. Options include a footpedal microphone switch and a wireless microphone.

Unlimited vocabularies in subsets of up to 80 words or phrases are stored and recognised without the use of the Apple's memory or processing power, since the VIM has its own microcomputer and memory.

The Apple Voice Utility Software is a menu driven program, written in Basic, which allows you to rapidly build and edit

a vocabulary for any specific application software. Two character strings are defined, the first is the spoken word or phrase to be understood by VIM, the second interacts with your application program in response to the spoken word or phrase. Once the vocabulary is defined, the menu for training the VIM to your voice pattern is selected and prompts you through the defined vocabulary, thereby generating a voice reference pattern for each word or phrase. These voice reference patterns are stored in the VIM memory. Next select a menu to save your vocabulary item on disc, and then put VIM to work by selecting the recognition mode and loading any application program. The VIM, your "third hand," now allows the Apple II to accept both voice and keyboard data.

The test mode is useful to validate the separation between any user defined vocabulary, test recognition accuracy, and to provide optimum rejection of out-of-vocabulary speech or other sounds.

Other features of the utility software provide operational flexibility including error detection, idle mode, vocabulary listing and instructional aid.

Tel: (0101) 714-639 6150.

Static RAM for Apple

AN American company, Legend Industries of Michigan claims to have developed the first 18k static RAM card for the Apple II and IIe.

The card contains a battery back-up system to allow memory retention after switching off the mains supply to the Apple enabling the user to store programs, special monitor routines or DOS.

The card draws very low power and can be used in any slot. A write-enable/write-protect switch allows the user to protect the information in the card or alter the data at will – a useful feature for those monitor routines that are not alterable in the ROM on the motherboard, such as CAPTEST.

Another application is to relocate DOS into the card and install a special "boot" routine that would automatically install DOS into the machine. This routine can be installed in the C800-CFFF space provided by Legend on the RAM card.

Tel. (0101) 313-674 0953.

Fail safe disc pen

INDEXING and identification of a floppy disc must be done on the protective sleeve containing the disc itself. The danger is that if one writes heavily on a disc's protective sleeve with an ordinary pen or ballpoint, the surface of the disc inside the sleeve could easily be damaged and valuable data destroyed.

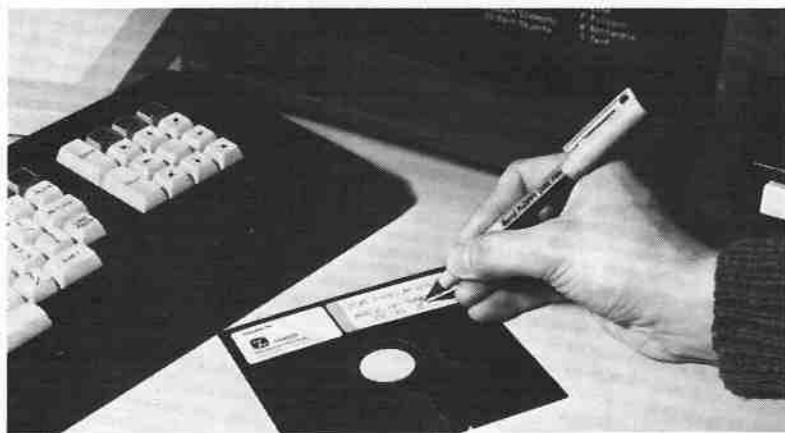
Berol is now marketing a floppy disc pen with a fail-safe feature – a safety tip that will automatically bend if the writer presses too heavily.

Better a bent nib which can soon be straightened than a ruined floppy.

Berol claims its new pen is also suitable for fine writing, figure work, charts and diagrams and can be used with stencils or against a ruler because of its long, fine tip.

There are four colour choices including a fade-resistant black for documents which need a long storage life. The pens cost 45p.

Tel: 0553-61221.



The head protector

THE new Corvus "H" series of Winchester drives was developed to try to eliminate catastrophes such as head crashes and overheating which often affect other Winchester drives, claims the manufacturer, Keen Computers.

The coated oxide media traditionally used on hard discs has been replaced by a hard metal alloy that is plated onto the disc surface.

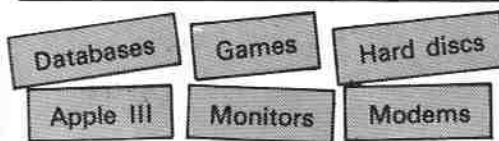
Keen says that compared with the soft oxide media this metal alloy is far less likely to suffer serious damage in the

event of a head crash. It also gives enhanced recording qualities.

The drives incorporate a shock absorber system designed to protect the inner assembly and to give greater portability; and finned castings on the hard disc assembly reduce the danger of overheating by giving better thermal conductivity.

The 5½in "H" series drives come in 6, 12 and 18mbyte formats with prices starting from £1,795.

Tel. 01-236 9942.



apple classifieds

COMPLETE APPLE II system for sale including disc drives, monitor, ramcard, videx 80-column, parallel, communications and serial cards, graphics tablet, applefan, numeric keypad, silenttype printer. Whole lot for £2,000 or will sell

separately. MX-80 F/T III printer, as new £325. Bracknell (0344) 84423.

GAMES AND PROGRAMS for sale. All as new. List includes Zork I, Zork II, Wizardry, Choplifter Hadron, Typing Tutor, and many others. Phone Paul on

01-549 3045 now.

WANTED APPLE II 48K Europlus. Must be very cheap, non working acceptable but must not be butchered. Tel: 0223 243410 after 6pm.

APPLE DOS 3.3 CUMANA 143K disc

drives with controller £250 without £225. 10 months warranty left. Will run with Apple controller card. Jon Michael, 39 Manorfield, Singleton, Ashford, Kent. No callers please. Work 05806 4278.

INTEGER CARD. Genuine Apple accessory. As new £50. Tel: 02756 68152.

FOR SALE Centronics Microprinter P1 electrostatic printer suitable for use with a parallel printer interface card. Includes a few rolls of paper. Price £50 ono. Ring (061) 445 4663 after 7pm.

SOFTWARE SALE, SENSATIONAL! Last One, Applewriter, Pinball, Racetrack, Dataplan, Highsort, plus more. All back issues Windfall, Users Guide, books, magazines. All free with Last One, £300. Discs, printer paper etc. included. Tel: 0981 540061 (evenings).

MEGABYTE VLASAC MEGASTORE 2 x 2 eight inch discs just plug in and use on DOS, bargain at £590. Ring Scone 52237.

POOLS PREDICTION DATABASE – We can supply five years English Football League results 1977-1982 in computer format for Apples, complete with starter analysis programmes £15. 37 Councillor Lane, Cheadle, Cheshire. Tel: 061-428 7425.

ACCOUNTING SOFTWARE for sale. Complete set of TABS business software and manual for the Apple II computer at half price, £625. Telephone 0225-310916 mornings.

apple classifieds

- Classified ads can only be accepted from private readers, not companies.
- The cost is 20p per word, with a minimum of 10 words prepaid.
- Your ad will be printed in the next available issue of Windfall.
- Your accompanying cheque should be made payable to Windfall.
- Ads can only be accepted on this form (or a photocopy of the form).
- There is no maximum to the number of words you include in your ad.
- Ads too long for the form should continue on a separate sheet of paper.
- Ensure your phone number or address is included in the ad.

<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	10 words £2.00
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	15 words £3.00
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	20 words £4.00
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	25 words £5.00
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	30 words £6.00

Cheque enclosed for £ _____

Name _____ Address _____

POST TO: Apple Classifieds, Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY.

Card keeps its memory

A CMOS battery-backed RAM card designed for use with the Apple II and IIe is available from Flexitallic Controls.

Data stored in Datalock can be maintained for a minimum of two years by the re-chargeable battery, which is automatically trickle charged when power is applied to the board.

The card, which can be installed in slots 1 to 6, occupies 256 bytes of the Apple memory map and incorporates a write disable switch and fail-safe data retention facility.

Two versions of Datalock are available – a single expansion card which stores up to 16k of data, and an extended version providing 32k storage capacity.

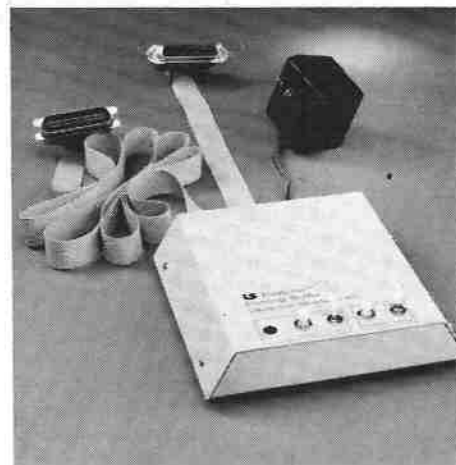
They cost £120 and £180 respectively, but can also be bought as a package with the Autoprom Basic program storage card.

Tel: 0706-343438.

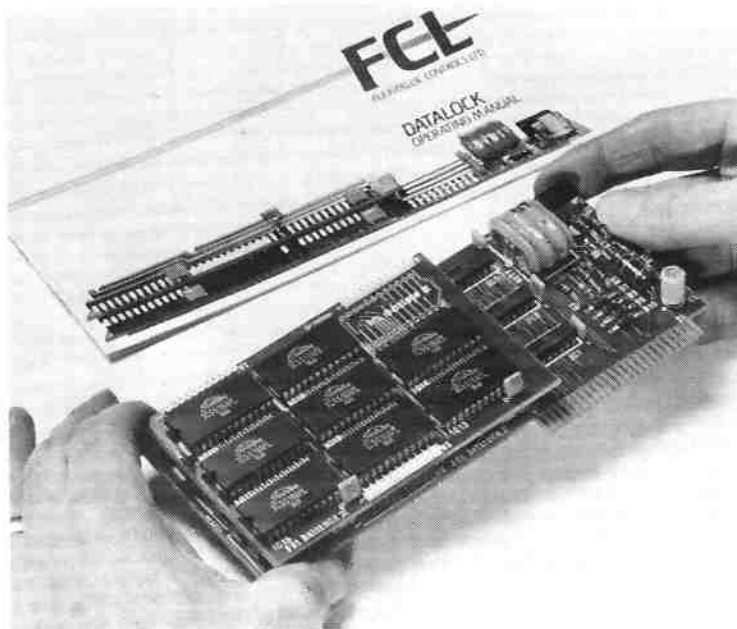
Flexible buffer

A NEW concept in printing buffers is Interactive Structures' Pipeline with random access printing. It allows the selection of sentences, paragraphs, graphs or pictures from different programs or even different computers in random fashion to compose a final document.

The finished text can then be printed quickly and simply in a single operation. For example, graphs can be inserted into reports, addresses put in form letters, multiple copies made automatically and



Pipeline printing buffer



Datalock: data stored on it can be maintained for a minimum of two years.

letters put together out of component paragraphs.

Pipeline also includes conventional FIFO operation – data is loaded into the buffer as fast as the computer can send it and is fed out at the right speed for the printer.

First data in is the first data out. Other features include compression of data for efficient utilisation of memory space, the ability to bypass buffer operations for straight through printing, a simple erase feature to clear the buffer and an automatic duplication feature.

The buffer costs £189 for the 8k version and can be expanded to 128k at a cost of £12.50 for each 8k upgrade. The 128k version costs £359.

Pipeline is compatible with the Pkaso printer interface for Apples or any Centronics parallel computer-printer connection. It is available from Pete and Pam and is supplied with its own plug-in power supply, cabling, manual and one year warranty.

Tel: 0706-227011.

Classroom security

CLAIMED to be the perfect answer to the piracy of and tampering with pupil discs in the classroom is Meddle Pruf, from Microcomputer Workshops of New York.

The program allows a teacher to protect each pupil disc with two levels of security – disc encoding and a unique password.

Files cannot be exchanged from one pupil disc to another, even if the password is known. However with the master disc a teacher can view, write to and copy from any student disc.

Microcomputer Workshops say the package is easy to use, allows more than 3,900 protection combinations, and foils standard copy programs. It costs \$59.95.

Tel: (0101) 914-937 5440.

The file cruncher

A VERSION of Keele Codes' E40 compression utility runs under DOS 3.3. The company says E40 reduces Ascii files written in English to about 40 per cent of their original size. There are substantial space savings as well with other data.

The package contains five files including documentation and programs to both compress and expand a file. The decoding process restores a compressed file to its original form.

Keele Codes says use of the utility means that discs contain more files and more data, data transfer by telephone is cheaper, and classification of a disc library is easier.

It is claimed to be quicker to compress a file than to copy it, and quicker still to expand it. The E40 programs give explicit cues to the user, and any number of files can be processed in turn. Cost: £45.

Tel: 0782-629221.

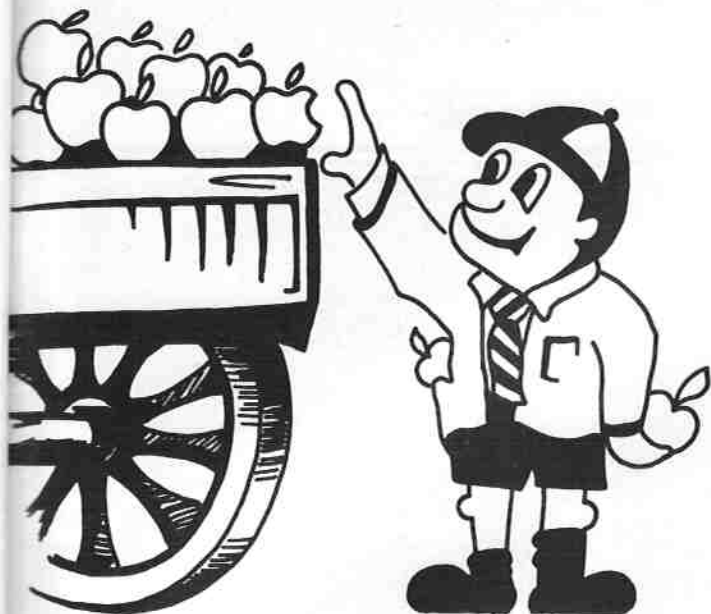
Data shuffler

VIDICHART is a software program designed to allow simultaneous display and manipulation of four sets of collected data. It interfaces with Adalab, the Apple laboratory interface, or any A/D converter or data input from the Apple keyboard.

Key features include independent manipulation of data sets, performance of mathematical functions, peaks integrated, data sets normalised and the baseline correction of data sets.

Produced by Interactive Microware, Vidichart is distributed in Europe by Heyden Datasystems.

Tel: 01-203 5171.



Monthly review of
Apple in education

Studying standing wave formation via the Apple

By
DAVE
MILLER

IT is often difficult for students to follow the theory behind standing waves since the actual process of wave superposition is quite hard to visualise. I have had experience of this since I was recently studying A-level physics.

On seeing one of my physics teachers he suggested that I should try to write a program to simulate the interactions between two sine waves moving in opposite directions along the same medium. The following program is the revised result of that suggestion.

The idea behind the program is to display, in diagrammatic form, the way two sine waves undergo superposition to form a standing wave. The visual idea came from a physics book which shows stills of two pulses of opposite phase moving in opposite directions down a slinky spring interfering with each other.

The display on the screen is a diagrammatic version of the slinky spring with a continuous train of pulses moving in opposite directions.

The program plots the standing wave and the two sine waves on the hi-res page 2 in 256 points (point 0 is on the left, and point 255 is on the right). The program will work correctly on both Apple II and on ITT 2020 machines without modification.

Entering the code:

1. Enter the Basic listing as printed and save to disc.
2. Enter the assembler code and direct the assembler to assemble to the file 'STANDING WAVE PLOTTER' or relocate and save the object code from the address \$6000.
3. If you do not have an assembler then enter the monitor from Basic by typing 'CALL - 151'. Then enter the hex dump of the machine code given. Remember to replace '-' after the four digit

hex number with ':'. Proof read each line as you type it in. Then issue the following DOS command:

```
BSAVE STANDING WAVE PLOTTER,  
A$6000, L$142
```

4. Enter and run the short Basic program, 'WAVESET', which sets up and saves the wave data. The function to be plotted can be changed at this stage if need be (e.g. a different amplitude can be entered).

5. Enter and RUN the Basic program, 'TABLE SETUP', which sets up and saves the graphics plotting tables.

Running the program:

The program does not require any input from the user and the operating instructions are very simple, so the various functions will be dealt with in brief:

The program will print up the introduction and the general instructions. It will then wait for the user to press a key before it starts the simulation.

The following keys and their functions are listed below:

- 'ESC' Exits the simulation.
- 'RTN' Freezes the simulation. A further press of the 'RTN' key unfreezes the display.
- 'SPACE' Switches off the display of the two sine waves just leaving the standing wave. The two sine waves are returned by pressing 'SPACE' again.

The program requires no data input from the user and is unlikely to go wrong; but if the program does not work then this short list may give some reasons and possible courses of action:

- If the Basic program crashes and gives an Applesoft/Palsoft error (message begins with a '?') then check the Basic program listing for typing

errors. If the error message does not begin with a '?' then it is a DOS error. These errors are listed in detail in the DOS manual.

● If the program 'hangs' then there is a fault in the machine code. The assembly listing can be checked but an easier method to determine whether there is an error is to enter and run the program 'M/C CHECK'.

● If the output on the screen does not look like a standing wave then the fault could lie in the lookup tables or in the wave data. The program 'DATA CHECK' should then be entered and run to see whether these data are corrupted.

There now follows a program overview for those who want to modify it. Modification is easy since the routines used are taken, almost unmodified, from a much larger and more sophisticated wave analysis package.

The program consists of four main sections:

- The controlling Basic program.
- The machine code which actually does the simulation.
- The data tables which contain the sine waves.
- The lookup tables to allow hi-res plotting.

The machine code program resides in the range \$6000 to \$6141.

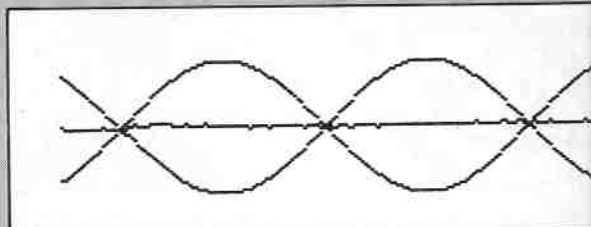
The lookup tables required for plotting sit in the range \$6200 to \$62FF for the high order bytes and in the range \$6300 to \$63FF for the low order bytes. The data stored in these two tables point to the left-hand location on hi-res page two. The first datum from the tables points to the top byte, the second datum points to the byte below this and so on until the end of the screen is reached.

It is impossible to cause an overflow by trying to plot a point with a Y co-ordinate greater than 256 since the Y values are always modulo 256. The reason why lookup tables are used is simply one of speed. Maximum speed can be achieved only by this method.

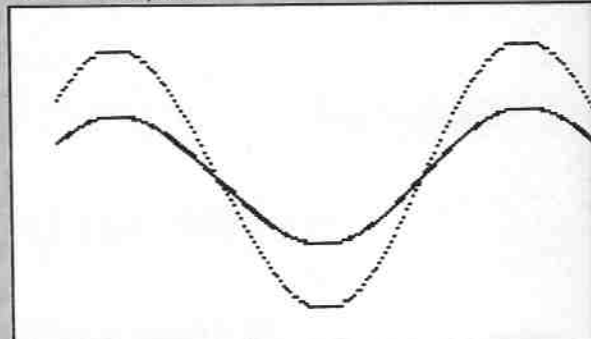
The data tables for the sine waves reside from \$6800 to \$6B00. They are stored here for use so that they will not be corrupted. When the machine code is run it copies these tables from their high memory address into the range \$2100 to \$2400.

There are a number of other buffers used by the program which are set up by the program when run. These — there are six — hold the data actually to be plotted onto the screen. A list of all the buffers used by the program follows:

- 2000-20FF** Plot buffer for standing wave. Holds data of standing wave to be plotted next time.
- 2100-21FF** Wave 1 data buffer. Holds the 2's complement values of the first sine wave.
- 2200-22FF** Wave 2 data buffer. Holds the 2's complement values of the second sine wave.
- 2300-23FF** 'Spare' data used by the program.
- 2400-25FF** Unused by this package.
- 2600-26FF** Standing wave erase buffer. Holds data of standing wave to be erased next time.



180° out of phase



In phase

2700-27FF Wave 1 plot buffer. Holds the data of the first sine wave to be plotted next time.

2800-28FF Wave 1 erase buffer. Holds the data of the first sine wave to be erased next time.

2900-29FF Wave 2 plot buffer.

2A00-2AFF Wave 2 erase buffer.

The machine code cycles through a plotting and updating cycle. The first thing done is the transfer of the contents of plot buffers to erase buffers. This will allow the waves presently displayed on the screen to be erased.

Then the new waves are calculated. The pointer to the first sine wave is incremented (equivalent to moving the contents of the buffer right one position), and the pointer to the second sine wave is decremented (equivalent to moving the contents of the buffer left one position).

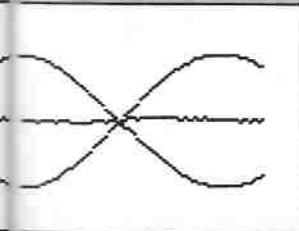
The new standing wave is then calculated by adding the 2's complement data of the sine waves together. The resultant data is converted to plottable data by adding \$5F. The sum for each point is then placed in the standing wave plot buffer.

The last thing to be done is to transfer the current sine waves into their plot buffers. This is performed by adding \$5F to the data in the sine wave data buffers.

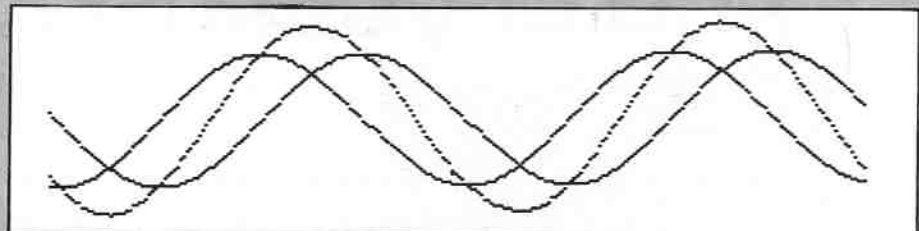
After all this updating and summing is completed the waves can be plotted on the screen.

The plotter subroutine erases the old waves and plots the new ones all at once, point by point, starting at X=0 (the left) and ending at X = 255 (on the right). This system will not produce a flashing or a flickering image since the screen is never totally blacked out. You may be able to see the new plot scan from left to right if you don't look directly at the screen (the rods in our eyes' periphery have a higher flicker fusion frequency than the cones in the eye's fovea).

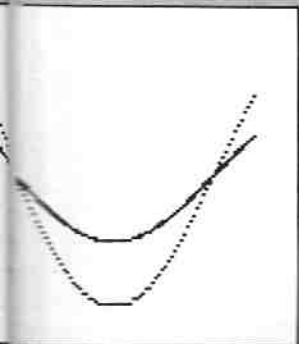
The plotting routine works for both ITT 2020 and Apple II machines without modification. The



Examples of resulting standing wave generated by two sine waves



90° out of phase



"Setup" subroutine determines which machine the code is being run on.

This is quite simple since the Applesoft and Palsoft ROMs differ in various respects. This is true for location \$D00A. This contains \$2C in the Palsoft ROM while the Applesoft ROM contains some other value. So the setup routine just tests for the value \$2C in location \$D00A. If the test is false then the machine is an Apple and the program is set to display the waves in seven bit per byte format. If the test is true then the machine is an ITT 2020 and the program is set to display the data in nine bits per byte format.

These two display formats result from the fact that the Apple and ITT use different bit mapping techniques for the high resolution graphics pages. The Apple allows seven of the eight bits in each graphic byte to be visible on the screen. The eighth bit determines the overall colour (colours 0 to 3 have the colour bit off, colours 4 to 7 have it on).

The ITT, though, allows this bit to be visible and adds another bit to each graphics byte, thus each graphics byte on the ITT has nine bits, all visible on the screen.

The data in the wave buffers are of two formats: 2's compliment as in the data wave buffers, and absolute as in the plot/erase buffers.

The 2's compliment data, produced by the Basic program 'Waveset', code for the two sine waves and are in the range -25 to +25.

The absolute data are produced by the machine code program and code for the images of the waves as seen on the screen. The data form the Y co-ordinate for each point along the wave ($Y = 0$ is at the top of the screen as in Basic). The 2's compliment data are converted to absolute data by adding \$5F (95 in decimal).

It is hoped that the above contains enough data to enable the easy conversion of this program to more specialised tasks.

```

0 TEXT : HOME : GOSUB 17: REM LO          : PRINT "KEY MARKED 'ESC'."
  AD IN DATA                             12 SPEED= 255: PRINT : PRINT : INVERSE
1 PRINT TAB( 7)"STANDING WAVE D          : PRINT "PRESS ANY KEY TO START T
  EMONSTRATION"                            HE SIMULATION"; NORMAL : PRINT
2 PRINT TAB( 7)"-----              " "; GET A#
  -----"
3 POKE 34,3
4 SPEED= 100
5 VTAB 5: PRINT " THIS PROGRAM          13 TEXT : HGR2 : CALL 24576: REM
  SIMULATES THE INTERACT-" : PRINT          CALL MACHINE CODE
  : PRINT "IONS BETWEEN TWO ID          14 TEXT : HOME
  ENTICAL SINE WAVES."
6 PRINT : PRINT "BOTH THE INDIVI          15 INPUT "ANOTHER GO? ";A#: IF LEFT#
  DUAL SINE WAVES AND THE" : PRINT          (A#,1) = "Y" THEN 13
  : PRINT "RESULTANT STANDING          16 HOME : NEW
  WAVE ARE DISPLAYED."
7 PRINT : PRINT " ONCE THE SIMU          17 D# = CHR# (4): REM CONTROL-D
  LATION HAS BEGUN, THE" : PRINT
  : PRINT "DISPLAY CAN BE FRO          18 PRINT D#"BLOAD STANDING WAVE
  ZEN BY PRESSING THE" : PRINT          PLOTTER": REM LOAD IN MACHIN
  : PRINT "KEY MARKED 'RETURN'          E CODE
  ."
8 PRINT : PRINT " TO START THE D          19 PRINT D#"BLOAD STANDING WAVE
  ISPLAY MOVING PRESS THE" : PRINT          DATA": REM LOAD IN WAVE DATA
  : PRINT "'RETURN' KEY AGAIN,          20 PRINT D#"BLOAD STANDING WAVE
  "                                       PDATA": REM LOAD IN PLOTTING
9 PRINT : PRINT " THE SINE WAVES          TABLES
  CAN BE REMOVED LEAVING" : PRINT
  : PRINT "ONLY THE STANDING W          21 RETURN
  AVE BY PRESSING THE"
10 PRINT : PRINT "SPACE BAR. TO          22 REM #*****
  GET THE SINE WAVES BACK" : PRINT
  : PRINT "THE SPACE BAR MUST          23 REM #
  BE PRESSED AGAIN."
11 PRINT : PRINT " TO END THE SI          24 REM #STANDING WAVE PROGRAM#
  MULATION JUST PRESS THE" : PRINT          25 REM #
  : PRINT "                            26 REM #COPYRIGHT (C) 1:5:82#
  : PRINT "                            27 REM #
  : PRINT "                            28 REM # DAVE MILLER #
  : PRINT "                            29 REM #
  : PRINT "                            30 REM #MODIFIED ON 30:1:1983#
  : PRINT "                            31 REM #
  : PRINT "                            32 REM # VERSION 2.0 #
  : PRINT "                            33 REM #
  : PRINT "                            34 REM #*****
  
```

● Readers wishing to receive Dave Miller's full listings should write to Windfall at Europa House, 68, Chester Road, Hazel Grove, Stockport SK7 5NY enclosing a stamped addressed envelope.

Data analysis, planning and crystal ball-gazing

PERSONAL Data Analysis by Micro DP is an integrated collection of programs for the processing and analysis of quantitative data, with particular emphasis on the analytical, planning and forecasting techniques used in areas such as business, economics and the social sciences.

In order to use the system a 48k Apple II Plus and at least one disc drive is required. Distinctive features of the package are:

□ A modular design — potential users need buy only those parts of the overall system that are relevant to their needs.

□ The use of data files stored on disc — there is no provision for interactive data input to the various analytical modules.

□ A genuinely easy-to-use presentation.

At all stages the user chooses from an explicit menu of options which, even when encountered for the first time, rarely require the program documentation to be consulted.

The cornerstone of the system is the data preparation module, Dataprep. This unit is used for the creation, manipulation, editing and analysis of data files consisting of up to 4,000 entries.

Provision is also made for working with survey data, such as the results of a questionnaire, in a set of survey analysis routines.

Any initial reservations one has about the seemingly tedious need to create a data file before an analysis are quickly dispelled by the ease and speed with which Dataprep deals with this task and by the wide range of facilities which are then immediately available for an initial appraisal of the data.

These include arithmetic transformations and matrix operations, manipulation and sorting of data arrays, calculation of frequency distributions and comparisons with theoretical distributions (Normal, Poisson etc.), cross tabulations and simple statistics (e.g. mean, standard deviation).

High resolution graphics are generally available to display plots or histograms of the raw data or the results of the calculations. A further plus feature is a file conversion facility enabling data files written in data interchange format, for example Visicalc files, to be accessed.

In view of the versatility of Dataprep it could well be that for some readers this module alone would fulfil their needs for quantitative data analysis. Personal Data Analysis, however, has only just begun. A choice of seven analytical modules with which to prepare thorough, professional analyses and forecasts from the stored

data are now available. Current modules are:

GENREG: correlation and regression

TIME: time series analysis

BOXJEN: Box-Jenkins modelling

OPTIM: linear programming

CLUST: principal components and cluster analysis

ANOVA: analysis of variance

QSIM: queueing and inventory simulation

As one can gauge from these outline descriptions, the modules are not for the absolute novice, but it should be apparent that the more specialist user can purchase what is in effect a customised package.

This is not to say that the modules are any the less easy to use than Dataprep or that they are of no interest to the non-expert in that particular field. Indeed I

are available.

The module TIME is concerned with the analysis of time series (e.g. beer sales at North West Apple Users Group meetings) and the important problem of forecasting. It contains long term forecasting routines to aid decomposition of the series into its characteristic components — trend, cyclical, seasonal and irregular movements.

The series is adjusted for seasonal and cyclical variations using the moving average method, assuming either an additive or multiplicative relationship. For the analysis of long term trend or secular movement linear, exponential, modified exponential, Gompertz, logistic and up to seventh degree polynomial modelling is provided.

Effective use is again made throughout the program of high resolution graphics to give optional displays of results. A Fourier analysis option is incorporated to help identify periodic variations in the series.

Exponential smoothing is used in the module for short term forecasts and there is provision to allow for seasonal and trend variation and an adaptive (variable smoothing constant) model. An alternative approach to the analysis of time series using the Box-Jenkins philosophy is available in the BOXJEN module and this is likely also to interest those concerned with forecasting.

I thought that there were two general deficiencies in the package. One is the inability to label or name the variables stored on disc so that for large data matrices either a good memory or a written record appears to be necessary.

The second criticism is that when conducting significance tests the critical value of the test statistic must always be supplied by the user. There were some minor inconsistencies in the manual, such as pages of output appearing in reverse order to that described or a graphical display appearing which was not mentioned in the text, and some typographical errors. Overall, however, the program documentation is well written and strikes the right balance between theory, explanation and example.

In conclusion, this is an excellent, easy-to-use package which has much to offer those engaged in analysis, planning and forecasting, particularly in commerce and industry.

The key Dataprep module costs £125. The other modules cost £50 if bought at the same time as Dataprep or £75 if bought separately. ■

By KEITH INDGE

spent an agreeable hour learning how to carry out queueing simulations (an application which I knew nothing about) with the aid of QSIM and only brief references to the open manual.

It would be inappropriate to describe all the analysis modules and, in fact, not all were available for review. Nevertheless, it is possible to convey something of the depth of treatment by considering two in more detail.

GENREG initially reports the mean, standard deviation and correlation matrix for all variables in data files of up to 200 cases and 20 variables.

The user then proceeds to an analysis of simple linear regression or multiple linear regression, the latter using either (1) the standard approach with independent variables selected by the investigator or (2) a stepwise approach in which the program selects the important independent variables or (3) two stage regression which seeks to identify truly independent variables from a set of quasi-independent variables.

Reporting includes the values, standard errors and t-values of the coefficients of the regression equation, the standard error of estimate, r-squared, the Durbin-Watson statistic and analysis of variance data. Optional listings of residuals, confidence intervals and of predicted values

C/WP BITES £200 OFF APPLE II E

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The preliminary Convention programme

Friday, June 3

Morning session chairman: Peter Brameld

Apples in Business (10.45am-11.45am) Explaining why and how Apples could be used in the world of business, the hardware and software available, and factors involved in getting a business system up and running successfully.

Business Case Studies (12noon-1pm) An in-depth look at two business applications and the results achieved.

Afternoon session chairman: Cliff McKnight

Factors Influencing the Choice of Programming Languages in Education (2.15pm-3.15pm) An outline of the languages available and their relevance at various levels in the educational system.

Educational Case Studies (3.30pm-4.30pm) A look at the way two schools – one in Scotland and one in London – are using their Apples, and some of the problems they've encountered.

Saturday, June 4

Morning session chairman: Peter Brameld

Financial Spreadsheets for Beginners (10.45am-11.45am) Explaining what spreadsheets are and how they can be used, followed by a case study of an accountant's use of Visicalc.

Second Generation Spreadsheets (12 noon-1pm) A brief

look at the packages available, a discussion on how to link spreadsheets and to use the DIF function, and a chance to put questions to a panel of experts.

Afternoon session chairman: Max Parrott

Software Utilities (2.15pm-3.15pm) Many commercial packages can't be categorised as covering a specific field such as word processing, accounting or financial planning. However they can be extremely valuable programming aids. We discuss what is available, and why and when they might be used.

The Apple as an intelligent terminal (3.30pm-4.30pm) A practical look at how the Apple is being used to control industrial and scientific apparatus.

Sunday, June 5

Morning session chairman: Cliff McKnight

Networking (10.45am-11.45am) A look at what networking involves, where it is leading and what is now available.

Databases and Word Processing (12 noon-1pm) Two of the major application areas of Apples in business discussed in detail.

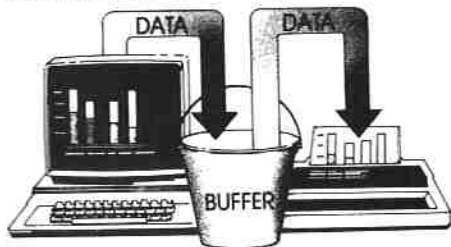
Afternoon session chairman: Max Parrott

Software Portability (2.15pm-3.30pm) A look at software development and the problems involved in transferring software packages between Apples and other micros.



If your printer uses your Apple[®] more than you do, you need The Bufferboard[™].

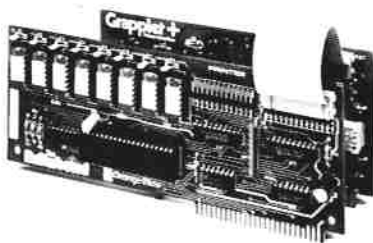
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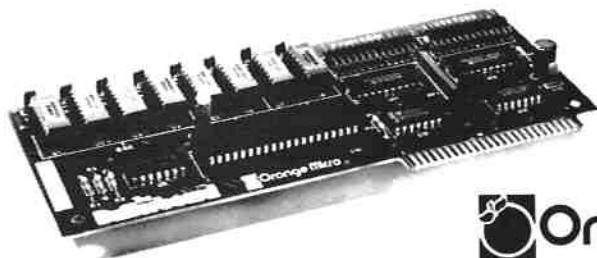
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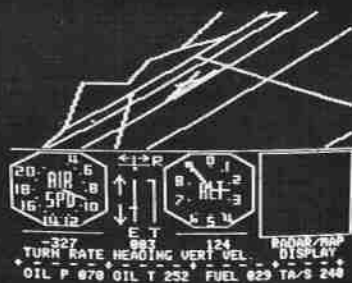
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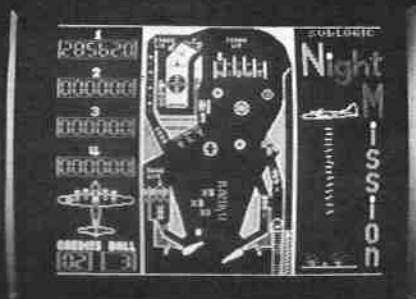


A2-FS1

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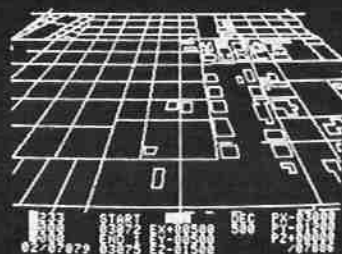


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ESCAPE! – A challenging game of skill and strategy. You've broken out of your cell and now the electronic guards are closing in fast. Can you escape? DOS 3.3 Applesoft 48K disk.

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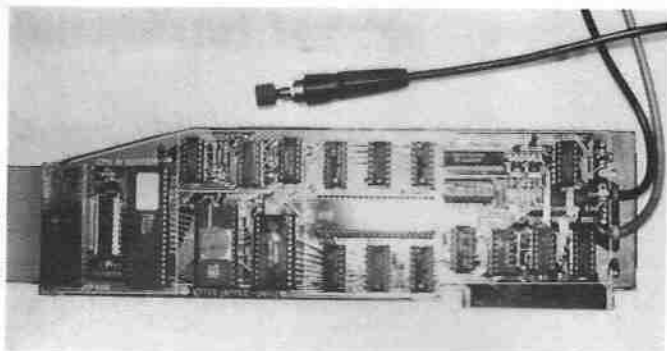
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SOURCE FILE: DATE

```
0000: 1 *****
0000: 2 *
0000: 3 * DATE CONVERSION ROUTINE *
0000: 4 *
0000: 5 * COPYRIGHT SEPT 83 *
0000: 6 *
0000: 7 * BY GEOFF STRATTON *
0000: 8 *
0000: 9 *****
```

----- NEXT OBJECT FILE NAME IS DATE.OBJO

```
500C: 11 ORG $500C
5000: 12 DAYL EGU $5000 ;DAY TENS.
5001: 13 DAYH EGU $5001 ;DAY UNITS.
5002: 14 LFSP EGU $5002 ;LEAP FLAG/SPACE.
5003: 15 M1 EGU $5003 ;MONTH LETTER 1.
5004: 16 M2 EGU $5004 ;MONTH LETTER 2.
5005: 17 M3 EGU $5005 ;MONTH LETTER 3.
5006: 18 LCSP EGU $5006 ;LEAP COUNT/SPACE.
5007: 19 YL EGU $5007 ;YEAR TENS.
5008: 20 YH EGU $5008 ;YEAR UNITS.
5009: 21 ERR EGU $5009 ;ERROR FLAG.
500A: 22 DATEL EGU $500A ;DAY TOTAL LO BYTE.
500B: 23 DATEH EGU $500B ;DAT TOTAL HI BYTE.
```

```
500C: 25 *****
500C: 26 *
500C: 27 * CONVERT DATE TO TWO *
500C: 28 *
500C: 29 * BYTE HEX VALUE *
500C: 30 *
500C: 31 *****
```

```
500C:A0 00 33 LDY #0
500E:AD 03 50 34 TEST LDA M1 ;GET FIRST LETTER OF MONTH.
5011:D9 EA 50 35 CMP MCB,Y ;COMPARE WITH MONTH CHAR 1.
5014:F0 0E 36 BEQ MATCH ;CHECK SECOND LETTER.
5016:CB 37 NEXT INY ;SKIP OVER TO NEXT MONTH.
5017:CB 38 INY
5018:CB 39 INY
5019:CB 40 INY
501A:C0 30 41 CPY #4B ;? ALL MONTHS CHECKED.
501C:D0 F0 42 BNE TEST ;NO SO CHECK NEXT.
501E:A9 01 43 ERROR LDA #1
5020:BD 09 50 44 STA ERR ;MONTH NOT FOUND.
5023:60 45 RTS ;RETURN WITH ERROR.
5024:AD 04 50 46 MATCH LDA M2 ;GET SECOND LETTER.
5027:D9 E9 50 47 CMP MCB+1,Y ;COMPARE WITH MONTH CHAR 2.
502A:D0 EA 48 BNE NEXT ;NO MATCH SO CHECK NEXT MONTH.
502C:AD 05 50 49 LDA M3 ;GET LAST LETTER OF MONTH.
502F:D9 E5 50 50 CMP MCB+2,Y ;COMPARE WITH MONTH CHAR 3.
5032:D0 E2 51 BNE NEXT ;NO MATCH.
5034:B9 ED 50 52 LDA MCB+3,Y ;GET MONTH NUMBER.
5037:BD 03 50 53 STA M1 ;SAVE IT.
503A:A2 09 54 LDX #9
503C:BD FF 4F 55 MASK LDA DAYL-1,X ;MASK OFF
503F:29 0F 56 AND #15
5041:9D FF 4F 57 STA DAYL-1,X ;MSB FOR
5044:CA 58 DEX
5045:D0 F5 59 BNE MASK ;DAY/YEAR.
5047:20 D5 50 60 JSR DH ;CONVERT 2 BYTE DAY TO 1 BYTE HEX.
504A:A2 07 61 LDX #7
504C:20 D5 50 62 JSR DH ;CONVERT 2 BYTE YEAR TO 1 BYTE HEX.
504F:AD 07 50 63 LDA YL ;YEAR COUNT.
5052:4A 64 LSR A ;HALVE IT.
5053:2E 02 50 65 ROL LFSP
5056:4A 66 LSR A ;HALVE AGAIN.
5057:2E 02 50 67 ROL LFSP
505A:BD 06 50 68 STA LCSP ;SAVE NUMBER OF LEAP YEARS SO FAR.
505D:EE 06 50 69 INC LCSP ;ADD 1 FOR 1900.
5060:AE 00 50 70 LDX DAYL ;GET DAY.
5063:E0 20 71 CPX #32 ;? > 31 DAYS.
5065:B0 87 72 BCS ERROR ;INVALID.
5067:AD 02 50 73 LDA LFSP ;LEAP FLAG.
506A:D0 13 74 BNE NXTCHK ;NOT LEAP YEAR.
506C:AC 03 50 75 LDY M1 ;MONTH NUMBER.
506F:F0 08 76 BEQ DECLC ;MUST BE JAN.
5071:C0 02 77 CPY #2 ;MAR.
5073:B0 04 78 BCS NXTCHK ;AFTER LEAP DAY.
5075:E0 1E 79 CPX #30 ;? < LEAP DAY.
5077:B0 A5 80 BCS ERROR
5079:CE 06 50 81 DECLC DEC LCSP ;SUBTRACT ONE FROM LEAP COUNT.
507C:4C 9E 50 82 JMP OK
507F:AC 03 50 83 NXTCHK LDY M1 ;GET MONTH.
5082:C0 01 84 CPY #1 ;? FEB.
5084:D0 04 85 BNE NOTFEB
5086:E0 1D 86 CPX #29 ;? > 28 DAYS.
508B:B0 94 87 BRIDGE BCS ERROR ;INVALID.
508A:C0 03 88 NOTFEB CPY #3 ;? APRIL.
508C:F0 0C 89 BEQ AJSN
508E:C0 05 90 CPY #5 ;? JUNE.
5090:F0 08 91 BEQ AJSN
5092:C0 06 92 CPY #8 ;? SEP.
5094:F0 04 93 BEQ AJSN
5096:C0 04 94 CPY #10 ;? NOV.
5098:D0 04 95 BNE OK
509A:E0 1F 96 AJSN CPX #31 ;? > 30 DAYS.
509C:B0 EA 97 BCS BRIDGE ;INVALID.
509E:AC 07 50 98 OK LDY YL ;USE YEAR AS COUNTER.
50A1:F0 08 99 BEQ DONE
50A3:A9 6D 100 LOOP LDA #109 ;LD BYTE FOR ONE YEAR.
50A5:20 C8 50 101 JSR ADIT ;ADD TO TOTAL.
50A8:EE 08 50 102 INC DATEH ;HI BYTE FOR ONE YEAR.
50AB:BB 103 DEY
50AC:D0 F5 104 BNE LOOP ;ADD ANOTHER YEAR.
50AE:AD 06 50 105 DONE LDA LCSP ;LEAP COUNT.
50B1:20 C8 50 106 JSR ADIT ;ADD TO TOTAL.
50B4:AC 03 50 107 LDY M1 ;MONTH.
50B7:B9 1A 51 108 LDA MND,Y ;LD BYTE VALUE FOR MONTH.
50BA:20 C8 50 109 JSR ADIT ;ADD DAYS.
```

```
50BD:B9 27 51 110 LDA MND+13,Y ;HI BYTE VALUE FOR MONTH.
50C0:F0 03 111 BEQ DODAY ;NO HI BYTE TO ADD.
50C2:EE 08 50 112 INC DATEH ;ADD HI BYTE.
50C5:AD 00 50 113 DODAY LDA DAYL ;GET DAY.
50C8:18 114 ADIT CLC
50C9:60 0A 50 115 ADD DATEL ;ADD LO BYTE.
50CC:BD 0A 50 116 STA DATEL ;SAVE IT.
50CF:90 03 117 BCC FINISH
50D1:EE 08 50 118 INC DATEH ;ADD HI BYTE.
50D4:60 119 FINISH RTS
50D5:18 120 DH CLC
50D6:BD 00 50 121 LDA DAYL,X ;LD BYTE FOR DAY/YEAR.
50D9:A8 122 TAY
50DA:F0 07 123 BEQ TOTAL
50DC:A9 00 124 LDA #0
50DE:69 0A 125 ADDT ADD #10 ;DEC 10.
50E0:88 126 DEY
50E1:D0 FB 127 BNE ADOT ;ADD NEXT 10.
50E3:7D 01 50 128 TOTAL ADD DAYH,X ;HI BYTE FOR DAY/YEAR.
50E6:9D 00 50 129 STA DAYL,X ;DAY TOTAL.
50E9:60 130 RTS
50EA: 131 MSB OFF
50EA:4A 41 4E 132 MCB DFB 'J','A','N','O','F','E','B',1
50ED:00 46 4E
50F0:42 01
50F2:4D 41 52 133 DFB 'M','A','R','2','A','P','R',3
50F5:02 41 50
50F8:52 03
50FA:4D 41 59 134 DFB 'M','A','Y','4','J','U','N',5
50FD:04 4A 55
5100:4E 05
5102:4A 55 4C 135 DFB 'J','U','L','6','A','U','G',7
5105:06 41 55
5108:47 07
510A:53 45 50 136 DFB 'S','E','P','8','O','C','T',9
510D:08 4F 43
5110:54 09
5112:4E 4F 56 137 DFB 'N','D','V','10','D','E','C',11
5115:0A 44 45
5118:43 08
511A:00 1F 38 138 MND DFB $00,$1F,$3B,$5A,$7B,$97,$B5,$D4
511D:5A 78 97
5120:85 04
5122:F3 11 30 139 DFB $F3,$11,$30,$4E,$6D,$00,$00,$00,$00
5125:4E 6D 00
5128:00 00 00 140 DFB $00,$00,$00,$00,$00,$00,$01,$01,$01,$01
512E:00 00 01
5131:01 01 01
```

```
5134: 142 *****
5134: 143 *
5134: 144 * CONVERT TWO BYTE HEX *
5134: 145 *
5134: 146 * VALUE TO DATE *
5134: 147 *
5134: 148 *****
```

```
5134:A0 06 150 LDY #6 ;CLEAR
5136:A9 00 151 LDA #0
5138:99 00 50 152 CLEAR STA DAYL,Y ;WORK
513B:88 153 DEY
513C:10 FA 154 BPL CLEAR ;AREA.
513E:A2 10 155 LDX #16
5140:0E 07 50 156 NXTBT ABL YL ;DIVIDE
5143:2E 08 50 157 ROL YH ;YEAR
5146:2E 00 50 158 ROL DAYL ;BY
5149:2E 01 50 159 ROL DAYH ;365
514C:AD 00 50 160 LDA DAYL ;DAYS
514F:38 161 SEC ;TO
5150:E9 6D 162 SBC #109 ;GET
5152:AB 163 TAY ;NUMBER
5153:AD 01 50 164 LDA DAYH ;OF
5156:E9 01 165 SBC #1 ;YEARS
5158:90 09 166 BCC CNTND ;SO
515A:EE 07 50 167 INC YL ;FAR.
5160:BC 00 50 168 STY DAYL ;%
5163:CA 170 CNTND STA DAYH ;REMAINING
5164:D0 BA 171 DEX ;DAYS.
5166:AD 07 50 172 LDA YL ;GET YEAR.
5169:4A 173 LSR A ;HALVE IT.
516A:2E 02 50 174 ROL LFSP ;REMAINDER INTO LEAP FLAG.
516D:4A 175 LSR A ;HALVE AGAIN.
516E:2E 02 50 176 ROL LFSP ;INTO LEAP FLAG.
5171:BD 06 50 177 STA LCSP ;LEAP YEARS SO FAR.
5174:AD 02 50 178 LDA LFSP ;IS IT LEAP.
5177:D0 17 179 BNE INCLC ;CANT BE LEAP.
5179:AD 07 50 180 LDA YL ;GET YEAR.
517C:F0 15 181 BEQ SUBLC ;MUST BE 1900.
517E:AD 01 50 182 LDA DAYH ;GET DAY.
5181:D0 10 183 BNE SUBLC ;MORE THAN LEAP DAY.
5183:AD 00 50 184 LDA DAYL ;GET DAY.
5186:38 185 SEC
5187:ED 06 50 186 SBC LCSP ;SUBTRACT LEAPS.
518A:80 07 187 BCS SUBLC ;FALLEN INTO PREVIOUS YEAR.
518C:C9 3C 188 CMP #60 ;LEAP DAY.
518E:80 03 189 BCS SUBLC ;LESS THAN LEAP DAY.
5190:EE 06 50 190 INCLC INC LCSP ;ADD 1 FOR 1900.
5193:AD 00 50 191 SUBLC LDA DAYL ;GET DAY.
5196:38 192 SEC ;REAL
5197:ED 06 50 193 SBC LCSP ;SUBTRACTION.
519A:BD 00 50 194 STA DAYL ;SAVE IT.
519D:80 28 195 BCS DOYR ;NEXT STAGE.
519F:CE 01 50 196 DEC DAYH ;OVERFLOW.
51A2:10 23 197 BPL DOYR ;OK.
51A4:AD 00 50 198 LDA DAYL ;GET DAY.
51A7:18 199 CLC
51AB:69 6D 200 ADC #109 ;1 YEAR LO BYTE.
```



```

51AA:BD 00 50 201 STA DAYL ;SAVE IT.
51AD:A9 01 202 LDA #1 ;HI BYTE.
51AF:BD 01 50 203 STA DAYH ;SAVE IT.
51B2:CE 07 50 204 DEC YL ;SUBTRACT 1 YEAR.
51B5:AD 02 50 205 LDA LFSP ;LEAP FLAG.
51B8:F0 08 206 BEQ CLRF ;WAS LEAP.
51BA:C9 01 207 CMP #1 ;? POST LEAP.
51BC:DO 09 208 BNE DOYR ;OK.
51BE:A9 00 209 SETF LDA #0 ;SET LEAP FLAG.
51C0:F0 02 210 BEQ DOF ;ALWAYS TAKEN.
51C2:A9 01 211 CLRF LDA #1 ;CLEAR LEAP FLAG.
51C4:BD 02 50 212 DOF STA LFSP ;RESET LEAP FLAG.
51C7:AD 01 50 213 DOYR LDA DAYH ;GET DAY HI.
51CA:DO 13 214 BNE CONYR ;CANT BE OTH JAN.
51CC:AD 00 50 215 LDA DAYL ;GET DAY LO.
51CF:DO 0E 216 BNE CONYR ;CANT BE OTH JAN.
51D1:A9 6E 217 LDA #110 ;LO BYTE FOR 31 DEC.
51D3:BD 00 50 218 STA DAYL ;SAVE IT.
51D6:EE 01 50 219 INC DAYH ;DO HI BYTE.
51D9:CE 07 50 220 DEC YL ;BACK ONE YEAR.
51DC:4C BE 51 221 JMP SETF ;RESET LEAP FLAG.
51DF:A2 07 222 CONYR LDX #7 ;COUNT FOR YEAR.
51E1:20 5B 52 223 JSR HTD ;YEAR CONVERSION TO ASCII.
51E4:AD 02 50 224 LDA LFSP ;GET LEAP FLAG.
51E7:DO 1C 225 BNE NL ;NOT LEAP YEAR.
51E9:AD 01 50 226 LDA DAYH ;GET DAY HI BYTE.
51EC:DO 09 227 BNE DECIT ;REMOVE LEAP DAY.
51EE:AD 00 50 228 LDA DAYL ;GET DAY LO BYTE.
51F1:C9 3C 229 CMP #60 ;? FEB 29TH.
51F3:F0 5B 230 BEQ SPECIAL ;DO IT SEPARATE.
51F5:90 0E 231 BCC NL ;LESS THAN 60 DONT MATTER.
51F7:38 232 DECIT SEC ;SUBTRACT
51FB:AD 00 50 233 LDA DAYL ;LEAP
51FB:E9 01 234 SBC #1 ;DAY.
51FD:BD 00 50 235 STA DAYL ;SAVE IT.
5200:80 03 236 BCS NL
5202:CE 01 50 237 DEC DAYH ;OVERFLOW.
5205:A0 0D 238 NL LDY #13 ;COUNTER.
5207:8B 239 CHK DEY ;NEXT MONTH.
5208:38 240 SEC
5209:B9 1A 51 241 LDA MNO,Y ;MONTH LO.
520C:ED 00 50 242 SBC DAYL ;SUBTRACT DAY LO.
520F:AA 243 TAX ;SAVE IT.
5210:B9 27 51 244 LDA MNO+13,Y ;MONTH HI.
5213:ED 01 50 245 SBC DAYH ;SUBTRACT DAY HI.
5216:10 EF 246 BPL CHK ;TRY NEXT.
5218:8A 247 TXA ;GET LO RESULT.
5219:10 EC 248 BPL CHK ;TRY NEXT.
521B:8C 03 50 249 STY M1 ;GOT MONTH.
521E:AD 00 50 250 LDA DAYL ;REMAINING DAYS.
5221:38 251 SEC
5222:F9 1A 51 252 SBC MNO,Y ;PREVIOUS MONTH TOTAL.
5225:8D 00 50 253 STA DAYL ;SAVE DAY.
5228:A2 00 254 LDX #0 ;COUNT FOR DAY.
522A:20 5B 52 255 JSR HTD ;DAY CONVERSION TO ASCII.
522D:A0 FF 256 LDY #255
522F:AD 03 50 257 LDA M1 ;GET MONTH.
5232:CB 258 TST INY
5233:D9 EA 50 259 CMP MCB,Y ;LOCATE MONTH NUMBER.
5236:00 FA 260 BNE TST ;TRY NEXT.
5238:A2 02 261 M LDX #2 ;COUNT FOR LETTERS.
523A:8B 262 MTH DEY
523B:B9 EA 50 263 LDA MCB,Y ;MONTH LETTER.
523E:9D 03 50 264 STA M1,X ;PUT IN BUFFER.
5241:CA 265 DEX
5242:10 F6 266 BPL MTH ;NEXT LETTER.
5244:A9 2D 267 LDA #45 ;PUT IN
5246:8D 06 50 268 STA LCSP ;ASCII
5249:BD 02 50 269 STA LFSP ;DASHES.
524C:60 270 RTS
524D:A9 32 271 SPECIAL LDA #50 ;ASCII "2".
524F:8D 00 50 272 STA DAYL
5252:A9 39 273 LDA #57 ;ASCII "9".
5254:8D 01 50 274 STA DAYH
5257:A0 07 275 LDY #7 ;COUNT FOR FEB.
5259:DO DD 276 BNE M ;PRINT "FEB".
525B:BD 00 50 277 HTD LDA DAYL,X ;DAY/YEAR TENS.
525E:A8 278 TAY
525F:A9 30 279 LDA #48 ;ASCII MASK.
5261:9D 00 50 280 STA DAYL,X ;DAY/YEAR TENS.
5264:9B 281 TYA
5265:C9 0A 282 AGAIN CMP #10
5267:30 09 283 BMI UNITS UNITS
5269:FE 00 50 284 INC DAYL,X ;ADD 10.
526C:38 285 SEC
526D:E9 0A 286 SBC #10 ;SUBTRACT 10.
526F:4C 65 52 287 JMP AGAIN ;TRY AGAIN.
5272:09 30 288 UNITS DRA #48 ;ASCII MASK.
5274:9D 01 50 289 STA DAYH,X ;PUT IN UNITS.
5277:60 290 RTS

```

*** SUCCESSFUL ASSEMBLY: NO ERRORS

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November 1981

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



May 1982

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



November 1982

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

December 1981

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



June 1982

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



December 1982

Think Tank - Doing the impossible in Pascal (listing) - Interactive editor-assembler, Part I - Take Visicalc to the Christmas party - Games reviews (Space Kadet, Crazy Mazy, Mars Cars, Star Maze, Deadline, Musicomp, Electric Duet, Time Zone) and listings (Humpty Dumpty, Christmas Card, Scram) - reviews of O'Level Aids, Tic Tac Show and Screenwriter II - Beginners guide to PEEKs and POKEs, part II - 280 cards compared - PLUS four pages of Compucopia and six Appletips.

July 1981

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

January 1982

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



July 1982

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



January 1983

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

August 1981

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

February 1982

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



August 1982

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



February 1983

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

September 1981

Consumers' guide to App music, Part I - Games review (Starmines, Creature Ventu Hi-res Soccer) - Ski-III game (listing) - Speed restrictor with variables - Non-limit curve fitting - Machine code techniques, Part II (text insertion) - Crash course in Basic, Part I - Dot matrix printer - Apples in network (modems, Prestel) - CAL expansion coming - Computer gear for physically handicapped - Apple user profile: SEG. PLUS three pages of Compucopia and five Appletips.

March 1982

Games review (Crash, Crum and Chomp) - Apple Med Forum - Data Factory review - Apple Graphics, Part III (display histograms) - Printing, annotated DOS disc director - Crash course in Basic, Part I - Start training for the Apple Olympics - Elements of the Apple, Part II - Payroll pack for the Apple III - educational programs review - DOS 3.3 to 3.2 software switch - Workshop/Word tuition course reviewed. PLUS three pages of Compucopia and four Appletips.



September 1982

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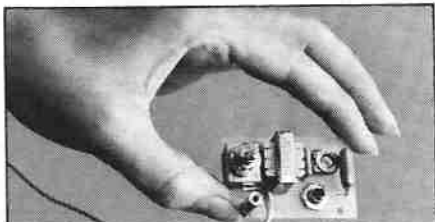
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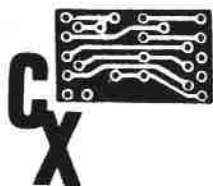
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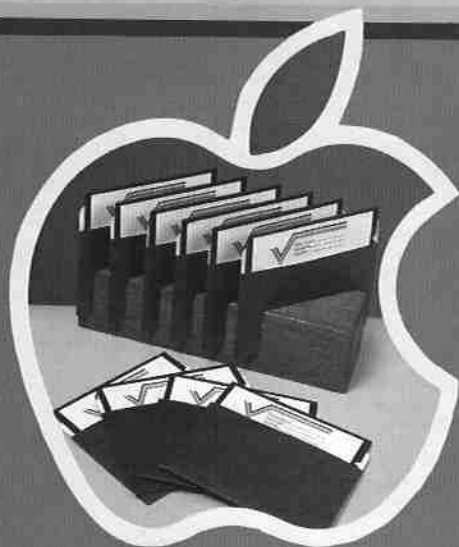
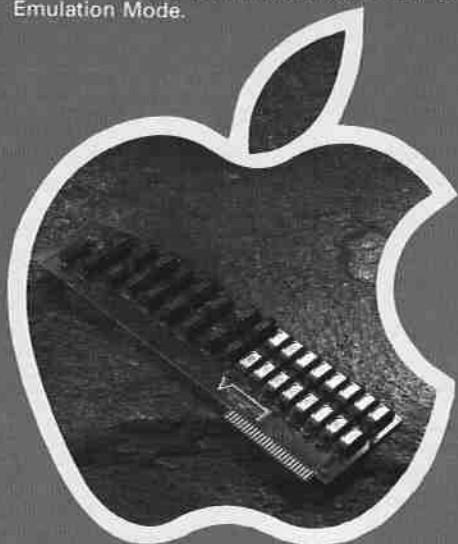
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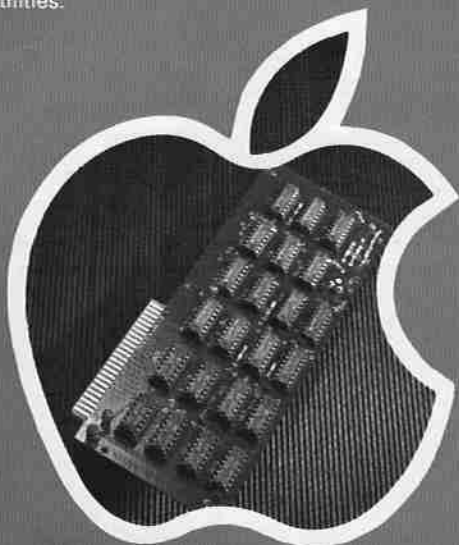


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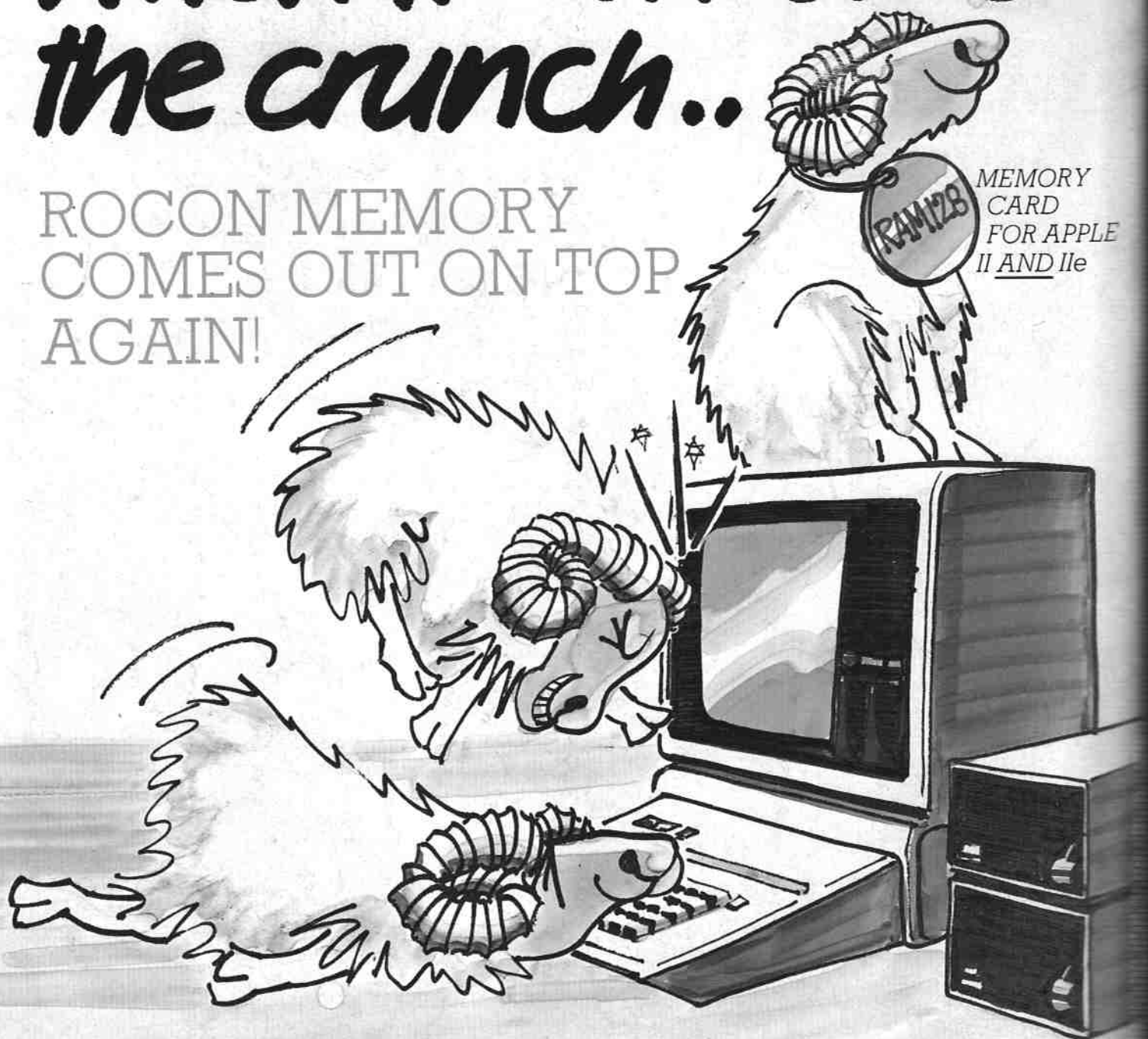
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