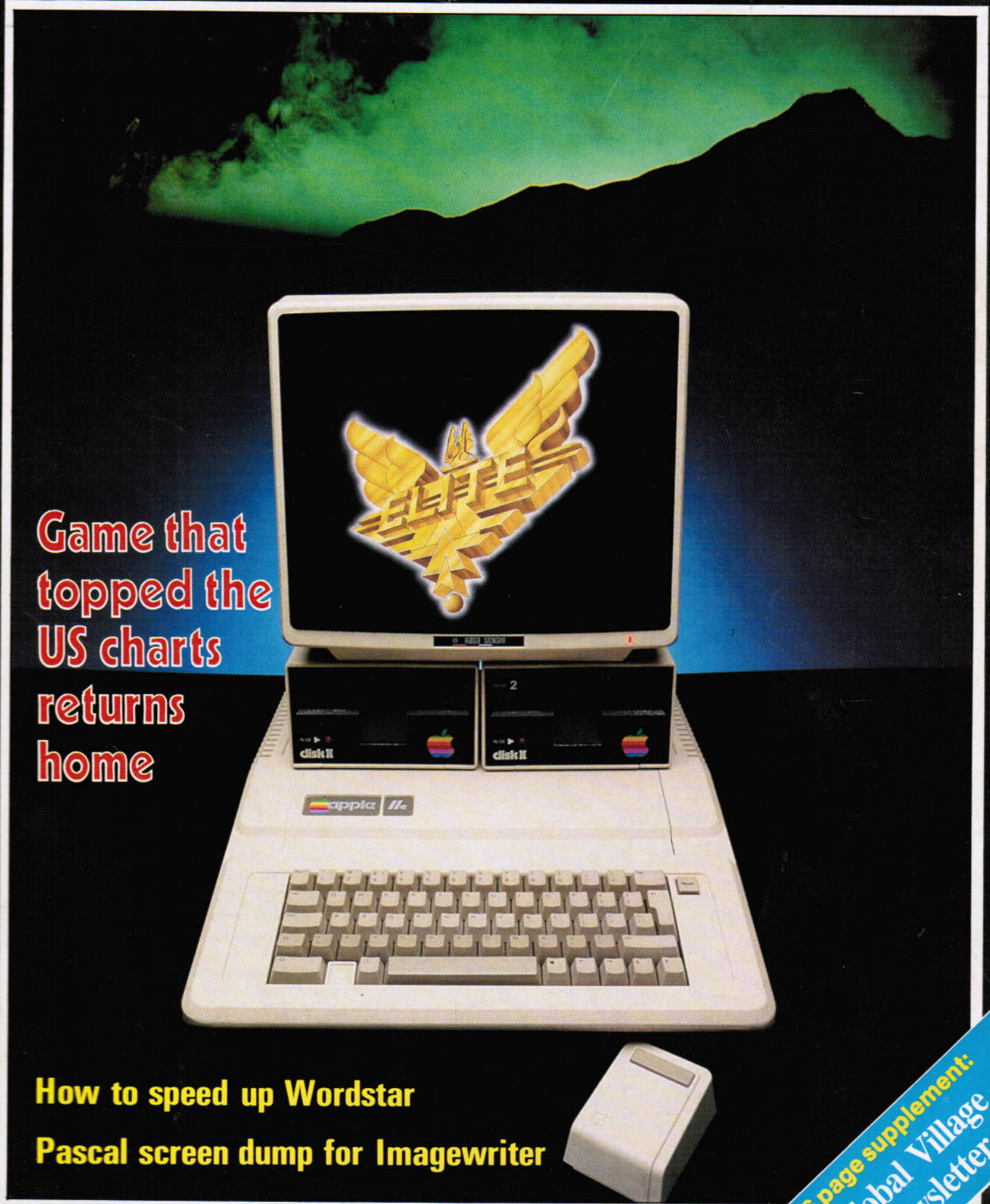
A Database Publication

apple user

Vol. 6 No. 8 August 1986 £1.25



Game that topped the US charts returns home

How to speed up Wordstar

Pascal screen dump for Imagewriter

16 page supplement: Global Village Newsletter

Reviews: MultiRam ● Fulltext 55/80 ● Ultra Term

BEST EVER DEALS from Peanut!

BEST SELLERS

IIe EXTENDED 80 column card lowest ever price **£29.50**
II+ 80 COLUMN card with built-in soft-switch **£44.50**
Z80 CARD runs all CP/M lowest ever price **£32.00**
16K RAM card **£33.50**
PARALLEL printer card including cable **£31.00**
PRINT-BUFFER card, 32K including cable **£74.00**
DISK controller card **£28.50**
PEANUT SLIM disk drive **£92.00**
SHINWA CPA80+ printer with NLQ – lowest ever price **£175.00**
QUENDATA DWP1120 13" daisywheel **£149.00**
CIRTECH FLIPPER card lowest ever price **£299.00**
CIRTECH CHAMPION printer card lowest ever price **£42.00**

CIRTECH FLIPPER CARD £295.00

Peanut

PEANUT HARD DRIVE
10 Mbyte capacity unit running all DOS 3.3 CP/M, Pascal programs. Full service contract available ..... New Low Price **£650.00**
20 Mbyte version **£795.00**

APPLE COMPATIBLE PERIPHERALS

PEANUT COMPUTER
FREEPOST, DEWSBURY, WF13 1BR.
(No Stamp required)
(Normal delivery: Low Mill Dewsbury, WF13 3LX).

PHONE: 0924 499366
(24 HOURS ANSWERING SERVICE)
Telecom Gold 72:DTB10199

Money back guarantee. Add 15% VAT to all prices.
Carriage (for orders under £100) – £3.00
(for orders over £100) – £5.00
Monitors £7.00 – Printers £7.00
Prices may fluctuate with £ rate, goods will be charged at prices ruling at date of dispatch.

We will match the price of any item elsewhere, provided documentary proof is given, and the item is ex-stock.
Dealer enquiries welcome – inc. IBM
Peanut Computer is the trading title of Golf Computers Ltd

DINERS CLUB INTERNATIONAL · AMERICAN EXPRESS · ACCESS · VISA

SOFTWARE

MICROLEDGER the perfect integrated accounts package for the small business, Microledger 1 Dos 3.3 Low price exclusive to Peanut **£99.00**
Microledger 2 enhanced CP/M ... **£245.00**
Microledger 2, MS-DOS, PC-DOS **£295.00**
FORMAT-80 ENHANCED the ultimate word processor – both Prodos and DOS 3.3, now with spreadsheet **£99.00**
FLASHCALC the new advanced spreadsheet program from the makers of Visicalc. Compatible with Visicalc files. For IIe, IIc **£69.00**
Many other programs available – check prices.

MONITORS

SANYO CRT 36 Hi-Res mono 12" **£119.00**
PHILIPS Monitor 80 12" screen
Green **£79.00**
Amber **£83.00**

CIRTECH

CIRTECH CARDS – DISCOUNT PRICES
Champion printer card **£44.50**
Champion printer card + 16K buffer **£85.50**
Champion printer card + 64K buffer **£119.00**
Cache box, 64K buffer, parallel **£120.00**
Flipper card **£295.00**
80 column for IIe with 64K mem. **£55.00**
Z80 card for CP/M **£43.50**
IIc Z80 module for CP/M **£81.00**
CP/M Wordstar package, Z80 card, CP/M system, manual **£205.00**

HARDWARE

DISC Notcher **£4.95**
DISK Storage Box (100 Disks) **£12.95**
TILT/SWIVEL monitor base, 12" **£12.95**
MONITOR Top File Tray **£7.95**
KEYBOARD 96 key detached unit, 24 function keys IBM style, II+ compatible **£89.00**
JOYSTICK new all metal, self centreing, fine trim, IIe or II+, state which **£19.50**
ASAD super joystick, fits IBM or Apple, optional self-centreing, fine trim **£24.50**
POWER SUPPLY 7.5A heavy duty **£59.50**
Cooling Fan Clip-on **£23.00**
PEANUT DISKETTES,
Fuji-brand SSDD top quality 5 year guarantee. Packs of 10
(Add £1.00 carriage) **£13.95**
25 Pack unbranded SS/DD **£22.50**

PRINTERS

EPSON
LX 80, friction feed **£220.00**
LX 80, tractor/friction **£239.00**
NEW FX85 with NLQ **£365.00**
RX 100 ..... **£386.00**
SHINWA CPA80+, with NLQ **£175.00**
CPB80 matrix IBM ... **£209.00**
PEANUT NLQ, near-letter-quality 65 cps, draft quality 160cps **£249.00**
SPECIAL OFFER
QWENDATA DWP 1120 Daisywheel, 21cps qume compatible, 13" carriage **£149.00**

DISK DRIVES
LOW PRICES

PDD4 Slim Disk Drive, 140K **£92.00**
PDD6 Apple IIc compatible **£105.00**
PDD7 half height, direct drive 140K capacity – Chinon mechanism ... **£105.00**
PDD8 Double sided, double density, 640K capacity, inc. patch s/w for Pascal 1.1, CP/M 56, CP/M 60, Prodos 1·1·1, Diversidos, Dos 3·3 ..... **£270.00**

PLUG IN CARDS

ACCELERATOR for II+, 3.5 times faster! **£175.00**
SPEECH synthesiser with full software **£45.00**
IEEE48 laboratory interface **£79.00**
CLOCK card, mountain compatible **£135.00**
80 COLUMN card with built-in softswitch. Auto 40/80 switch inc. inverse video chip **£44.50**
Z80 runs all CP/M **£32.00**
80 COLUMN card, IIe extended **£39.00**
16K RAM adds 16K memory to 48K computers CP/M and Pascal compatible **£33.50**
EPROM WRITER programs popular eprom chips with compare, verify, copy, read etc. functions **£47.00**

PARALLEL PRINTER standard Centronics interface, recognises all control codes, including cable, full graphic dump feature **£31.00**
PRINTER/BUFFER CARD free computer of time-consuming delays – dump text straight into buffer. Printer takes it out at own rate. Full graphic and sideways print capability, Grappler compatible, CP/M Appleworks inc. cable. 32K **£74.00**
IC TESTER Plugs into Apple and with remote ZIF socket indentifies and tests over 500 74 and 4000 series IC's . **£99.00**
MEMORY TESTER Similar but tests all common memory chips – DRAMS, SRAMS, EPROMS, PROMS. Also programs EPROMS, PROMS **£119.00**
Both include full manual and software.

DISK DRIVE CONTROLLER 13 or 16 sector disks auto-run **£28.50**
I/O FOUR PORT, 6522 chips, versatile card **£32.00**
PAL card, composite PAL UHF TV colour **£42.00**
GRAPPLER compatible printer card in two versions. These cards have printer selection switches:
No buffer inc. cable **£47.00**
64K buffer inc. cable **£87.00**
128K RAM blockbuster extra RAM, increases spreadsheet memory, for example, by 128K **£95.00**
PIGEON MODEM CARD
Combined RS232 and Modem with auto answer, auto dial, 300/1200 baud, file transfers, includes full terminal and Prestel software **£155.00**
DATA HIGHWAY for Pigeon **£69.00**

apple user
Volume 6
Number 8
August 1986

News

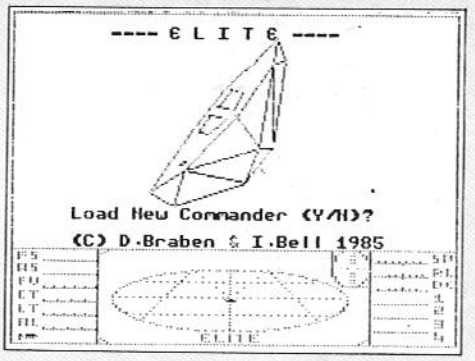
Reviews

MicroLink

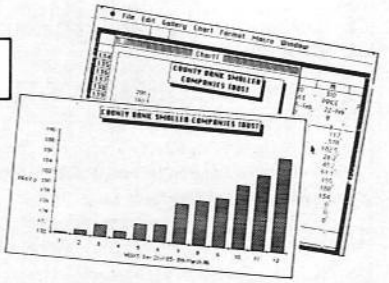
Utility

Classifieds

Fun & Games



Spreadsheet



Pascal

Hardware

CP/M

Feedback

Apple User Managing Editor **Derek Meakin** *Technical Editor* **Max Parrott**
Production Editor **Peter Glover** *Advertisement Manager* **John Riding** *Art Editor* **Heather Sheldrick**
Reviews Editor **Christopher Payne** *News Editor* **Mike Cowley** *Editor-in-Chief* **Peter Brameld**

Telephone: 061-456 8383 (Editorial) 061-456 8500 (Advertising) 061-480 0171 (Subscriptions)
Telex: 265871 MONREF G Quoting Ref. 72:MAG001 Telecom Gold Mailbox: 72:MAG001 Prestel Mailbox: 614568383

Published by Database Publications Ltd, Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY.

News trade distribution:
Europress Sales and Distribution Limited, Unit 1, Burgess Road, Ivyhouse Lane, Hastings, East Sussex TN35 4NR. Tel: 0424 430422.

ABC 9,665 July-December 1985

Subscription rates for 12 issues, post free:

£15 UK & Eire (sterling)
£23 Europe
£38 Overseas (airmail)

THIS MONTH'S SUPER SAVERS

WORD PROCESSING

Format-80 (II)	£99.00
Wordstar (II CP/M)	£250.75
MAC Author	£169.15
MAC Word	£148.75

PRINTERS

Brother Twinwriter 5	£1175.00
Epson FX85	£339.00
Epson FX105	£439.00
Epson LQ1500	£655.00
Epson LX80	£199.00
Epson JX80 (7 Colour)	£425.00
Brother HR15	£339.00
Brother HR25	£649.00
Brother HR35	£749.00
Epson DX100 (Parallel)	£309.00
Epson DX100 (Serial)	£319.00
Qume Letterpro 20	£575.00

ADD-ON BOARDS

IIE 64K 80 Column Card	£51.00
Videx Videoterm	£220.15
Videx Softswitch	£29.75
Proclock	£135.15
Kraft Joystick	£40.33
Cooling Fan	£33.96
16K Ram Card	£50.96
128K Ram & Software	£203.15
Apple Super Serial Card	£100.00
Aristocard Serial I/F	£63.75
Aristocard Parallel I/F	£58.65
Cirtech Champion	£41.65
Cirtech 16 Cachecard	£80.75

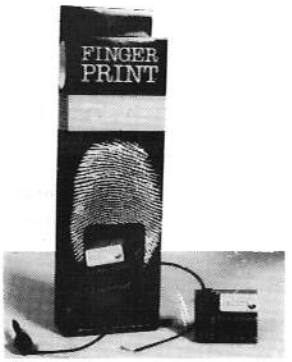
EPSON RX 100+ ... £249

List price £309

With 15.5" carriage, this printer will take A3 paper, and print 233 characters per line in condensed mode.

FINGER PRINT £24

Epson MX, FX80, RX, FX100



FINGER PRINT turns an ordinary Epson MX, FX & RX model into a more versatile, harder working, problem solving match for your computer!

This plug-in module for your Epson printer puts up to 10 special print functions at your fingertips.

TRIUMPH ADLER

TRD7020 ..... £250

Serial or Parallel Daisy Wheel Printer

A 20 CPS Daisy Wheel Printer at an amazing 50% off list price.

A complete catalogue is available with details of

PRINTERS & ACCESSORIES
PLOTTERS & ACCESSORIES
MODEMS
APPLE II & MAC HARDWARE
APPLE II & MAC SOFTWARE

ALSO AVAILABLE:
EX-DEMO STOCK AT UNBEATABLE PRICES

DATABASES

dBase II (CP/M)	£299.00
Omnis 3 MAC	£378.25
Megafiler	£143.65
MAC File	£148.75
PFS: File & Report MAC	£39.00
Filevision MAC	£14.95

UTILITY PROGRAMS

Copy II Plus (II)	£42.46
Sideways Apple (II)	£45.90
VC Expand 80 (II)	£54.40
Turbo Toolbox Apple (II)	£39.82
MAC D/Wheel Connection	£96.90
MAC Memory Disk	£28.90
Work & Print Spooler MAC	£24.65
MAC Tracks Macros	£24.65
Copy II MAC	£42.46

SPREADSHEETS

Multiplan (II)	£80.75
Flashcalc (II)	£75.65
MAC Multiplan	£161.50

Please add £5 for P+P and 15% VAT to Total

RCS Ltd
132 Evelyn Crescent
Sunbury-on-Thames
Middlesex TW16 6NA

0932 761815

Mail Order Only

Access

New UK sales chief

APPLE has a new UK director of sales and his immediate priority is to implement improved service to users through the company's dealer network.

John Floisand, previously managing director of Apple's distributor in South Africa, has wide experience in the computer industry and marketing.

"My first concern is to develop Apple UK's dealer distribution channels to provide more selective solutions", he told *Apple User*. "This will allow dealers not only to sell hardware, but also to identify strategic markets and supply appropriate solutions".

Floisand's thrust is toward more specific applications services to augment Apple's already-proven training and after sales support.

This is in line with the company's recognition of "overlapping areas of other, non-computer, expertise which has to be considered in certain specific applications – for instance desktop publishing where writing and layout ability are as important as micro skills", Floisand explained.

APPLE reached another major milestone this summer when worldwide sales passed the four million unit mark.

At the end of June total sales of Apple machines – including Macintosh – stood at 4,023,509.

Apple big three in the pipeline

APPLE is poised to strengthen its position in the world micro market with the launch of at least three new machines over the next few months.

Following the news that it is about to unveil a new member of the II family, the IIx *(see Apple User,* July) it has now been learned that two further machines are in the pipeline.

The revelation comes from John C. Dvorak, influential computer columnist for the well-informed San Francisco Examiner.

Known to have close links with Apple in California, Dvorak claims that the soon-to-be-released computers will be the most significant products in Apple's history.

And he has gone so far as to predict the launch dates – January or February next year.

"The most controversial new product is codenamed the Milwaukee", says Dvorak. "Promoters call it the Apollo killer in that it is aimed right at the workstation market dominated by Apollo and Sun Microsystems".

Although no official details of the machine – or confirmation of its existence for that matter – have appeared, the columnist insists that he is already in the know.

"The Milwaukee will be a three piece machine – separate keyboard, box and monitor", says Dvorak, "and it will sport a 68020 microprocessor, 16 grey scale monochrome or colour video display".

Expected to sell for less than $7,000 in the States, the top-of-the-market machine is reputed to have been designed as a CAD/CAM workstation featuring six to eight slots, a built-in hard disc and an optional 20mb RAM card.

Dvorak also reports the existence of a new plain Jane version of the Macintosh. "It looks like a regular Mac, but it's in a new platinum grey case", he told his readers.

"The kicker to this is that the new machine will supposedly have double the resolution of the current Macintosh screen".

Meanwhile, another USA source has told *Apple User* that the Jonathan project is now dead.

This was to produce an "exotic" Macintosh – the most powerful yet.

Reason for its demise? Apparently it conflicted with other developments at Apple.

Elite release

ELITE, the first UK game to make it to the top of the American charts, has returned home in triumph – with a little help from Apple.

After reaching the number one spot on Billboard, the prestige USA list, a version for the Apple II range is now being marketed in Britain (see review on page 10).

The cult adventure was originally written for the BBC Micro under the Acornsoft label, setting its two young co-authors – both Cambridge undergraduates – well on the road to becoming millionaires.

Elite was sufficiently well received by the critics to receive the nomination for the Home Computer Software of the Year Award in 1985.

And it even spawned a national competition, with 5,000 of its diehard followers fighting it out for the title of Elite-A-Thon champion.

However this was nothing to compare with what happened when it subsequently became the property of Firebird, the software arm of British Telecom.

Its new owners immediately commissioned an Apple version and transported it to the United States. Rave reviews followed and it soon began to shoot up the charts.

"The end result was we have the first non-American game to make it to the number one spot in the USA", said a Firebird spokesman.

"So following its success over there, it just had to be made available for Apple users back in the UK where it all started".

SECOND CENTRE

APPLE Computer has opened its first Apple Centre outside London. The new centre in Nottingham is part of Apple's plan to open 50 such stores nationwide by the end of next year.

Apple's marketing manager Keith Phillips said: "These stores are a vitally important part of our marketing and sales drive.

"While our existing dealer network remains in place the Apple Centre concept enables Apple and its dealers to serve our growing markets in the area of business and the professions".

The centre, in Queens Court, Lenton Lane, Nottingham, will be the new location for KR Computer Services which now employs a staff of 12 specialists.

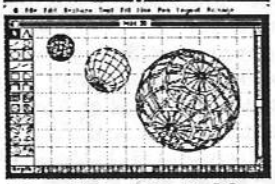
The MacSerious Promise

We are dedicated to helping the serious - or not too serious - Mac user get hold of the software he or she needs ... and which no-one else supples this side of the Atlantic. If you can't find it elsewhere, try MacSerious. If we don't have it in stock, we'll get it for you if it exists.

Easy3D ✓

... makes making 3D graphics so easy, & it's only **£90.00**! Build your own sky-scraper, 3D logo, or architectural rendering. Or whatever you fancy. And it all happens with lightning speed. Then pop it into VideoWorks for movie magic. Also compatable with MacPaint, PageMaker, LaserWriter, etc., etc.

There are 461 programs listed and described in our Summer Catalogue. Why don't you write or phone for one? (It includes the MacSerious MiniMagazine, and a list of 78 disks full of public-domain & shareware software. These programs are available free, but a £7.50 service charge for duplication, etc., will be charged.)



Mac 3D at £179.00

is a powerful 2 & 3D object-oriented graphics package. Now version 1.1 adds autodimensioning and lathe-like shape-sculpting tools to it's 22 shape-tool palette, power reshaping, hidden line removal, 360° rotation in 3 dimensions using the unique circular scroll-bar, moveable camera, enhanced pattern editor, full text features, LaserWriter support, and much, much more.

Statview512+ £325.00

The most advanced, most comprehensive statistical package available for the Macintosh today ✓

Now here!

Tempo

Intelligent macros for the Macintosh

£90.00

Mac Zap - the one essencial disk utility. No more un-backed-up disks £49.95

Cricket Graph £174.00

You can easily create presentation quality graphs with powerful features like: 16 bar patterns & plot symbols; selection of fonts, sizes & styles; text, lines & arrows added anywhere; up to 2000+ point data sets; regression curve-fit & error bars; 3D pizzaz-adding depth; Graphic Macros; Colour plotting; & much, much more.

Executive Office ✓

The Complete Integrated Management System **£295.00**

A lightning-fast, ultra-powerful, fully-integrated executive office management program that not only gives you everything you need, but is by far, the easiest business software to understand and use.

File Management, Word Processing, Calculations & Tables, Report Generation, Electronic Worksheet, Graphics Design, & MailleMerge are included.

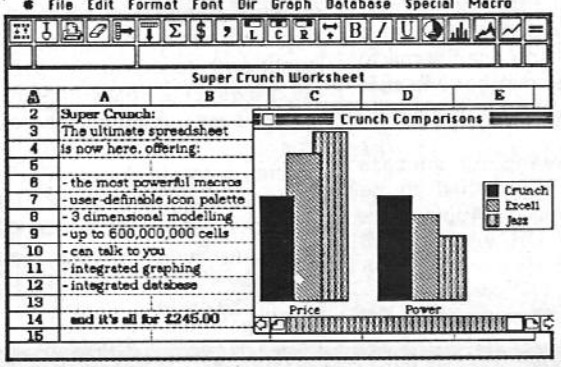
The choice is no longer just 'Jazz' or 'Excel'. There's now a new blueprint for success.

BUSINESS

FilevisioN

Now it's here - the Mac's most versatile file manager! Up to 32,000 records, files up to 4Mbyte. 4,000 characters per record, 99 information fields & 16 data types with 2,000 characters per field - & graphics, of course, but now you can cut'n paste from MacPaint & MacDraw, & full LaserWriter support is provided. **£345.00**

Shipping & Handling
In the UK: £2.00/order (1st class mail)
W. Europe: £3.50/order (normal mail)
Call for costs by other ways or to other places.



Can you manage without a disk catalogger/labeller much longer? Fully Mac+ & hard disk compatible

£39.95

Silicon Press £74.95

The colour print solution for the Mac. Silicon Press is a utility for printing labels, cards, or full-page layouts - whatever size you want - in colour in the ImageWriter II. Text & Graphics can be mixed freely, & labelling information can be merged from most database programs. The LaserWriter is fully supported.

MacAuthor ... More than a word processor

MacAuthor - the ultimate document creation system. It doesn't matter if you want to write plays, scientific papers, poems, Ancient Greek, technical manuals ... or write a thank-you letter to your Aunt Ethel, you're going to do it better, easier, quicker with MacAuthor. **£199.00**

The Games Department

MacInooga Choo Choo	£34.95
Airborne	£19.95
Enchanted Scepters	£34.95
Balance of Power	£44.95
Deja Vu	£44.95
Racter	£39.95
Steven King's The Mist	£37.50
A View to a Kill	£37.50

... and then there's

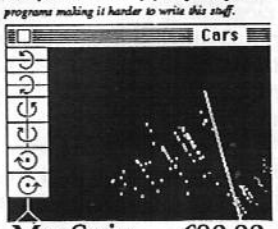
MacGolf £49.95

MacGolf is a truly superb 'Golf Simulator'... so realistic you'll think you're really there.

MouseWrite £199.00

is a Hebrew/English word processor with RTL entry. Includes mail merge.

Help! (It's the workers again.) We can't take much more of this. The boss keeps finding more good programs making it harder to write this stuff.



MacSpin £90.00

A revolutionary tool for graphical data analysis: using 3D display via rotation & 4D via animation, MacSpin makes it easy to visualise & discover trends, patterns, associations, & outliers.

All offers subject to availability. We reserve the right to adjust prices without notice. UK residents add 15% VAT to all prices

Introducing

Interlace

..the database that thinks it's a spreadsheet.

Interlace is the only program that let's you define your database visually by drawing connectors between files. Reports are freeform - place fields & pictures wherever you like, access multiple files & other reports ... 'bridge the gap between the pretty programs & the power programs.' **£125.00**

Paragenesis ✓

- an electronic design software system with Schematic Entry (£775.00) and Digital MacroScope (£1050.00). This is a top-end professional system, with linker to Bishop Graphics' Quick Circuit program (£650.00), making it the most powerful system of it's kind on any micro.

EZ-Draft £1750.00 ✓

- the first fully professional CAD system for the Mac, EZ-Draft is significantly more powerful than any other CAD systems available on micros, and ideal for all types engineeringing & architectural drawings and technical illustrations. Optional EZ-CAM completes the system. Please call for full details. Special Educational price.

Dealers - call about special arrangements for distribution of Paragenesis & EZ Draft

Buy more, get better adverts. OK? - The Boss

Fontographer V 2.0

- the only professional laser font editor available for the Mac today. When your design is ready, it can be printed on the LaserWriter, or any PostScript™ compatable device. *Now supports composite characters and can replace or add new characters to the built-in fonts.* Maximise your LaserWriter power. Bitmap are made automatically, and can be fine-tuned with an enclosed copy of FONTastic, the famous bitmap font editor (also available on it's own)

Fontographer: £375.00
FONTastic: £44.95 ✓

The MacSerious Top 10
June 1986

1	Mac Zap
2	Easy 3D
3	FONTastic
4	TML Pascal
5	Mac 3D
6	Silicon Press
7	Accessory Pak 1
8	Fontographer
9	Mac Golf
10	Macinooga Choo-Choo

Don't forget

Instant Art!

Ready-to-use Graphics ✓
Instant Symbols, Hands, Food & Drink. Display & Border Fonts, Display Alphabets, Business Forms - and Laser Business Forms

TML Pascal at £90.00

is too cheap. We could be selling it for 2 or 3 times the price. This amazing system will compile BOTH Lisa & Macintosh Pascal, permitting the creation of stand-alone, double-click-able applications, and DA's. Complete access to the Toolbox is provided, including QuickDraw, MacInTalk speech, printing, serial drivers, AppleTalk LAN, and the SANE floating point types are supported. MDS and C routines can be linked. This is a complete development system incorporating multi-window editing, Linker/Librarian, Resource Compiler (RMaker), and executive batch processing as well as the Pascal Compiler with f1 application & D.A. examples. Works with Mac XL, 512K Mac, MacPlus, HFS, HD20, and extended memory systems. An optional library of procedures to manage your main event loops - MacExpress - is available at extra cost. *Can you afford NOT to own this program?*

If you see ✓ beside an item, it means we have a demo available. Cost is £5.00 each inc. P+P, refundable on purchase.

The interactive disassembler.

When you've got MacNosy, there are no more secrets. **£80.00**

LightSpeed C £160.00

Hot from the Press! A complete high-performance C programming environment providing in a single integrated Macintosh-style application, a multi-file text editor, high performance native code compiler, ultra-fast linker, and automatic make facility, as well as full ToolBox and Unix-compatability library support.

A complete implementation of the C language as defined by Kernighan & Ritchie's *The C Programming Language* (1978) plus more recent features as described in *C: A Reference Manual* (Harbison & Steele 1984) and special features to permit proper support of the Mac environment.

Performance is what counts: Lightspeed C compiles up to 17 times faster than Cosulair C, 14 times faster than Megamax C, and 12 times faster than Aztec C.

Generated code is between 70% & 90% of the size produced by these other compilers, and execution time varies between 65% and 95%. Call for full details.

Dealers! Distributors! Send for our InfoPak.

MacSerious - *the* Mac software source for the UK & Europe. Let us help you get the products your customers want.

File.... Edit.... Goodies! TM

titled

MacSerious Software

36 Queen Street
Helensburgh G84 9PU
Phone 0436-78131

Germany: Trierer straße 8, 5517 Wincheringen Phone 06583-1371
France: 75 Rue de Moulin de Pierre, 92140 Clamart Phone 01-46-42-43-52
Netherlands: Graatseweg 99, 651285 Nijmegen Phone 080-239520

Export drive for software

A PARTNERSHIP between Scottish industry and education, set up to market educational software for Apple computers throughout the world, has been formally launched.

Designed in Scotland, the software will be marketed through Scetlander, jointly owned by the Scottish Council for Educational Technology and Scotlander, one of Scotland's youngest public companies, headed by Ron Lander.

The official launch was performed by Minister for Industry and Education, Allan Stewart, at the Scottish Office.

The first educational catalogue produced by the company contains details of more than 60 different software programs, catering for all ages and varying degrees of ability from pre-school to further education.

Dr Tom Bone, chairman of SCET and principal of Jordanhill College of Education, said: "This joint effort is the secure basis for a marketing venture which SCET has been seeking for some years. The prospects are bright".

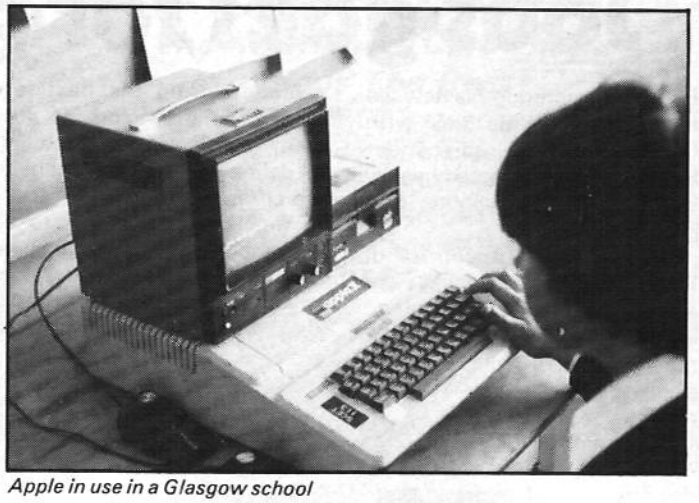
Prices of the programs range from £7.50 to £17.50 with suites of programs costing from £20 to £40. There are special rates for bulk purchases.

Ribbon service

A NEW-ribbon-for-old scheme for Apple printers has been set up by Aladdink.

Used printer ribbon cassettes sent to the new Scottish company will be returned within a few days re-inked and ready again for use.

Aladdink is offering the service at one third of its normal retail price, with a minimum of £1. The company suggests having two ribbons – one for use while the other is away being re-inked.



Apple in use in a Glasgow school

E-mail via Mac

AN electric mail service for Macintosh users, operating as one of the computer's desk accessories, has been published by TopExpress of Cambridge.

Called Topmail, it is being sold by P&P Micro Distributors at £250.

If a message is sent to a Macintosh user who has logged off the system it is stored by the mail server and despatched as soon as they log back on.

Court upholds US mail order ban

A BAN by Appie on independent dealers selling machines by mail order in the United States has been upheld by a federal appeals court.

The ruling came following the hearing of objections which claimed that the corporation's policy violated anti-trust laws.

In a suit filed by six computer dealers – several of whom were refused supplies by Apple for selling by mail – the 9th US Circuit Court of Appeals upheld a lower court's decision that Apple had not transgressed.

The court rejected claims that the company's action was a form of price fixing or an illegal restraint of trade.

Apple decided in November 1981 that it would prohibit mail order sales of its products through independent dealers. It also insisted at that time that these dealers should offer full support services for customers.

Apple said its policy suited its marketing, which was aimed at inexperienced computer users, and was intended to stop dealers from dropping support services because of financial losses because of "free riders" – mail order dealers who often referred customers to conventional retailers for service. It was argued in court that Apple was conspiring with dealers to fix prices by eliminating discount mail order sales.

The appeals court said Apple's only concern with prices involved losses caused by free riders, a concern that was lawful and legitimate, according to Judge Otto Skopil.

He also upheld the US District Court ruling that Apple's policy was not anti-competitive.

"The evidence showed that competition was intense before and increased after the mail order ban was imposed", the judge said.

The appeals court also said there was no sign that price discounts were discussed at meetings with dealers, no indication prices were set through coercion and no evidence of a conspiracy.

Gary Reback, a lawyer for the Cupertino-based company, said that since Apple imposed its ban on mail orders the idea had been adopted by some larger computer firms, including IBM.

The case could have implications for a variety of consumer products whose manufacturers want to influence retail sales practices.

Reback said the number of Apple dealers nationwide increased from 1,000 in 1981 to about 2,500 a year ago. The company had refused to renew about 600 dealerships in the last few months, trying to keep those who "were going to survive the industry shakeout and were committed to the Apple line".

APL for Macintosh

APL68000, for the Macintosh and Macintosh Plus, has been released by MicroAPL.

Widely used on supermicros and mainframe systems, APL is now entering the microcomputer market in a diverse set of applications, including management information, financial modelling, statistics, market research and insurance. APL functions can access the Clipboard, exchange data and pictures with other Macintosh applications, and set up new windows and dialog boxes.

Full access to Quickdraw graphics is provided and applications can draw into their own windows or directly to Apple printers.

Price: £295.

Mac leads Japan drive

APPLE has launched an assault on the Japanese marketplace with a special version of the Macintosh Plus.

It uses a new operating system called KanjiTalk which took two years to develop and carries the three traditional Japanese "alphabets" plus English.

"The system offers immediate access to a powerful library of Macintosh software which can be easily translated from the original language into Japanese", says Apple Japan general manager Alexander van Eyck.

"Perhaps more important, it also provides a development environment which allows local software developers to create Japanese software products".

Apple is also shipping fully localised versions of Apple software including MacPaint, MacDraw and MacProject.

According to van Eyck, the traditional word processing application-based Japanese market is shifting its emphasis toward spreadsheets and databases and "is demanding powerful, diverse software solutions that are now available through KanjiTalk".

DISCS DEAL

THE exclusive UK distribution rights of Micah internal hard discs for the Macintosh 512k and Macintosh Plus has been obtained by Cristie Data Products.

The MicahDrive AT hard discs come in 10 and 20mbyte versions. The internal interface transfers data to and from Macintosh RAM memory at full disc speed of .625 mbytes per second. They also leave external ports available for other devices.

The drive comes complete with interface, built-in power supply and all necessary cables.

Jobs goes for graphics

BUSY restructuring his new life after severing his ties with Cupertino, Apple co-founder Steve Jobs has invested heavily in sophisticated computer graphics production.

He has bought control of Pixar, the firm responsible for eye-catching computerised images in several films and the manufacture of expensive graphics computers and workstations.

Jobs will pull Pixar's strings as chairman but leave day-to-day operation of the company to graphics wizards Edwin Catmull and Alvy Ray Smith.

Industry observers believe Jobs may be planning to integrate Pixar technology into the workstation being developed by his new company, Next Inc.

Jobs is on record as saying that "image computing will explode during the next few years. The technology is now ready and Pixar will be the first to define this new segment of the computer industry".

Meanwhile he is down to his last share in the company he started with Steve Wozniak, having sold the rest to raise about $120 million for his new projects.

His solitary Apple share is retained because it entitles him to a copy of the company's annual report and accounts.

..Wozniak to college

CO-FOUNDER of Apple, Steve Wozniak has finally graduated from college – 13 years late.

He originally dropped out of his course to start up Apple. Then last year in a management dispute he left the company – although he later reinvested in it – and returned to successfully complete a degree in electrical and engineering sciences.

He passed the course without the science professors and students knowing of his outstanding computer background.

Now head of a company called CL9, which makes infrared remote control devices for home entertainment systems, he jokingly told 8,000 fellow graduates at his degree ceremony: "Now I can go out and get a good paying job".

On a more serious note he advised the students that: "The most appropriate answer is not always to add another feature to your product. Instead just show that you have the talents which will enable you to do so".

Moving protected discs

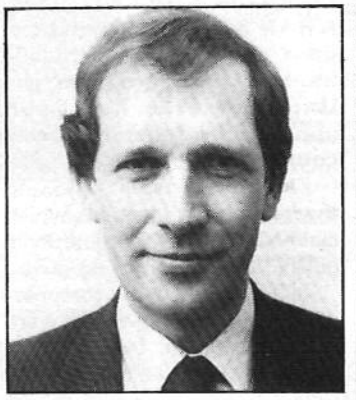
PROTECTED DOS 3.3 discs can now be moved to UniDisk 3.5 using Snapshot UniCopy 3.5, a new product for Apple users from Dark Star Systems.

It uses the interrupt-and-resume power of the Snapshot card to let users boot any memory-resident program from a standard 5.25in floppy disc and then save it to a UniDisk 3.5 disc in just a few seconds.

Twelve programs can be stored on the same disc regardless of the operating systems under which they normally run.

Switching programs can be done with the minimum of effort by using UniCopy 3.5 to interrupt the program which is running, saving its current status and then loading another.

Each program on a UniCopy disc resumes running at the point of interruption, so time-consuming disc I/O operations and searching are both eliminated. Price £20, with the Snapshot card £95.



NEW MD

DAVID Southworth, 36, is the new managing director of P & P Micro, the company which built its empire on the Apple II.

He joins P & P from Coopers and Lybrand Associates where he was in charge of the commercial and financial consultancy applications for the North West.

P & P's chairman Peter Fisher said: "His management skills and knowledge of medium and large company operations will complement our already substantial team".

He added: "The Apple IIe is still selling well and our Macintosh business is very strong".

Printer interface

AN Apple II interface compatible with its entire range of printers has been launched by Citizen Europe.

It offers a 7 bit Centronics capability and has been extensively tested with the current Apple II DOS 3.3 operating system.

The interface can also be used with Citizen's daisywheel printer, the Premier 35. Price £70.

Graphic adventure

A GRAPHIC adventure set at Stonehenge is now available from Ariolasoft for the Apple II series.

Standing Stones entails recovering the Grail, Mithril chain mail and other treasures hidden deep beneath the stones.

It has 15 dungeon levels and allows the creation of a personal knight to overcome spells. Price: £19.95.

16 BIT POWER/10YEAR BATTERY BACK-UP RAM

The IIe Memory Card That Outdoes The Rest!

MultiRam RGB's standard features include an exclusive 10 year battery backed RAM port, up to 1 Megabyte of RAM expandable to 4 Megs, RGB Video and ***More***

The MultiRam RGB Card offers more standard features than any other IIe auxiliary RAM card, features simply not available with other RAM cards or available only as expensive options.

The Hardware

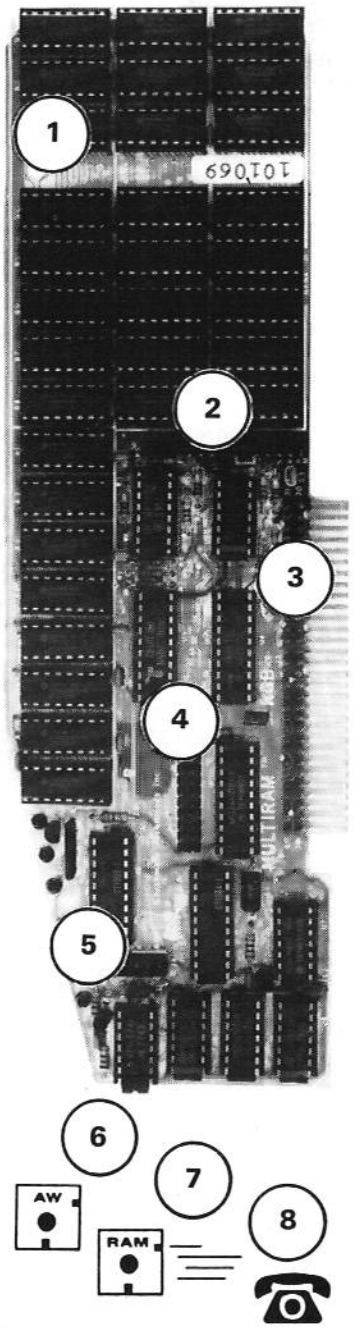
1. With ***1 Megabyte capacity,*** Multi-Ram RGB is available in sizes from 64K to 1 Meg. Plug in your own 256K or 64K dynamic RAM when you need more memory. Then use our sophisticated, unique hi-res RAM test to show the exact location of any bad RAM on the card while testing. Apple Computer says it's the best RAM test available for any memory card.

2. The ***SRAM Port*** can be connected to an optional SRAM Pack containing 128K to 2 Megs of Static RAM with 10 year battery backup. Shut off the Apple and all programs and data in SRAM will be there when you turn on the Apple tomorrow. Or next week. Or next year. The SRAM option makes MultiRam RGB the only IIe memory card that remembers what was stored in it when you turn off the Apple. Multi-Ram RGB is the *first and only* Apple RAM card to offer the SRAM port.

3. Expand MultiRam RGB up to 4 Megs using the ***memory expansion pins*** on the card's back. Add a ¾ Meg MultiRam IIe card for a 1¾ Meg total. Or add a 3 Meg MultiRam Plus card for a 4 Meg total, the most memory available in one slot for the Apple. Because either expansion card fits on the RGB's back (the power supply side), they never touch or interfere with cards in slot 1, another exclusive MultiRam feature.

4. The ***65C816 CPU Port*** allows the MultiRam EX 65C816 card, a 16-bit option, to directly address all memory on the MultiRam cards without bank-switching. Advanced 16-bit software, like VIP Professional, a Lotus 1-2-3 compatible spreadsheet, can use this memory for power spreadsheets. Another MultiRam exclusive.

5. The ***RGB Video*** connector links the card to any Apple compatible RGB monitor for crisp, vivid 80-column and double hi-res displays. RGB video is standard with the card, an option others charge hundreds for. Of course MultiRam RGB also provides you with regular 80-column and double hi-res graphics because it's a direct replacement for the Apple extended 80-column card.



The Software

6. ***AppleWorks expansion software*** is included with MultiRam RGB to expand AppleWorks from 55K to 3,034K, the largest Desktop available. AppleWorks expansion software lets you ● automatically segment and save large files to floppy ● load all or parts of AppleWorks into RAM (even printer routines) for supercharged speed ● easily use a RAM disk along with an expanded Desktop to store Pinpoint and Jeeves accessories for immediate response ● create databases of more than 5,300 records vs the ordinary 1,350 records ● create word processor files over 5,300 lines (more than 100 pages) ● and show date and time on screen with any ProDOS clock and enter them into databases with one keystroke. And we're adding new features all the time.

7. ***RAM Disk software*** for ProDOS and DOS 3.3 is included with the card. Programs are also included to partition and customize the RAM disks as well as to quickly copy files to and from the immense, lightning fast RAM disk (20 or more times faster than floppies) that can be created from MultiRam's memory. Pascal and CP/M RAM disk software is available at nominal cost.

The Service

8. We don't forget you after you buy. ***Customer Support*** is as important a MultiRam feature as any other. Get ***free*** software upgrades from your dealer as we improve our software. Call us on our Customer Support line if you have a question, to see what new programs support more memory, or to tell us your suggestion for improving our hardware or software. We listen to you. We respond. MultiRam RGB is just one of many products we design, manufacture or market.

ASK YOUR DEALER FOR MULTIRAM

From **£219** + VAT with 256K.
RGB Cable extra.

Postage & Packing **£3** + VAT

DEALER HOT LINE
(021) 356 7402

Introductory offer valid only until end of August 1986.

Access VISA

Rosco Ltd

289 Birchfield Road, Birmingham B20 3DD. Tel: (021) 356 7402
Telex: 334303 TXAGWMG

Classic converts well to Apple

ELITE has been around for some time now on various other micros ranging from the BBC Micro to the Spectrum. Having proved so popular it has been converted for the Apple under licence by Firebird Software.

When playing the game you become the commander of a fast, manoeuvrable spacecraft, initially capable of carrying 20 tons of cargo and equipped with only the essential weapon systems.

The universe consists of eight galaxies, each containing about 250 planets, making over 2,000 different planets to visit. Each planet has a selection of items that you can buy or sell, and the price depends upon the state of the particular planet.

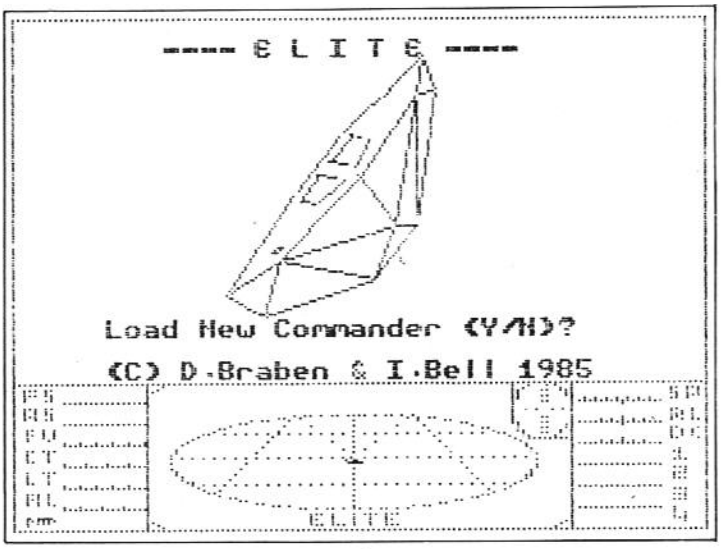
They range from highly advanced industrial to technologically backward agricultural ones. Different governments bring with them corresponding degrees of stability.

For example, capitalist states are safe to visit, while an anarchy is to be avoided at all costs in the early stages of the game. Not all of the planets are inhabited by humanoid creatures.

There are lizards, insects, slimy things, and others, but they all trade in the same items. You never actually land on a planets' surface. All trading takes place in orbiting space stations.

Your ship's computer has some functions to help you decide what items to trade. You have at your disposal a short range map of the neighbouring planets, and a huge database containing information on every planet in the universe.

After consulting the database about your neighbouring planets you must decide which on to visit next and which of the items available on your current planet would be the most profitable. The game changes



tempo after you leave the safety of the space station.

You now have to control your spacecraft until you dock at the space station on your destination planet. Keyboard or joystick can be used to fly the spaceship although joystick is recommended.

This is when the game is at its most impressive. The speed of the graphics and the realism of space flight are excellent. The display shows a 3D view in any of four directions, a very useful 3D radar, and many instruments that give information about speed, shield energy, laser temperature, missile status and so on.

The 22 types of craft are depicted by wire frame graphics with hidden line removal – very impressive.

The fun begins after you hyperspace to within viewing distance of a particular planet. Because of the inaccuracies of modern hyperspace travel you will still have some distance to go under the power of normal warp drive.

It is during this approach that your arcade skills and reactions are tested to their limit. Space pirates hunting for valuable cargoes will attack you, sometimes in force.

If your record is not clean because you have accidentally shot a policecraft or have traded in prohibited articles – slaves, narcotics and firearms – bounty hunters and police will also be pursuing you.

In the early stages of the game it is advisable to keep your nose clean, and try to avoid unnecessary encounters.

Docking with a spinning space station above a planet is quite a tricky procedure, and a good deal of practice is required. When using joystick control button 0 fires a laser, button 1 accelerates the craft and both buttons together slow you down.

Therefore when in the final approach to a space station it is very possible to accidentally shoot the station. This is usually fatal as they will then not let you in and will send out hordes of police to take revenge.

After days of doing this I discovered that you can use the keyboard for accelerating and slowing down while in joystick mode, which is not made clear in the manual.

When you have enough credits to your name you can start buying extra equipment for your ship. One of the first things to buy is a docking computer. With this you just have to get into range of a space station, press C, and docking is automatic from then on.

Other useful items include a larger cargo bay, more efficient lasers, an escape pod and guided missiles.

The game comes complete with an excellent instruction booklet, a background story called The Dark Wheel, a poster indicating the different types of foe, a quick reference guide and an errata sheet with an error on it – it says that the L key should be used to save the game, but the manual is actually correct in stating the I key is used.

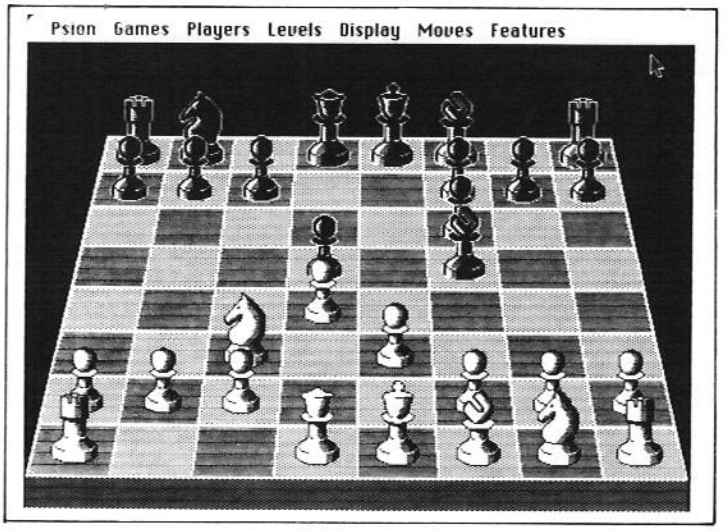
I have some doubts about the game's commercial durability as it is not of the standard of, for example, Galactic Trader by Broderbund. However the excellent arcade sections make up the value for money, although some people might find it so difficult as to be frustrating.

Despite these reservations Elite is a classic game. The Apple version is easily as good as the versions for other computers and will captivate Apple owners for many a month.

Julian Scott

Program: Elite
Price: £19.95
Publisher; Firebird Licensees Inc, Wellington House, Upper St. Martin's Lane, London WC2H 9DL. Tel: 01-836 3179.

Superb graphics, clever chess



CHESS from Psion offers stunning graphics, a perspective view of the chess board and smooth movement of the pieces. The program is written so that it can be set up in any one of six languages and it offers many features.

The level of play can be selected from 28 different options. It can offer hints and is gentlemanly enough to allow you to take moves back. There is an option that allows you to see its line of thinking showing the next few moves for you and the computer.

You can play back the moves so far in the game, and there is a comprehensive Help facility and 50 classic games for you to study. It claims to have been the World Microcomputer Chess Champion for the last two years.

The 23 page booklet looks impressive at first sight. However only three pages are in English, the rest devoted to the same topics in other languages. half the space is devoted to a potted history of chess with fleeting references to the stored games.

I would like to have seen at least a sentence on each game so that I would have known what aspect of the game it was illustrating. There is in fact a reference list of the games right at the back of the booklet which I only stumbled across by accident. I suppose you could use this to look up games in a chess reference book.

It was interesting to see that the famous Psion protection device of a hole punched in the disc was actually a scratch in the oxide layer. The result is the same however – you can't back it up.

It played a jolly good game, roundly beating me and not keeping me waiting too long between moves. However I was not altogether happy with the way the pieces were moved. The Macintosh is an intuitive machine to operate and Psion Chess seemed rather to go against the grain.

You would expect that moving a piece would require dragging – that is, holding the mouse button down while moving the mouse. With this program you click the mouse to pick up a piece, then move it and click it again to put it down. Now that sounds reasonable until you come to try it – there is something very un-Macintosh about the movement.

The same reservations apply to the perspective view of the chess board. Visually it can't be faulted – it is stunning. But curiously I found it difficult to play with. Now the level of my game of chess is not very high but I found myself missing threats that should have been obvious.

Fortunately there is the option of a 2D display and I found I played much better using this. I think what must happen is that with a real board you keep altering your head position to give you a slightly different view.

This allows your brain to build up the 3D model. With only one view of the 3D board your brain receives much less information than it is used to, hence the difficulty. No doubt given long enough the brain would learn to cope, but that is not the point.

When you compare it to its major rival, Sargon Chess, it does have a number of added features. The most useful was the time clock which is sadly lacking in Sargon.

The 2D board was not as good as Sargon's, but the 3D board is really good to look at, if not to play with. Despite my reservations if you are a chess buff with a Mac it's a must.

Mike Cook

Program: Chess
Price: £59.95
Supplier: Psion, Psion House, Harcourt Street, London W1H 1DT. Tel: 01-723 9408
Requirements: Apple Macintosh

A CHILLING CHALLENGE

BALANCE of Power from Mindscape is subtitled Geopolitics in the Nuclear Age. The author, Chris Crawford, has distilled into this game the major power struggle between East and West. Your stage is the world and the game is played against a backdrop of the countries of the world.

At the click of a mouse separate countries may be highlighted and information about them gleaned in the same way as a file vision database.

The object of the game is to increase your sphere of influence without causing a nuclear war. You can play the role of the USA or the USSR, either against another player or the computer.

Basically you act by supporting friendly governments and various forms of insurrection in unfriendly ones. However your every move can, and probably will, be challenged by your opponent, be it human or computer.

At this point you can either back off or insist on carrying out your policy. At first nothing is lost if you back off, but if you persist you will lose prestige. If neither side is willing to back off a nuclear war ensues and you both lose.

At this stage the screen goes black, and a terse message informs you that there are no graphics of mushroom clouds and bits of bodies floating around as there is no reward for failure.

The game can be played at four different levels – beginner, intermediate, expert and nightmare. The increasing levels reduce the amount of reliable advice you are given and also introduce more options and variables.

In this respect it is a very good simulation because there is too much data available to you. What is needed is the ability to differentiate the important from the trivial.

In addition to taking action events happen all over the world and these can be read in a newspaper. However these events give information about government stability rather than being in themselves credible.

In the advanced game you can bring diplomatic pressure to bear as well as making treaties with friendly countries. However there is another tactic which can be used against a troublesome country – that of finlandization. The author uses this term to indicate a country that is treated like a political leper.

He derives this from what happened to Finland after the second world war. Finland was an ally of Germany when the Germans attacked Russia, but Finland itself was not attacked by the USSR because they were

too busy with other matters. After the war none of the western powers would befriend Finland and so they had to start sucking up to the Soviets.

Thus a nominally neutral country was effectively under the domination of the Soviets. So in the game your actions can make countries finlandize to the USA or USSR. I think it was an American who said: "There aint a noun that can't be verbed".

You can also try to bring about a coup d'etat directly be sending in your own troops. However the domino theory prevails and you must have a direct line of friendly countries to pass your troops through, bearing in mind that you have only a limited number of troops at your disposal.

In the later stages of the game you can obtain a briefing on each country. This appears in the form of nine graphs showing the ups and downs of factors caused by your policies. These factors include insurrection, stability, weapons and so on.

The rules are presented in an impressive 80 page soft-bound book which slips into removable hard-bound covers. It covers all aspects of the simulation including hints and tips on how to play each level.

There are even appendices covering the artificial intelligence models used in the program's reasoning and how the game compares to the real world. There is a bibliography of 20 books used by the author to research the facts and ideas used in the program. These can be followed up by the enthusiast to give you an insight into the simulation.

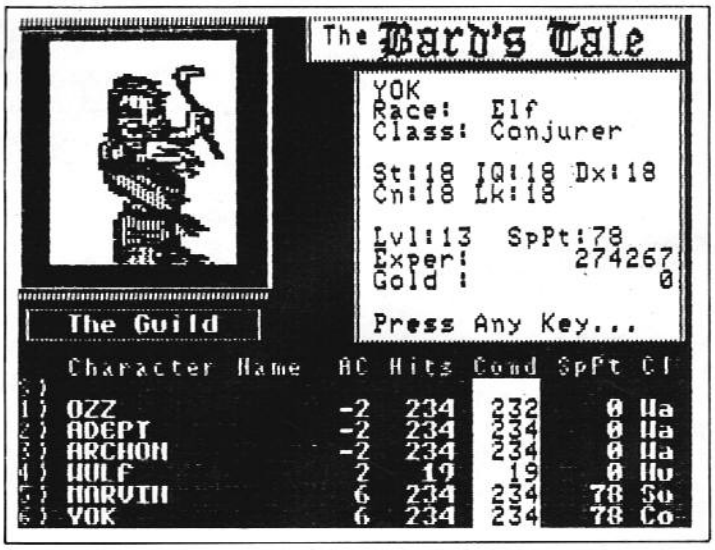
To call a program educational often gives it the commercial kiss of death, but this is educational in the true sense of the word. It would be a very good exercise to give to a group of students, as it is thought-provoking and absorbing.

It highlights the complexities of decision making and distills the feeling of being weighed down with information. While the program is a gross simplification of the real thing it does manage to convey the complexity of interrelationships.

All in all Balance of Power is absorbing and challenging and a chilly reminder that nuclear devastation could be round the next corner. **Mike Cook**

Program: Balance of Power
Price: £26.95
Producer: Mindscape, c/o Mirrorsoft, Maxwell House, 74 Worship Street, London EC2A 2EN. Tel: 01-377 4600
Requirements: Apple Macintosh

Wizard one for fantasy folk



THE Bard's Tale is a story about the town of Skara Brae, which has fallen under the spell of an evil warlock. The spell has sealed the town off from its surroundings by inducing a local winter and turned many of its people into evil creatures.

The few people that were spared now live in constant fear and depression. The bard in the local tavern sings a sad song, which tells of the town's grave plight. You, being the bravest man left, are supposed to get together a group of your friends to do something about it all.

In much the same fashion as in Wizardry you can assemble a party of up to six members. Each member can be either a fighter, magician, wizard, cleric and so on, and you can also choose from several different races, such as human, elf, hobbit and gnome. Once you have got a party together you can start adventuring.

The screen is split up into several sections, much like the first two Wizardry scenarios. Your location is shown graphically in the top left corner, your party's statistics along the bottom half of the screen and your progress and other messages are reported on the top right hand section.

Although the game looks very much like Wizardry and has a similar concept it is graphically superior, and plays a lot faster, with less disc accessing and pauses.

The first thing you notice is the amazing solid 3D graphics view of your location, which scrolls towards you as you move through the maze. It's an incredible effect, much like looking through a camera with a zoom lens and seeing things move towards you.

Initially you see the town's many buildings, and at any time you can turn sideways and get a front-on view of the buildings on either side of you, and even enter them, but you won't always find much inside.

The town is very large indeed, and for a long time I wondered when I would get to enter the dungeon.

There are many interesting places to visit in the town, such as temples for healing battle wounds, pubs for some refreshments and adventure, Garth's Equipment Shoppe for buying and selling weapons, armour and so on, and many other novel places.

The game keeps a constant record of time, so if you stand around doing nothing for too long some mean creatures are going to sneak up behind you and pick a fight. Also as time goes on, it eventually becomes night, and the sky becomes black and full of stars.

When you come across some enemies you are given the option to fight or run away. If you fight them the battle takes place blow for blow, and the damage done by one person to the other is calculated by various factors, including the character's strength and agility.

As you win battles your characters gain experience points and gold, and the amounts depend on who or what you managed to defeat.

The dungeons are quite different from Wizardry ones, since the graphics are solid rather than just outlines, and there are many unique surprises in them as well. After battles in the dungeons you will often find a chest. Some of them will contain a booby trap which can be disarmed if you're clever.

The game provides quite a mixture of environments, so there is plenty of variety. On top of that there are many different spells your characters can acquire.

Another added bonus for Wizardry players is a utility which will convert your Wizardry characters into Bard's Tale ones.

It will also do the same for characters from Ultima 3. All in all Bard's Tale is a masterpiece in fantasy adventuring and should not be missed by fans of the genre at any cost.

Leon Seltsikas

Program: Bard's Tale
Price: £19.95
Publisher: Ariolasoft, 68 Long Acre, Covent Garden, London WC2E 9JH. Tel: 01-836 3411.
Requirements: Apple II

EVERYTHING APPLE!

Apple IIc

Apple IIc 128K Computer	475.00
Apple External Disk Drive	119.00
Apple Monitor	70.00
Apple Monitor Stand	15.00
Apple Flat Panel Screen	325.00
Apple Power Supply for IIc	23.00
Apple Mouse	39.00
Apple Carry Case	19.00

Apple IIe

Apple IIe 64K Computer	475.00
Apple Unidisk 5.25	200.00
Apple Unidisk 5.25/Cont.	250.00
Apple Duodisk with Kit	400.00
Apple Unidisk 3.5	299.00
Apple Unidisk Accessories	49.00
Apple Monitor II	120.00
Apple Numeric Keypad	80.00
Apple Mouse IIe	109.00
Apple IIe Enhancement Kit	60.00
Apple Super Serial Card	90.00
Apple Hand Controller	25.00
Apple Joystick	39.00
Apple Memory Expansion Card	199.00

Apple II Software and Books

Appleworks	130.00
Apple Quickfile	50.00
Apple Logo II 64K	109.00
Apple Logo II 128K	69.00
Apple Access II	57.00
Applewriter II ProDOS	89.00
Apple Pascal 1.2	180.00
Apple Pascal 1.3	180.00
Apple Instant Pascal	90.00
Apple Fortran	99.00
Apple IIe Tech Ref Manual	23.95
Apple IIc Tech Ref Manual	23.95
Apple IIe Owners Manual	12.00
Applesoft Reference Manual	22.95
Applesoft Tutorial Manual	20.95
Basic Programming ProDOS	20.95
The Power of Appleworks with Disk	29.95
MouseDesk	29.95
ProDOS Tech Ref Manual	23.95
Macintosh Users Handbook	13.95
Inside Macintosh	79.95
Instant Pascal Ref Manual	22.95
Excel Business Solutions	15.50
Lotus Guide to Jazz in Business	15.95

Macintosh

Macintosh Plus	1725.00
Macintosh 512K/800K	1425.00

Macintosh Accessories

Hard Disk 20	1295.00
External Drive 800K	319.00
Numeric Key Pad	60.00
Security Kit	30.00
Carry Case De Luxe	55.00
Peripheral-8 Cable	25.00
Diskettes Single sided	26.00
Diskettes Double Sided	35.00
Modem	249.00
Modem Accessory Kit	40.00

DESKTOP PUBLISHING SYSTEM – PLEASE RING FOR LATEST PRICE

Apple Printers and Accessories

Apple Imagewriter I 10"	275.00
Apple Imagewriter I 15"	425.00
Apple Colour Imagewriter II 10"	339.00
Imagewriter II 32K Memory	75.00
Imagewriter Acc Kits	31.00
Peripheral-8 Cables	25.00
Apple Laserwriter PLUS	4595.00
Laserwriter Toners	90.00
Appletalk Connectors	50.00
Apple Daisywheel	995.00

All the above items are genuine **Apple** products. Naturally we also stock most popular peripherals and software from other manufacturers. Please write for up to date list.

Macintosh Software

Aldus Pagemaker	395.00
Daisywheel Connection	114.00
Easy 3D	89.00
Excel	295.00
Filevision	99.00
Jazz 1a	275.00
MacTerminal	59.00
Mac3D	179.00
MacDraft	180.00
MacPalette	49.00
MacPascal	90.00
Macputer 512	395.00
Multiplan	159.00
Omnis 3	350.00
Sidekick Office Manager	69.95
Silicon Press	75.00
Systematics Ledgers	195.00
Systematics Payroll	195.00
Thunderscan	249.00
Vicom	135.00
Work 'n' Print	29.00

Apple II Software

Graphworks	79.00
Macputer Accounts	180.00
Macputer Profile	350.00
Mailmerge for Appleworks	29.00
Multiplan	95.00
MouseWrite	89.95
MacroWorks	39.95
Pinpoint	69.00
Pinpoint Speller	69.00
Print Shop	45.00
Print Shop Graphics Library	18.00
Print Shop Companion	30.00
Supercalc 3a	170.00
Systematics Ledgers	195.00
Systematics Administrator/WP	195.00
Systematics Payroll	195.00
Tycoon Commodity Market	29.00
Ultima IV	48.00
Unimate	28.00
Vicom	75.00

Cards

Apple 80 column	79.00
Apple 80 column ext 64K	180.00
Apple Parallel Interface	99.00
Apple Super Serial	90.00
Cirtech 80 column	29.00
Cirtech 80 column ext 64K	55.00
Cirtech Z80	42.00
Cirtech Z80 IIc H/ware only	75.00
Cirtech CP/M + IIc	165.00
Cirtech CP/M Prog Pack IIc	89.00
Cirtech CP/M + Syst IIc	195.00
Cirtech Flipper	290.00
Orange Printer Card	69.00
Orange Grappler + Serial or Parallel	99.00
Orange Buffer Board Serial or Parallel	89.00
Ramworks 128K	179.00
Ramworks 256K	189.00
Ramworks 512K	229.00
Ramworks 1Meg	359.00
Ramworks RGB Option	119.00
System Clock II/II+/IIc/IIe	79.00
Transwarp Accelerator IIe/+	259.00
Z-Ram 256K	299.00
Z-Ram 512K	359.00

The Power of **Appleworks**
The Book we have all been waiting for!
Learn how to get the best from this superb program
Complete with comprehensive Data Diskette
£29.95 inc VAT
plus £2 p&p.

New for the MAC
an indispensable Mac print utility
Silicon Press
Print in seven colours with the Imagewriter II
Allows you to print sequential labels, cards envelopes, stickers and other identifiers
£75 plus VAT

MouseWrite
More than a Mouse Mouse Driven Word processing similar to the Macintosh.
Divides screen into two windows.
Supports UniDisk 3.5 and Imagewriter II Colour.
Alternative Keyboard moves available.
Extremely fast in use.
£89.95 plus VAT

New for the MAC
Macintosh Office Manager
Sidekick
Editor/Mini Word Processor, Versatile Calendar, Alarm, Financial/Scientific Calculator, Print Spooler, Thing to do File, Phone Log, Expense Account File.
£69.95 plus VAT

Education and Multiple orders a speciality

Advertised prices do not include VAT Applecard – Visa – Access cards accepted

HOLDENS COMPUTER SERVICES

191-195 MARSH LANE, PRESTON PR1 8NL. TEL 0772 561321

EXPANDING YOUR IIe's CAPACITY

GEOFF WOOD takes the MultiRam route

THERE are two different ways of expanding the capacity of an Apple IIe from the standard 64k or 128k up to a megabyte or more. One way is to put a RAM card into one of the expansion slots.

This is the method adopted by Apple's own expansion card and by such proprietary cards as Saturn, U-Micro and Cirtech's Flipper – reviewed in *Apple User,* June 1986.

The other way is to replace the normal or extended 80 column card by a card with more RAM. This is the method adopted by Applied Engineering for their RamWorks card which was reviewed in *Apple User,* October 1985, and also by Checkmate Technology for their MultiRam card reviewed here.

MultiRam is supplied in various sizes ranging from 64k to 1.5mb. The card is well made with gold plated contacts and good quality sockets. It has 24 sockets for RAM chips, divided into three banks of eight.

If bank A contains 64k bit chips and banks B and C are empty the capacity of the whole card is 64k, like the Apple extended 80 column card. By adding 64k bit chips to banks B and C the capacity becomes 192k.

Alternatively, 256k bit chips can be used in bank A together with either 64k bit or 256k bit chips in banks B and C – if mixed sizes of chips are used in any one bank the whole bank offers only 64k of extra RAM. Thus if all three banks are filled with 256k bit chips the total extra RAM is 768k.

Above the gold fingered motherboard connector is a memory expansion connector to which can be attached the MultiRam RGB card. This offers RGB video output and also up to 768k of extra memory, making 1.5 mb all told.

The version supplied for review contained 128k of RAM in banks A and B. For test purposes I moved the chips from my extended 80 column card into bank C, giving 192k of extra RAM, or 256k all told including the 64k on the main board. The card is supplied with a 100 page manual covering installation, testing, RAM disc emulation, programming and AppleWorks expansion.

A disc is also supplied, one side offering various utilities, the other side holding programs to adapt AppleWorks to recognise the extra memory.

When I booted up the adapted AppleWorks it told me that the desktop size was 140k. I then loaded in a page of text containing about 2,500 characters in 54 lines and copied the page as many times as possible.

I managed to expand the file to 41 pages – 2,214 lines – but then came up against the barrier that the AppleWorks program sets a limit of 2,250 lines in a word processor file.

While saving this file, AppleWorks told me that it was 131k and that I still had 14k available. However on listing the disc it said that the file was 91k. AppleWorks uses a compaction method when saving files.

With the 41 page file I could flip from the beginning to the end of the file very quickly using Open-Apple-1 and Open-Apple-9, but I had problems with the Open-Apple-R command.

I asked it to replace a word that occurred 17 times per page with a shorter word. After two minutes the message "Desktop full – action not completed" appeared and then "Text and/or commands may have been lost at line 642". Sure enough it had lost a few lines.

I cut the file down to 35 pages and still had the same problem with the Search and Replace command. Not until I cut it to 30 pages would it work properly and it took nearly three minutes to change 510 words. The moral is not to use very large files that approach the limits of AppleWorks or your MultiRam card.

The MultiRam manual says that if you have enough memory when you reach the limit of 2,250 lines you can create another file, then jump back and forth between them with Open-Apple-Q and transfer text between them using the clipboard and either Open-Apple-C or Open-Apple-M. Obviously a file must be less than 2,250 lines if you want to transfer data into it.

However I have never really seen the point in creating large files with any word processor. Small files are much easier to handle. Even a lengthy book can be split into convenient chapters. A good word processor allows you to copy or move paragraphs between files and to print a series of files with consecutive page numbers.

I then tried out the database by loading a file containing 500 records – 39k on disc. By copying and pasting I expanded the file to 1,450 records. While saving this file AppleWorks said that it was 140k and that I still had 3k available. However the file size on disc was only 111k.

I tried sorting the file of 1450 records into alphabetical or numerical order on various columns and found that this took between 10 and 40 seconds. The Find command took between 3 and 13 seconds to find various words. The Select command using three criteria took only 3 to 8 seconds.

The MultiRam manual claims that files of up to 5350 records can be created, whereas normally AppleWorks is limited to 1350 records. Although larger files will take longer to perform the Arrange, Find and Select operations the expanded version of AppleWorks must be one of the fastest database programs available in terms of speed of sorting and selecting.

Thanks to ProDOS loading and saving large files are quite fast operations. The word processor file of 91k and the database file of 111k loaded or saved in about a minute. The loading time includes the time to load the appropriate part of the program from drive 1 as well as the file from drive 2.

If your file is too big for a floppy disc – 136k – the program automatically segments the file over two or more discs. The discs must have identical names and if you do not have enough formatted discs before you start the Save operation you may be in trouble.

I tried to opt out in the middle of one that needed two discs and the system crashed. The manual recommends you to have plenty of formatted discs. I would also recommend you to save files regularly, and save every one at least twice on separate sets of discs.

AppleWorks has a safety feature when saving files after the first one. It saves the new

version on an empty part of the disc, then deletes the original version – hence the reason for the screen message "Carefully saving your file".

With small files there are no problems unless the disc is almost full, but with large files you may have to start again with another disc.

The MultiRam version of AppleWorks saves as much as possible of your large file on the same disc as the original version, then asks you to insert another disc. However if you leave the original one in the drive it will delete the original file and save the balance of the new file as part 2.

To test the capacity of the spreadsheet I entered a five digit number in cell A1, copied it down to A990 then copied this column into the next 10 columns. The MultiRam manual advises you to leave a few rows clear at the bottom of the spreadsheet to facilitate copying, hence the reason for stopping at row 990 rather than 999.

AppleWorks told me that the file size was 128k and that I had 15k available. I tried to copy another column, but the action was not completed and stopped at row 450. Thus it filled 11340 cells. By this time the file size was 140k with 2k available. On disc the file size was 127k.

To test the capacity with calculations I entered the digit 1 in cell A1, then I entered 1+A1 in cell A2 and copied this formula down on a relative basis to A990. Next I entered 1+A1 in cell B1 and copied the formula to B990. Then I entered 1+B1 in cell C1, copied down to C999 and repeated the operation in column D.

When I tried again with column E the action stopped at row 500. AppleWorks told me that the file size was 142k and that I had 1k available. The file size on discs was 115k and it loaded and saved in about one minute. The recalculation time for this worksheet was only 65 seconds for 4100 cells.

The MultiRam version of AppleWorks really proves its worth for those who wish to hold up to 12 reasonably sized files in RAM and to switch instantly between the three applications.

Although the 55k desktop offered by a normal 64k extended 80 column card allows you to hold 12 small files in RAM, if you want to switch between three applications you will have to wait while it accesses drive 1 for the appropriate parts of the AppleWorks program.

With the 192k MultiRam I was able to load in 12 files totalling 86k and still switch instantly between any two applications. To switch instantly between three applications I had to use 12 smaller files totalling 43k.

Bigger versions of MultiRam would allow larger files with instant switching between three applications. The manual recommends 256k or more for this purpose.

On booting up the MultiRam version of AppleWorks you are greeted with an options menu before the main menu. This options menu allows you five choices. You can start AppleWorks in the normal way or you can load in the overlays for either the database, the word processor, the spreadsheet or all three.

Each single overlay take about 30 seconds to load – all three take about two minutes. Having made a choice you then proceed to the main menu, but you cannot go back to the options menu without rebooting.

However it seemed a waste of time to wait two minutes to load in all the overlays. If you start the adapted AppleWorks in the normal way, load in three different types of files, then use Open-Apple-Q to switch between the files it takes far less than a minute to load in the essential parts of the three applications. There may then be some further delays if you use certain other commands such as Print, but at least you can start editing.

MultiRam is not just a way of expanding AppleWorks. It offers RAM disc emulation for ProDOS and DOS 3.3. The manual says that Pascal and CP/M RAM drive emulation software will be available soon at a nominal charge.

MultiRam is claimed to be compatible with such cards as Titan's Accelerator, the Speedemon and most CP/M Cards. It is also claimed that some programs such as FlashCalc, MagiCalc and Magic Office will recognise extra memory in MultiRam provided that bank A contains 256k bit chips.

MultiRam has some advantages over RamWorks – not least being the price. For example, a 256k RamWorks is advertised at $219 in the USA – £219 in the UK – whereas a 320k MultiRam is only $175. A 1mb RamWorks is $369, whereas a 1mb MultiRam is only $284 including the RGB card – the RGB option for RamWorks is an extra $129.

The MultiRam card also has a built-in port for connection to an optional 16 bit co-processor card. This feature is offered on RamWorks II which unfortunately does not fit a European Apple IIe. MultiRam also offers a much bigger manual than the 20 page RamWorks manual.

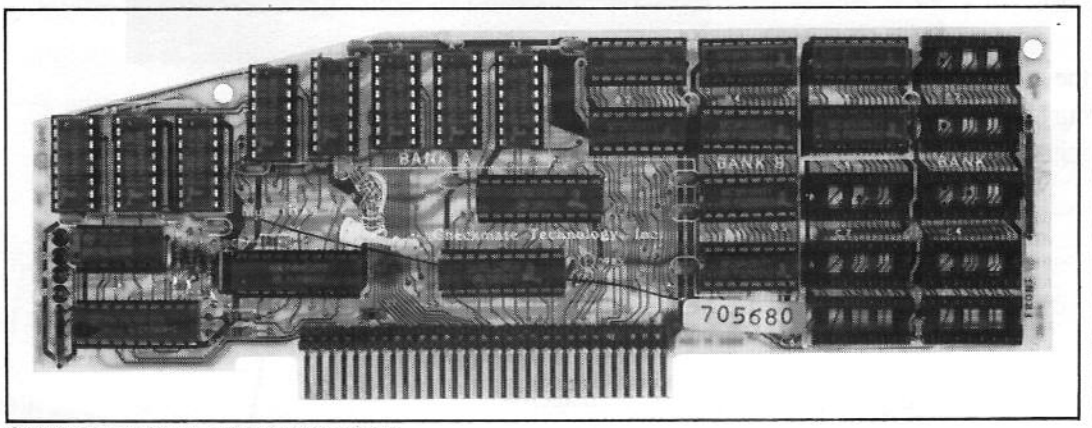
However some people might prefer to pay extra for RamWorks because it claims that it can expand the word processor to over 15,000 lines and the database to up to 15,000 records.

RamWorks also provides a built-in printer buffer if you have an Apple Super Serial card in your IIe. Also RamWorks is available from the UK supplier Bidmuthin Technologies or your local dealer.

If you already have an extended 80 column card it may be cheaper to buy a RAM card to fit into one of the expansion slots. AppleWorks version 1.3 automatically recognises the Apple expansion card, but not necessarily other RAM cards.

The Cirtech Flipper 1 mb card comes with a program to adapt AppleWorks 1.3 version to recognise the card and give a desktop of 1012k. If you buy a different RAM card you can use PlusWorks – reviewed in *Apple User,* April 1986 – to adapt AppleWorks to recognise the extra memory.

Thus there are many ways to expand your Apple IIe and AppleWorks. By studying our reviews you can take your choice before you pay your money.



Checkmate Technology's MultiRam card

So what's new f

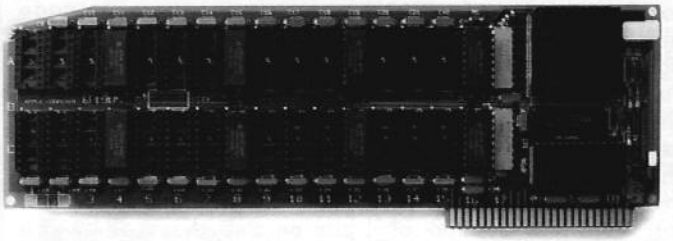
Being an experienced Apple II user you know that we purposely designed your computer so that it could grow in line with your own growth.

But, the thought struck us.

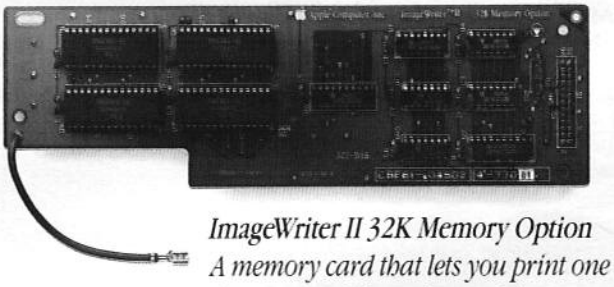
What if you don't know about the great things that have been happening for your machines recently. What if you don't know about the Memory Expansion Card that can provide over a megabyte of memory. About UniDisk 3.5,™ the high-capacity 3½ inch disk drive. About ImageWriter™ II, a colour printer with Sheet feeder and 32K Memory Option print buffer. About the 5¼ inch UniDisk,™ and about the Apple Modem.

We know that you are working your Apple II as hard as ever. We want to be sure that you are aware of the products that should be helping you.

So, for more information on the accessories shown here contact your local Authorised Apple dealer now or ring 100 and ask for Freefone Apple.



Apple II Memory Expansion Card
Boosts your IIe's™ memory by 256 kilobytes and can be expanded to a megabyte (1,024 kilobytes).

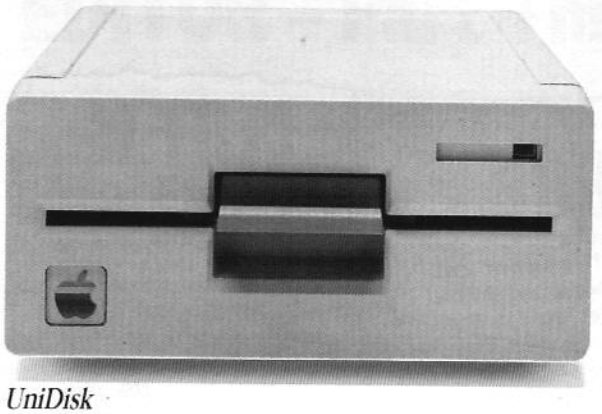


ImageWriter II 32K Memory Option
A memory card that lets you print one document while you're working on another.

ImageWriter II
The one printer that's great for both business and personal use. It's an enhanced version of our most popular dot-matrix printer – now quieter and faster, with three print settings, including near-letter quality. It also prints in both colour and black and white.

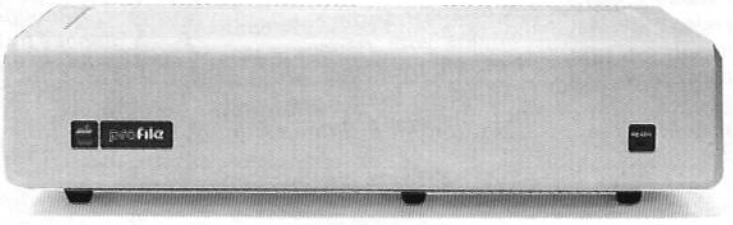
Apple Modem
Operates at both 300 baud (V21) and 1200/75 baud (V23) and is British Telecom approved. In addition, auto dial and auto answer features are available using the Hayes communications protocol.

br your Apple™ II?

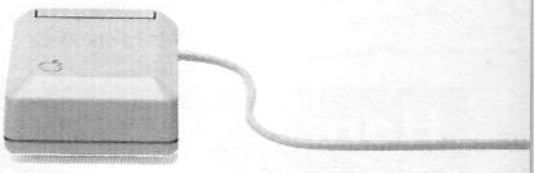


UniDisk
The basic 5¼" Apple disk drive has 143 kilobyte capacity and is fully compatible with all Apple 5¼" software.

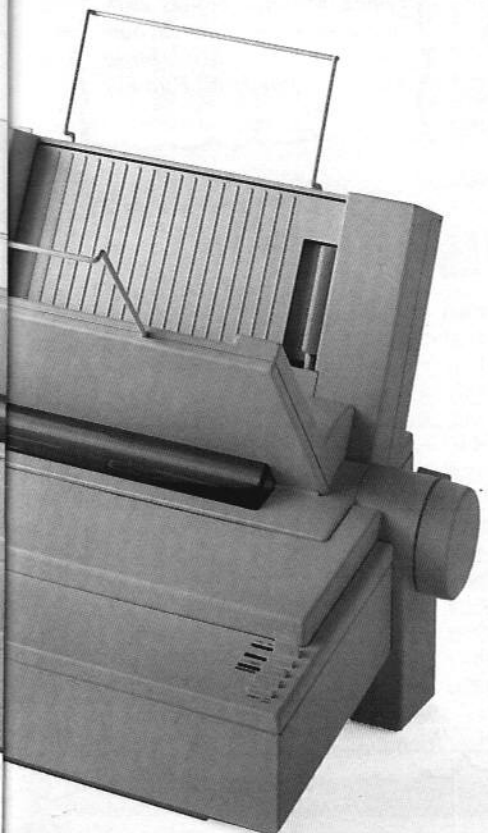
UniDisk 3.5
About five times the capacity of our 5¼" UniDisk. Allows you to run all 3.5" format software programs written for the Apple II family. Stores up to 800K of data.



10 Megabyte ProFile™
High capacity information storage equal to more than seventy 5¼" floppy disks, or more than 4,200 typewritten pages.



AppleMouse™
The mouse lets you control a pointer on the screen so you can get the file, word, picture, or whatever you want and work with it as easily as pointing at it.



Sheet Feeder
A detachable sheet feeder that lets you use continuous paper or your letterhead.

Apple™
The power to succeed.

MicroLink
in association with
TELECOM GOLD

NEWSLETTER

No. 12 August 1986

Help for the Boat People

MICROLINK is being used to bring hope to thousands of distressed Vietnam refugees living in the UK.

Their plight largely ignored, these former Boat People have become a forgotten multitude of have-nots crowded into substandard dwellings.

Their families are dispersed and they are unable to find work or obtain help from social agencies because of language difficulties and their ignorance of "the system".

But now MicroLink's telex and electronic mail services are easing cases of hardship by speeding the reunification of families and smoothing their path into Western society.

Many former Boat People are suffering because when they arrived in Britain the authorities assumed that being Vietnam refugees they were automatically Vietnamese.

In fact three-quarters of them were ethnically Chinese, speaking only a form of Cantonese and unable to understand the Vietnamese instructors hired to teach them English.

As a result they were classed as incapable and illiterate and many suffered severe psychological problems as a result of their failure to adapt to British society.

Because of their inability to communicate they could not even obtain adequate help from social agencies and hundreds ended up in squats and dingy hostels.

Shunned by the ethnic Vietnamese, and even UK Chinese communities, because they were considered inferior, the former Boat People faced a bleak future.

But a Chinese Vietnamese Advice Centre staffed by voluntary social workers has been opened in London to help them, and it is using MicroLink in its efforts.

Alf Jackson, one of the volunteers, said: "MicroLink's facilities will enable us to establish better communications with refugee agencies all over the world – particularly Hong Kong – and put dispersed families in touch.

"As well as the reunification of families, our work is concerned with improved housing for the refugees and their integration into UK society, for instance helping them set up in business".

CLIFF IS STILL TOPS

DESPITE what some critics might say the top show in London is the Cliff Richard musical Time.

At least that's the verdict of MicroLink subscribers according to the volume of bookings placed through TheatreLink, which is operated in association with renowned theatrical agency Edwards & Edwards.

Although Time has been panned by some of the critics it beats the long-running hit musical Cats into second place in the MicroLink theatre-goers' Top Ten.

In third place comes Me And My Girl – another of the eight musicals in the popularity list – followed by 42nd Street, with Starlight Express in fifth place.

Another target for the critics, Mutiny!, comes sixth followed by perennial favourite thriller The Mousetrap and the comedy hit Run For Your Wife.

Here's YOUR chance to join MicroLink

All you need to use MicroLink is a computer, modem, appropriate communications software and a telephone. Fill in this coupon below for details on how to join:

Please send me an application form to join MicroLink.

My computer is .....

My modem is .....

I do not have a modem.
☐ Please send details.

Name .....

Address .....

.....

.....

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

Commonwealth link?

MICROLINK has been chosen as a potential medium of communication between the Commonwealth Secretariat in London and the organisation's 49 member countries.

A project is underway to assess various electronic mail and telex options in conjunction with the Secretariat's planned expansion of its computer facilities.

The aim is to improve the speed and efficiency of links between member countries and also with international bodies like the United Nations' agencies and the World Bank.

The Commonwealth's own specialist databases will also be set up as part of the project which is expected to be completed in about two years time.

"MicroLink is one of two systems we are experimenting with at the present time", said Commonwealth Secretariat computer manager Peter Windle. "We have been impressed by its user-friendliness and ease of use".

HI-RES SCREEN EDITOR – Part Three

Composite picture created with hi-res screen editor

By PAUL SINNETT

THIS is the last in the three part series about the main screen editor program which we began in the June issue. Together with it are a Basic loading program to run under DOS, and some tips on its use.

The Basic program is used to load the screen editor itself at line 70 by a menu, but note that a banner picture is first loaded at line 50. It allows the easy loading and saving of pictures and picture objects from and to disc.

Filenames can have slot and drive number appended to them with the usual syntax. To load a picture named FILE.PIC from drive 2 type the name as FILE.PIC,D2.

The Input Anything routine at lines 340-350 is used to allow the comma to be put into the string. The only other thing to note is the use of the short machine code routine at $300 – POKEd in at line 30 – which issues DOS error messages.

On first entering the program, the ONERR GOTOs at lines 40 and 680 are best left out until the whole program functions correctly.

Using the screen editor is very simple. After loading a picture from the menu choose the E)dit option and you will see the picture displayed briefly on hi-res page 1 normally. It will then appear in inverse. This is the picture window which initially covers the whole picture screen.

First move up the bottom edge of the window by use of the P key, and the right edge to the left with the L key. Now experiment and move the window with the diamond of keys I, J, K, M. The rest of the editor's instructions are given in Part One, *Apple User,* June.

Readers can obtain a copy of the Hires Screen Editor by sending a 5¼in disc and sae to Max Parrott at Apple User.

```
85E5:          792 ***********************************
85E5:          793 ** MOVE LEFT 1 BIT
85E5:          794 ***********************************
85E5:          795 **
85E5:          796 MOVEL1  EQU  *         SEE ABOVE ROUTINE
85E5:20 9A 88  797         JSR  TOPFIND
85E8:AE 21 89  798 NEXTL1  LDX  WINDOWL
85EB:20 E1 88  799         JSR  RSETPOS
85EE:20 0D 89  800         JSR  GET
85F1:29 01     801         AND  #$01
85F3:4A        802         LSR  A
85F4:6A        803         ROR  A
85F5:6A        804         ROR  A
85F6:8D 26 89  805         STA  SPREBT
85F9:AE 22 89  806         LDX  WINDOWR
85FC:20 0D 89  807 LOOPL1  JSR  GET
85FF:29 01     808         AND  #$01
8601:4A        809         LSR  A
8602:6A        810         ROR  A
8603:6A        811         ROR  A
8604:8D 27 89  812         STA  SPREBT+1
8607:20 0D 89  813         JSR  GET
860A:29 80     814         AND  #$80
860C:8D 28 89  815         STA  SPREBT+2
860F:20 0D 89  816         JSR  GET
8612:4A        817         LSR  A
8613:29 3F     818         AND  #$3F
8615:0D 26 89  819         ORA  SPREBT
8618:0D 28 89  820         ORA  SPREBT+2
861B:20 15 89  821         JSR  STORE
861E:AD 27 89  822         LDA  SPREBT+1
8621:8D 26 89  823         STA  SPREBT
8624:EC 21 89  824         CPX  WINDOWL
8627:F0 04     825         BEQ  ENDLOOPL1
8629:CA        826         DEX
862A:4C FC 85  827         JMP  LOOPL1
862D:AD 25 89  828 ENDLOOPL1 LDA C1
8630:CD 24 89  829         CMP  WINDOWD
8633:F0 09     830         BEQ  ENDL1
8635:EE 25 89  831         INC  C1
8638:20 09 88  832         JSR  NXTLINED
863B:4C E8 85  833         JMP  NEXTL1
863E:60        834 ENDL1   RTS
863F:          835 **
863F:          836 ***********************************
863F:          837 ** MOVE UP 1 BIT
863F:          838 ***********************************
863F:          839 **
863F:          840 MOVEU1  EQU  *         SEE PASSAGE ON
863F:AE 21 89  841         LDX  WINDOWL   ;MOVE UP AND
8642:20 9A 88  842 NEXTU1  JSR  TOPFIND   ;DOWN.
8645:20 E1 88  843         JSR  RSETPOS
8648:20 0D 89  844         JSR  GET
864B:8D 26 89  845         STA  SPREBT
864E:AD 25 89  846 LOOPU1  LDA  C1
8651:CD 24 89  847         CMP  WINDOWD
8654:F0 24     848         BEQ  ENDLOOPU1
8656:20 09 88  849         JSR  NXTLINED
8659:20 E1 88  850         JSR  RSETPOS
865C:20 0D 89  851         JSR  GET
865F:8D 27 89  852         STA  SPREBT+1
8662:20 55 88  853         JSR  NXTLINEU
8665:20 E1 88  854         JSR  RSETPOS
8668:AD 27 89  855         LDA  SPREBT+1
866B:20 15 89  856         JSR  STORE
866E:20 09 88  857         JSR  NXTLINED
8671:20 E1 88  858         JSR  RSETPOS
8674:EE 25 89  859         INC  C1
8677:4C 4E 86  860         JMP  LOOPU1
867A:AD 26 89  861 ENDLOOPU1 LDA SPREBT
867D:20 15 89  862         JSR  STORE
8680:EC 22 89  863         CPX  WINDOWR
8683:F0 04     864         BEQ  ENDU1
8685:E8        865         INX
```

```
8686:4C 42 86  866          JMP  NEXTU1
8689:60        867 ENDU1    RTS
868A:          868 **
868A:          869 ***********************************
868A:          870 ** MOVE DOWN 1 BIT
868A:          871 ***********************************
868A:          872 **
868A:          873 MOVED1   EQU  *          SEE ABOVE ROUTINE
868A:AE 21 89  874          LDX  WINDOWL
868D:20 BC 88  875 NEXTD1   JSR  BTMFIND
8690:20 E1 88  876          JSR  RSETPOS
8693:20 0D 89  877          JSR  GET
8696:8D 26 89  878          STA  SPREBT
8699:AD 25 89  879 LOOPD1   LDA  C1
869C:CD 23 89  880          CMP  WINDOWU
869F:F0 24     881          BEQ  ENDLOOPD1
86A1:20 55 88  882          JSR  NXTLINEU
86A4:20 E1 88  883          JSR  RSETPOS
86A7:20 0D 89  884          JSR  GET
86AA:8D 27 89  885          STA  SPREBT+1
86AD:20 09 88  886          JSR  NXTLINED
86B0:20 E1 88  887          JSR  RSETPOS
86B3:AD 27 89  888          LDA  SPREBT+1
86B6:20 15 89  889          JSR  STORE
86B9:20 55 88  890          JSR  NXTLINEU
86BC:20 E1 88  891          JSR  RSETPOS
86BF:CE 25 89  892          DEC  C1
86C2:4C 99 86  893          JMP  LOOPD1
86C5:AD 26 89  894 ENDLOOPD1 LDA SPREBT
86C8:20 15 89  895          JSR  STORE
86CB:EC 22 89  896          CPX  WINDOWR
86CE:F0 04     897          BEQ  ENDD1
86D0:E8        898          INX
86D1:4C 8D 86  899          JMP  NEXTD1
86D4:60        900 ENDD1    RTS
86D5:          901 **
86D5:          902 ***********************************
86D5:          903 ** INVERT WINDOW
86D5:          904 ***********************************
86D5:          905 **
86D5:          906 IBLOCK   EQU  *          FIND TOP OF WINDOW
86D5:20 9A 88  907          JSR  TOPFIND   ;ADDRESS
86D8:AE 21 89  908 NEXTI    LDX  WINDOWL   ;START FROM LEFT
86DB:20 E1 88  909          JSR  RSETPOS   ;GET EACH BYTE
86DE:20 0D 89  910 LOOPI    JSR  GET       ;IN LINE OF WINDOW
86E1:49 FF     911          EOR  £$FF      ;INVERSE IT
86E3:20 15 89  912          JSR  STORE     ;PUT IT BACK
86E6:EC 22 89  913          CPX  WINDOWR   ;THEN IF
86E9:F0 04     914          BEQ  ENDLOOPI  ;FINISHED
86EB:E8        915          INX            ;MOVE THE ADDRESS
86EC:4C DE 86  916          JMP  LOOPI     ;TO THE NEXT
86EF:AD 25 89  917 ENDLOOPI LDA C1         ;LINE DOWN
86F2:CD 24 89  918          CMP  WINDOWD   ;AND DO AGAIN
86F5:F0 09     919          BEQ  ENDI      ;UNTIL BOTTOM
86F7:EE 25 89  920          INC  C1        ;OF WINDOW IS
86FA:20 09 88  921          JSR  NXTLINED  ;REACHED
86FD:4C D8 86  922          JMP  NEXTI
8700:60        923 ENDI     RTS
8701:          924 **
8701:          925 ***********************************
8701:          926 ** CHANGE PICTURES TO DATA
8701:          927 ***********************************
8701:          928 **
8701:          929 PICTODAT EQU *          SEE ABOVE
8701:20 9A 88  930          JSR  TOPFIND   ;INSTEAD OF
8704:20 E1 88  931          JSR  RSETPOS   ;INVERTING THE
8707:A9 00     932          LDA  £$00      ;BYTES, STORE
8709:8D 1A 89  933          STA  STORE2+1  ;THEM ONE AFTER
870C:AD 1E 89  934          LDA  PHAD2     ;THE OTHER ON
870F:8D 1B 89  935          STA  STORE2+2  ;THE GRAPHICS
8712:A0 00     936 NEXTPD1  LDY  £$00      ;PAGE THREE
8714:AE 21 89  937          LDX  WINDOWL   ;($6000-$7FFF)
8717:20 0D 89  938 LOOPPD1  JSR  GET       ;WITHOUT CHANGING
871A:20 19 89  939          JSR  STORE2    ;INFORMATION ON
871D:C8        940          INY            ;SCREEN.
871E:EC 22 89  941          CPX  WINDOWR
8721:F0 04     942          BEQ  ENDLOOPPD1
8723:E8        943          INX
8724:4C 17 87  944          JMP  LOOPPD1
8727:AD 25 89  945 ENDLOOPPD1 LDA C1
872A:CD 24 89  946          CMP  WINDOWD
872D:F0 21     947          BEQ  ENDPD1
872F:20 09 88  948          JSR  NXTLINED
8732:EE 25 89  949          INC  C1
8735:8C 26 89  950          STY  SPREBT
8738:AD 1A 89  951          LDA  STORE2+1
873B:18        952          CLC
873C:6D 26 89  953          ADC  SPREBT
873F:8D 1A 89  954          STA  STORE2+1
8742:AD 1B 89  955          LDA  STORE2+2
8745:69 00     956          ADC  £$00
8747:8D 1B 89  957          STA  STORE2+2
874A:20 E1 88  958          JSR  RSETPOS
874D:4C 12 87  959          JMP  NEXTPD1
8750:60        960 ENDPD1   RTS
8751:          961 **
8751:          962 ***********************************
8751:          963 ** CHANGE DATA TO PICTURES
8751:          964 ***********************************
8751:          965 **
8751:          966 DATTOPIC EQU *          SEE ABOVE
8751:20 9A 88  967          JSR  TOPFIND   ;THIS TIME
8754:20 E1 88  968          JSR  RSETPOS   ;TAKE DATA FROM
8757:A9 00     969          LDA  £$00      ;GRAPHICS PAGE
8759:8D 12 89  970          STA  GET2+1    ;THREE AND PUT
875C:AD 1E 89  971          LDA  PHAD2     ;IT ON TO THE
875F:8D 13 89  972          STA  GET2+2    ;PRESENT GRAPHICS
8762:A0 00     973 NEXTDP1  LDY  £$00      ;PAGE
8764:AE 21 89  974          LDX  WINDOWL   ;WITHOUT CHANGING
8767:20 11 89  975 LOOPDP1  JSR  GET2      ;DATA.
876A:20 15 89  976          JSR  STORE
876D:C8        977          INY
876E:EC 22 89  978          CPX  WINDOWR
8771:F0 04     979          BEQ  ENDLOOPDP1
8773:E8        980          INX
8774:4C 67 87  981          JMP  LOOPDP1
8777:AD 25 89  982 ENDLOOPDP1 LDA C1
877A:CD 24 89  983          CMP  WINDOWD
877D:F0 21     984          BEQ  ENDDP1
877F:20 09 88  985          JSR  NXTLINED
8782:20 E1 88  986          JSR  RSETPOS
8785:8C 26 89  987          STY  SPREBT
8788:AD 12 89  988          LDA  GET2+1
878B:18        989          CLC
878C:6D 26 89  990          ADC  SPREBT
878F:8D 12 89  991          STA  GET2+1
8792:AD 13 89  992          LDA  GET2+2
8795:69 00     993          ADC  £$00
8797:8D 13 89  994          STA  GET2+2
879A:EE 25 89  995          INC  C1
879D:4C 62 87  996          JMP  NEXTDP1
87A0:60        997 ENDDP1   RTS
87A1:          998 **
87A1:          999 ***********************************
87A1:         1000 ** SWAP DATA AND PICTURE
87A1:         1001 ***********************************
87A1:         1002 **
87A1:         1003 SWAP    EQU  *          SEE ABOVE ROUTINES
```

```
87A1:20 9A 88 1004         JSR  TOPFIND   ;CROSS BETWEEN
87A4:20 E1 88 1005         JSR  RSETPOS   ;THE TWO, SWAP
87A7:A9 00    1006         LDA  £$00      ;THE PICTURE ON
87A9:8D 12 89 1007         STA  GET2+1    ;THE SCREEN
87AC:8D 1A 89 1008         STA  STORE2+1  ;FOR THE DATA ON
87AF:AD 1E 89 1009         LDA  PHAD2     ;PAGE THREE
87B2:8D 13 89 1010         STA  GET2+2    ;WITHOUT CHANGING
87B5:8D 1B 89 1011         STA  STORE2+2  ;EITHER OF THEM.
87B8:A0 00    1012 NEXTS1  LDY  £$00
87BA:AE 21 89 1013         LDX  WINDOWL
87BD:20 0D 89 1014 LOOPS1  JSR  GET
87C0:8D 26 89 1015         STA  SPREBT
87C3:20 11 89 1016         JSR  GET2
87C6:20 15 89 1017         JSR  STORE
87C9:AD 26 89 1018         LDA  SPREBT
87CC:20 19 89 1019         JSR  STORE2
87CF:C8       1020         INY
87D0:EC 22 89 1021         CPX  WINDOWR
87D3:F0 04    1022         BEQ  ENDLOOPS1
87D5:E8       1023         INX
87D6:4C BD 87 1024         JMP  LOOPS1
87D9:AD 25 89 1025 ENDLOOPS1 LDA C1
87DC:CD 24 89 1026         CMP  WINDOWD
87DF:F0 27    1027         BEQ  ENDS1
87E1:20 09 88 1028         JSR  NXTLINED
87E4:EE 25 89 1029         INC  C1
87E7:8C 26 89 1030         STY  SPREBT
87EA:AD 12 89 1031         LDA  GET2+1
87ED:18       1032         CLC
87EE:6D 26 89 1033         ADC  SPREBT
87F1:8D 12 89 1034         STA  GET2+1
87F4:8D 1A 89 1035         STA  STORE2+1
87F7:AD 13 89 1036         LDA  GET2+2
87FA:69 00    1037         ADC  £$00
87FC:8D 13 89 1038         STA  GET2+2
87FF:8D 1B 89 1039         STA  STORE2+2
8802:20 E1 88 1040         JSR  RSETPOS
8805:4C B8 87 1041         JMP  NEXTS1
8808:60       1042 ENDS1   RTS
8809:         1043 **
8809:         1044 ************************************
8809:         1045 ** ADDRESS OF NEXT LINE DOWN
8809:         1046 ************************************
8809:         1047 **
8809:         1048 NXTLINED EQU *         SEE PASSAGE ON
8809:AD 20 89 1049         LDA  WHAD      ;FINDING ADDRESS
880C:18       1050         CLC            ;OF NEXT LINE
880D:69 04    1051         ADC  £$4
880F:8D 20 89 1052         STA  WHAD
8812:AD 1D 89 1053         LDA  PHAD
8815:18       1054         CLC
8816:69 1F    1055         ADC  £$1F
8818:CD 20 89 1056         CMP  WHAD
881B:B0 37    1057         BCS  ENDNXTLINE
881D:AD 20 89 1058         LDA  WHAD
8820:38       1059         SEC
8821:E9 20    1060         SBC  £$20
8823:8D 20 89 1061         STA  WHAD
8826:AD 1F 89 1062         LDA  WLAD
8829:18       1063         CLC
882A:69 80    1064         ADC  £$80
882C:8D 1F 89 1065         STA  WLAD
882F:AD 20 89 1066         LDA  WHAD
8832:69 00    1067         ADC  £$00
8834:8D 20 89 1068         STA  WHAD
8837:AD 1D 89 1069         LDA  PHAD
883A:18       1070         CLC
883B:69 03    1071         ADC  £$3
883D:CD 20 89 1072         CMP  WHAD
8840:B0 12    1073         BCS  ENDNXTLINE
8842:AD 20 89 1074         LDA  WHAD
8845:38       1075         SEC
8846:E9 04    1076         SBC  £$4
8848:8D 20 89 1077         STA  WHAD
884B:AD 1F 89 1078         LDA  WLAD
884E:18       1079         CLC
884F:69 28    1080         ADC  £$28
8851:8D 1F 89 1081         STA  WLAD
8854:60       1082 ENDNXTLINE RTS
8855:         1083 **
8855:         1084 ************************************
8855:         1085 ** ADDRESS OF NEXT LINE UP
8855:         1086 ************************************
8855:         1087 **
8855:         1088 NXTLINEU EQU *         SEE ABOVE ROUTINE
8855:AD 20 89 1089         LDA  WHAD
8858:38       1090         SEC
8859:E9 04    1091         SBC  £$4
885B:8D 20 89 1092         STA  WHAD
885E:CD 1D 89 1093         CMP  PHAD
8861:B0 36    1094         BCS  ENDNXTLNEU
8863:18       1095         CLC
8864:69 20    1096         ADC  £$20
8866:8D 20 89 1097         STA  WHAD
8869:AD 1F 89 1098         LDA  WLAD
886C:38       1099         SEC
886D:E9 80    1100         SBC  £$80
886F:8D 1F 89 1101         STA  WLAD
8872:AD 20 89 1102         LDA  WHAD
8875:E9 00    1103         SBC  £$00
8877:8D 20 89 1104         STA  WHAD
887A:AD 1D 89 1105         LDA  PHAD
887D:18       1106         CLC
887E:69 1C    1107         ADC  £$1C
8880:CD 20 89 1108         CMP  WHAD
8883:90 14    1109         BCC  ENDNXTLNEU
8885:F0 12    1110         BEQ  ENDNXTLNEU
8887:AD 20 89 1111         LDA  WHAD
888A:18       1112         CLC
888B:69 04    1113         ADC  £$4
888D:8D 20 89 1114         STA  WHAD
8890:AD 1F 89 1115         LDA  WLAD
8893:38       1116         SEC
8894:E9 28    1117         SBC  £$28
8896:8D 1F 89 1118         STA  WLAD
8899:60       1119 ENDNXTLNEU RTS
889A:         1120 **
889A:         1121 ************************************
889A:         1122 ** ADDRESS OF TOP OF WINDOW
889A:         1123 ************************************
889A:         1124 **
889A:         1125 TOPFIND EQU *          KEEP FINDING NEXT
889A:A9 00    1126         LDA  £$00      ;LINE DOWN FROM
889C:8D 1F 89 1127         STA  WLAD      ;THE TOP OF THE
889F:AD 1D 89 1128         LDA  PHAD      ;SCREEN UNTIL
88A2:8D 20 89 1129         STA  WHAD      ;THE TOP OF THE
88A5:A9 00    1130         LDA  £$00      ;WINDOW IS FOUND
88A7:8D 25 89 1131         STA  C1
88AA:AD 25 89 1132 LOOP1   LDA  C1
88AD:CD 23 89 1133         CMP  WINDOWU
88B0:F0 09    1134         BEQ  ENDLOOP1
88B2:EE 25 89 1135         INC  C1
88B5:20 09 88 1136         JSR  NXTLINED
88B8:4C AA 88 1137         JMP  LOOP1
88BB:60       1138 ENDLOOP1 RTS
88BC:         1139 **
88BC:         1140 ************************************
88BC:         1141 ** ADDRESS OF BOTTOM OF WINDOW
```

```
88BC:          1142 ***********************************
88BC:          1143 **
88BC:          1144 BTMFIND EQU  *          SEE ABOVE ROUTINE
88BC:A9 D0     1145         LDA  £$D0
88BE:8D 1F 89 1146         STA  WLAD
88C1:AD 1D 89 1147         LDA  PHAD
88C4:18        1148         CLC
88C5:69 1F     1149         ADC  £$1F
88C7:8D 20 89 1150         STA  WHAD
88CA:A9 BF     1151         LDA  £191
88CC:8D 25 89 1152         STA  C1
88CF:AD 25 89 1153 LOOP02  LDA  C1
88D2:CD 24 89 1154         CMP  WINDOWD
88D5:F0 09     1155         BEQ  ENDLOOP02
88D7:CE 25 89 1156         DEC  C1
88DA:20 55 88 1157         JSR  NXTLINEU
88DD:4C CF 88 1158         JMP  LOOP02
88E0:60        1159 ENDLOOP02 RTS
88E1:          1160 **
88E1:          1161 ***********************************
88E1:          1162 ** RESET ADDRESSES
88E1:          1163 ***********************************
88E1:          1164 **
88E1:          1165 RSETPOS EQU  *          GET THE ADDRESS FROM
88E1:AD 1F 89 1166         LDA  WLAD        ;BYTE FOR WORKING
88E4:8D 0E 89 1167         STA  GET+1       ;USED BY NEXT LINE
88E7:8D 16 89 1168         STA  STORE+1     ;UP AND DOWN
88EA:AD 20 89 1169         LDA  WHAD        ;ROUTINES
88ED:8D 0F 89 1170         STA  GET+2       ;AND PUT THEM IN
88F0:8D 17 89 1171         STA  STORE+2     ;THE STORE AND GET
88F3:60        1172         RTS              ;ROUTINES
88F4:          1173 **
88F4:          1174 ***********************************
88F4:          1175 ** RESET WINDOW
88F4:          1176 ***********************************
88F4:          1177 **
88F4:AD 29 89 1178 RSET    LDA  TP          ;STORE THE
88F7:8D 23 89 1179         STA  WINDOWU     ;WORKING WINDOW
88FA:AD 2A 89 1180         LDA  BP          ;POINTERS IN THE
88FD:8D 24 89 1181         STA  WINDOWD     ;WINDOW SIZE BYTES
8900:AD 2C 89 1182         LDA  RP
8903:8D 22 89 1183         STA  WINDOWR
8906:AD 2B 89 1184         LDA  LP
8909:8D 21 89 1185         STA  WINDOWL
890C:60        1186         RTS
890D:          1187 **
890D:          1188 ***********************************
890D:          1189 ** LOADING AND STORING
890D:          1190 ***********************************
890D:          1191 **
890D:BD 00 20 1192 GET     LDA  $2000,X
8910:60        1193         RTS
8911:B9 00 20 1194 GET2    LDA  $2000,Y
8914:60        1195         RTS
8915:9D 00 20 1196 STORE   STA  $2000,X
8918:60        1197         RTS
8919:99 00 20 1198 STORE2  STA  $2000,Y
891C:60        1199         RTS
891D:          1200 **
891D:          1201 ***********************************
891D:          1202 ** VARIABLES
891D:          1203 ***********************************
891D:          1204 **
891D:20        1205 PHAD    DFB  $20        ;PAGE HI-ADDR
891E:60        1206 PHAD2   DFB  $60        ;SPARE PAGE HI-ADDR
891F:00        1207 WLAD    DFB  $00        ;WORKING LO-ADDR
8920:20        1208 WHAD    DFB  $20        ;WORKING HI-ADDR
8921:00        1209 WINDOWL DFB  $00        ;WINDOW LEFT
8922:27        1210 WINDOWR DFB  $27        ;WINDOW RIGHT
8923:00        1211 WINDOWU DFB  $00        ;WINDOW UP
8924:BF        1212 WINDOWD DFB  $BF        ;WINDOW DOWN
8925:00        1213 C1      DFB  $00        ;GENERAL USAGE COUNTER
8926:00 00 00 1214 SPREBT   DFB  $00,$00,$00 ;SPARE BYTES
8929:00        1215 TP      DFB  $00        ;WORKING WINDOW
892A:BF        1216 BP      DFB  $BF        ;POSITIONS
892B:00        1217 LP      DFB  $00
892C:27        1218 RP      DFB  $27
892D:0F        1219 CX      DFB  $0F        ;LO-RES CURSOR X-POS
892E:0A        1220 CY      DFB  $0A        ;LO-RES CURSOR Y-POS
892F:00        1221 X       DFB  $00        ;GENERAL X-COORD
8930:00        1222 Y       DFB  $00        ;GENERAL Y-COORD
8931:00        1223 C2      DFB  $00        ;GENERAL COUNTER 2
8932:0F        1224 COL1    DFB  $F         ;LO-RES WHITE
8933:00        1225 COL2    DFB  $00        ;LO-RES BLACK
8934:00 00 00 1226 DATA    DFB  0,0,0,0,0,0,0,1,1,1,1,1,1,1,2,2,2,2,
                                2,2,2,3,3,3,3,3,3,3,4,4,4,4,4,4,4
8937:00 00 00
893A:00 01 01
893D:01 01 01
8940:01 01 02
8943:02 02 02
8946:02 02 02
8949:03 03 03
894C:03 03 03
894F:03 04 04
8952:04 04 04
8955:04 04
8957:01 02 04 1227 DATA2   DFB  1,2,4,8,16,32,64,1,2,4,8,16,32,64,1,2,4,8,
                                16,32,64,1,2,4,8,16,32,64,1,2,4,8,16,32,64
895A:08 10 20
895D:40 01 02
8960:04 08 10
8963:20 40 01
8966:02 04 08
8969:10 20 40
896C:01 02 04
896F:08 10 20
8972:40 01 02
8975:04 08 10
8978:20 40
897A:          1228 **
897A:          1229 ***********************************
897A:          1230 ** EQUATES
897A:          1231 ***********************************
897A:          1232 **
F800:          1233 PLOT    EQU  $F800      ;MONITOR LO-RES PLOT
F864:          1234 SETCOL  EQU  $F864      ;MONITOR LO-RES COLOR
F871:          1235 SCRN    EQU  $F871      ;MONITOR LO-RES SCRN
F832:          1236 CLRTOP  EQU  $F832      ;MONITOR LO-RES CLRSCREEN

*** SUCCESSFUL ASSEMBLY: NO ERRORS
```

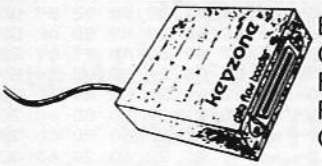
```
85E8- AE 21 89 20 E1 88 20 0D    8680- EC 22 89 F0 04 E8 4C 42
85F0- 89 29 01 4A 6A 6A 8D 26    8688- 86 60 AE 21 89 20 BC 88
85F8- 89 AE 22 89 20 0D 89 29    8690- 20 E1 88 20 0D 89 8D 26
8600- 01 4A 6A 6A 8D 27 89 20    8698- 89 AD 25 89 CD 23 89 F0
8608- 0D 89 29 80 8D 28 89 20    86A0- 24 20 55 88 20 E1 88 20
8610- 0D 89 4A 29 3F 0D 26 89    86A8- 0D 89 8D 27 89 20 09 88
8618- 0D 28 89 20 15 89 AD 27    86B0- 20 E1 88 AD 27 89 20 15
8620- 89 8D 26 89 EC 21 89 F0    86B8- 89 20 55 88 20 E1 88 CE
8628- 04 CA 4C FC 85 AD 25 89    86C0- 25 89 4C 99 86 AD 26 89
8630- CD 24 89 F0 09 EE 25 89    86C8- 20 15 89 EC 22 89 F0 04
8638- 20 09 88 4C E8 85 60 AE    86D0- E8 4C 8D 86 60 20 9A 88
8640- 21 89 20 9A 88 20 E1 88    86D8- AE 21 89 20 E1 88 20 0D
8648- 20 0D 89 8D 26 89 AD 25    86E0- 89 49 FF 20 15 89 EC 22
8650- 89 CD 24 89 F0 24 20 09    86E8- 89 F0 04 E8 4C DE 86 AD
8658- 88 20 E1 88 20 0D 89 8D    86F0- 25 89 CD 24 89 F0 09 EE
8660- 27 89 20 55 88 20 E1 88    86F8- 25 89 20 09 88 4C D8 86
8668- AD 27 89 20 15 89 20 09    8700- 60 20 9A 88 20 E1 88 A9
8670- 88 20 E1 88 EE 25 89 4C    8708- 00 8D 1A 89 AD 1E 89 8D
8678- 4E 86 AD 26 89 20 15 89    8710- 1B 89 A0 00 AE 21 89 20
```

NEW

FROM KEYZONE

keyzone

DATA FLOW BOOSTER



ELIMINATE THE FRUSTRATION OF SHORT PRINTER CABLES FOREVER. POSITION YOUR PRINTER ANYWHERE IN THE OFFICE WITHOUT PROBLEM.

Data deterioration and noise pick increase considerably with long printer cables.
A poor data signal will result in wrong code reaching the printer and hence corrupted printouts.
Airborne noises such as emitted by electrical items and lighting switched on or off can be induced on the printer line and again corrupt printouts.
A boosted signal will resist noise pickup and pass clean data edges and levels to the printer.
UP TO 30 METRES CAN BE ADDED TO YOUR EXISTING PARALLEL PRINTER CABLE.
The ***PARALLEL*** Data Flow Booster is ***ideal for long reliable printer cables.***
The ***SERIAL*** Data Flow Booster is ***ideal for long printer or communication cables eliminating the need for two modems and telephone lines.***
CENTRONICS £40 SERIAL RS232-V24 £50 +£2 P&P+VAT

KEYZONE LIMITED
U14 Acton Business Centre, School Road,
London NW10 6TD
Telephone: 01-965 1684/1804
Telex: 8813271 - GECOMS G

Access VISA

KEYZONE £ £ £ £ £ £ £ SAVER

keyzone

DIRECT FROM UK MANUFACTURER

TEXT CARD FOR APPLE *IIe*
Most versatile 80 column card – plug in auxiliary slot – gives a wider display screen. **£25**

64K EXTENDED 80 COLUMN CARD FOR APPLE *IIe*
Expand Apple *IIe* to 128 K Ram. Double the resolutions of graphics.
Software select 40/80 column.
Fully Applesoft CP/M, Pascal compatible.
Replacement for Apple extended 80 column card.
£40

80 COLUMN DISPLAY CARD FOR APPLE II+
Wider choice of character than normal – normal and inverse as standard – line graphics built in – ideal for form drawings or graphics – compatible with CP/M, Pascal/Basic etc. **£55**

PARALLEL PRINTER CARD
Printer card with text & graphic dump firmware featuring inverse, double-size & rotated image and High-Res Page 1 & 2. Printer cable included. **£35**

SERIAL RS232 PRINTER CARD
Low cost, easy to use send only printer card. Baud rates from 75 to 9600 printed on card. Supplied with an extension strap with 25 D socket for the printer cable. **£40**

FULL 12 MONTH GUARANTEE P&P £1+VAT

KEYZONE LIMITED
U14 Acton Business Centre, School Road,
London NW10 6TD
Telephone: 01-965 1684/1804
Telex: 8813271 - GECOMS G

Access VISA

PERIPHERAL CARDS

VISION

Colour Modulator + sound for IIe	£25
PAL for use with colour TV for II	£42
Resolution (80 col IIe)	£28
Resolution 64 (80 col + 64K RAM)	£55
80 col for II	£39
40/80 Slot Switch for 80 column II	£12
AUTO Soft Switch for 80 column II	£12
NEW AUTO SCREEN 80 for II	£44
DMS C12 RGB for II or IIe	£45

PRINTER CARDS

Paragraph cards are CP/M, Pascal, DOS and ProDos compatible with full graphic dump facilities.

PARA-GRAPH	£44
PARA-GRAPH + 16K	£70
PARA-GRAPH + 64K	£90
Serial/communication	£48
PACT Serial Printer	£22
RS232 Serial Cable (2m)	£14

MEMORY EXPANSION

16K RAM CARD For II	£33
128K RAM CARD For II	£95
80 COLUMN+64K For IIe	£55
*MULTIRAM IIe 256K	£179
*MULTIRAM IIe 512K	£219
*MULTIRAM IIe 718K	£259
*MULTIRAM IIc 256K	£229
*MULTIRAM IIc 512K	£269
*MULTIRAM RGB 256K	£219
*MULTIRAM RGB 512K	£259
*MULTIRAM RGB 1MB	£299

*This offer closes 30th August 1986

INTERFACING & CONTROL

IEEE-488	£79
Clock Card (battery back-up)	£59
Z80 Circuit Emulator	£199
A to D (16 Channel 8 bit)	£69
A to D/D to A (8 bit)	£85
I/O Card (4 ports + 2 timers)	£59
IC Tester	£99
PAL Programmer Card	£299
Logic Analyser Card	£299

Others

Z80 CP/M (II or IIe)	£35
Disc Controller	£28
EPROM writer up to 2764's	£47
EPROM writer up to 27128's	£75
EPROM writer up to 27256's	£99

PRINTERS

EPSON	
LX80	£199
FX85	£359
FX 105	£479
DX 100	£299
KAGA	
KP810 (80 Column NLQ)	£249
KP910 (132 Column NLQ)	£399

SOFTWARE

Format 80 (Enhanced)	£99
Flashcalc	£69
dBASE II	£299
Ormbeta Datafile Software	POA
Systematics (Per Package)	£219
Decathlon	£9
Super Expander	£19
Super Expander 80	£29
Super Expander 80.2	£39
Screen Director for Apple III	£75
PKASO III for Apple III	£19

ACCESSORIES

Graphic Mouse + Software	£59
Numeric Keypad for IIe	£24
Power Supply	£69
AC Cooling Fan	£24
Joystick (for II or IIe)	£30
Disk Doubler	£4.95
Diskettes – Wabash SS/SD(10)	£13
Diskettes – Datalife SS/DD(10)	£19

DISC DRIVES

Apple II compatible drive (Japanese TEAC mechanism)	£99
Apple IIc compatible disc drive	£109

MONITORS

KAGA	
12" Hi-Res (green or amber)	£109
14" Colour from	£209

DATA SWITCHES

PARALLEL, all 36 lines switched. Two way communication

1 to 2	£49
1 to 3	£59
1 to 4	£69
Cross Over	£69
Printer Buffer 64K	£149

SERIAL, two way communication

1 to 2	£39
1 to 3	£49
1 to 4	£59
Cross Over	£59

IEEE, coaxial and other types available on request.

DEALER HOT LINE
(021) 356 3828

Rosco Ltd

289 Birchfield Road,
Birmingham B20 3DD.
Tel: (021) 356 7402.
Telex: 334303 TXAGWMG

VISA

'Apple' is the Trade Mark of Apple computer Inc.

```
8718- 0D 89 20 19 89 C8 EC 22
8720- 89 F0 04 E8 4C 17 87 AD
8728- 25 89 CD 24 89 F0 21 20
8730- 09 88 EE 25 89 8C 26 89
8738- AD 1A 89 18 6D 26 89 8D
8740- 1A 89 AD 1B 89 69 00 8D
8748- 1B 89 20 E1 88 4C 12 87
8750- 60 20 9A 88 20 E1 88 A9
8758- 00 8D 12 89 AD 1E 89 8D
8760- 13 89 A0 00 AE 21 89 20
8768- 11 89 20 15 89 C8 EC 22
8770- 89 F0 04 E8 4C 67 87 AD
8778- 25 89 CD 24 89 F0 21 20
8780- 09 88 20 E1 88 8C 26 89
8788- AD 12 89 18 6D 26 89 8D
8790- 12 89 AD 13 89 69 00 8D
8798- 13 89 EE 25 89 4C 62 87
87A0- 60 20 9A 88 20 E1 88 A9
87A8- 00 8D 12 89 8D 1A 89 AD
87B0- 1E 89 8D 13 89 8D 1B 89
87B8- A0 00 AE 21 89 20 0D 89
87C0- 8D 26 89 20 11 89 20 15
87C8- 89 AD 26 89 20 19 89 C8
87D0- EC 22 89 F0 04 E8 4C BD
87D8- 87 AD 25 89 CD 24 89 F0
87E0- 27 20 09 88 EE 25 89 8C
```

```
87E8- 26 89 AD 12 89 18 6D 26
87F0- 89 8D 12 89 8D 1A 89 AD
87F8- 13 89 69 00 8D 13 89 8D
8800- 1B 89 20 E1 88 4C B8 87
8808- 60 AD 20 89 18 69 04 8D
8810- 20 89 AD 1D 89 18 69 1F
8818- CD 20 89 B0 37 AD 20 89
8820- 38 E9 20 8D 20 89 AD 1F
8828- 89 18 69 80 8D 1F 89 AD
8830- 20 89 69 00 8D 20 89 AD
8838- 1D 89 18 69 03 CD 20 89
8840- B0 12 AD 20 89 38 E9 04
8848- 8D 20 89 AD 1F 89 18 69
8850- 28 8D 1F 89 60 AD 20 89
8858- 38 E9 04 8D 20 89 CD 1D
8860- 89 B0 36 18 69 20 8D 20
8868- 89 AD 1F 89 38 E9 80 8D
8870- 1F 89 AD 20 89 E9 00 8D
8878- 20 89 AD 1D 89 18 69 1C
8880- CD 20 89 90 14 F0 12 AD
8888- 20 89 18 69 04 8D 20 89
8890- AD 1F 89 38 E9 28 8D 1F
8898- 89 60 A9 00 8D 1F 89 AD
88A0- 1D 89 8D 20 89 A9 00 8D
88A8- 25 89 AD 25 89 CD 23 89
88B0- F0 09 EE 25 89 20 09 88
```

```
88B8- 4C AA 88 60 A9 D0 8D 1F
88C0- 89 AD 1D 89 18 69 1F 8D
88C8- 20 89 A9 BF 8D 25 89 AD
88D0- 25 89 CD 24 89 F0 09 CE
88D8- 25 89 20 55 88 4C CF 88
88E0- 60 AD 1F 89 8D 0E 89 8D
88E8- 16 89 AD 20 89 8D 0F 89
88F0- 8D 17 89 60 AD 29 89 8D
88F8- 23 89 AD 2A 89 8D 24 89
8900- AD 2C 89 8D 22 89 AD 2B
8908- 89 8D 21 89 60 8D 00 20
8910- 60 B9 00 20 60 9D 00 20
8918- 60 99 00 20 60 20 60 00
8920- 20 00 27 00 BF 00 00 00
8928- 00 00 BF 00 27 0F 0A 00
8930- 00 00 0F 00 00 00 00 00
8938- 00 00 00 01 01 01 01 01
8940- 01 01 02 02 02 02 02 02
8948- 02 03 03 03 03 03 03 03
8950- 04 04 04 04 04 04 04 01
8958- 02 04 08 10 20 40 01 02
8960- 04 08 10 20 40 01 02 04
8968- 08 10 20 40 01 02 04 08
8970- 10 20 40 01 02 04 08 10
8978- 20 40
```

Basic loading program

```
10  IF  PEEK (104) <  > 8
    THEN  POKE 2048,0: POKE
    103,1: POKE 104,8: PRINT
    : PRINT  CHR$ (4)"RUN
    HELLO"
20  HIMEM: 8188:D$ =  CHR$
    (13) +  CHR$ (4)
30 LOC = 768: FOR I = LOC TO
    LOC + 4: READ A: POKE
    I,A: NEXT
40  ONERR  GOTO 590
50  PRINT D$"BLOAD BANNER"
60  POKE  - 16300,0: GR :
    POKE  - 16297,0: POKE  -
    16302,0
70  PRINT D$"BLOAD
    PIC.FX,A$8000"
80  GOSUB 310
90  TEXT : HOME : POKE 32,12
100  HTAB 10: PRINT "HIRES
    PICTURE EDITOR": PRINT
    "BY PAUL SINNETT"
110  VTAB 5: PRINT "L)OAD
    PICTURE": PRINT
120  PRINT "S)AVE PICTURE":
    PRINT
130  PRINT "E)DIT PICTURE":
    PRINT
140  PRINT "W)RITE OBJECT":
    PRINT
150  PRINT "R)EAD OBJECT":
    PRINT
160  PRINT "C)ATALOG DISK":
    PRINT
170  PRINT "Q)UIT PROGRAM":
    PRINT
180  POKE 32,0: VTAB 21:
    HTAB 11
190  PRINT "PLEASE PRESS A
    KEY": GOSUB 310
200  IF A = 76 THEN  GOSUB
    470: GOTO 90
210  IF A = 67 THEN  GOSUB
    500: GOTO 90
220  IF A = 83 THEN  GOSUB
    560: GOTO 90
230  IF A = 69 THEN  CALL
    32768: GOTO 90
240  IF A = 87 THEN  GOSUB
    640: GOTO 90
250  IF A = 82 THEN  GOSUB
    720: GOTO 90
260  IF A <  > 81 THEN  GOTO
    90
270  HOME : VTAB 12: HTAB
    11: PRINT "ARE YOU SURE?
    Y/N"
280  GOSUB 310
290  IF A <  > 89 THEN  GOTO
    90
300  HOME : PRINT D$"FP"
310  GET A$:A =  ASC (A$)
320  IF A > 90 THEN A = A -
    32
330  RETURN
340  CALL  - 657:B$ = "":
    FOR X = 512 TO 767: IF
    PEEK (X) <  > 141 THEN B$
    = B$ +  CHR$ ( PEEK (X) -
    128): NEXT
350 X = 768: NEXT : RETURN
360  GOSUB 390
370  VTAB 12: PRINT "PLEASE
    ENTER FILE NAME:": PRINT
380  GOSUB 340: RETURN
390  HOME : VTAB 5: PRINT
    "CURRENT SLOT: "; CHR$ (
    PEEK (46583) / 16 + 48)
400  PRINT "  AND DRIVE: ";
    CHR$ ( PEEK (46584) + 48)
410  RETURN
420  HOME : VTAB 12: PRINT
    "HIRES PAGE 1 OR PAGE 2":
    GOSUB 310
430 PG =  VAL (A$): IF PG <
    1 OR PG > 2 THEN  GOTO
    420
440  IF PG = 1 THEN PG$ =
    ",A$2000"
450  IF PG = 2 THEN PG$ =
    ",A$4000"
460  RETURN
470  GOSUB 420: GOSUB 360:
    ONERR  GOTO 590
480  PRINT D$"BLOAD"B$;PG$
490  RETURN
500  GOSUB 390: VTAB 12:
    HTAB 1: PRINT "WHICH
    DRIVE"
510  GOSUB 310: ONERR  GOTO
    590
520  IF A = 49 THEN  PRINT
    D$"CATALOG,D1": GOTO 550
530  IF A <  > 50 THEN  GOTO
    510
540  PRINT D$"CATALOG,D2"
550  GOSUB 310: RETURN
560  GOSUB 420: GOSUB 360:
    ONERR  GOTO 590
570  PRINT
    D$"BSAVE"B$;PG$;",L$1FFF"
580  RETURN
590  POKE 216,0: HOME : VTAB
    5
600  CALL LOC: PRINT
610  VTAB 23: PRINT "PRESS
    SPACE BAR TO CONTINUE"
620  GOSUB 310: IF A <  > 32
    THEN  GOTO 620
630  GOTO 90
640  GOSUB 360:RP =  PEEK
    (35116):LP =  PEEK
    (35115):BP =  PEEK
    (35114):TP =  PEEK
    (35113)
650 L = (RP - LP + 1) * (BP
    - TP + 1)
660  FOR I = 0 TO 3: POKE
    (8188 + I), PEEK (24572 +
    I): NEXT
670  FOR I = 0 TO 3: POKE
    (24572 + I), PEEK (35113
    + I): NEXT
680  ONERR  GOTO 590
690  PRINT
    D$"BSAVE";B$;",A$5FFC,L";L
700  FOR I = 0 TO 3: POKE
    (24572 + I), PEEK (8188 +
    I): NEXT
710  RETURN
720  GOSUB 360: ONERR  GOTO
    590
730  FOR I = 0 TO 3: POKE
    (8188 + I), PEEK (24572 +
    I): NEXT
740  PRINT
    D$"BLOAD";B$;",A$5FFC"
750  FOR I = 0 TO 3: POKE
    (35113 + I), PEEK (24572
    + I): NEXT
760  FOR I = 0 TO 3: POKE
    (24572 + I), PEEK (8188 +
    I): NEXT
770  RETURN
780  DATA166,222,76,2,167
```

apple classifieds

RAM cards | Hard discs | Disc drives | Modems | Floppy discs | A/D converters | Games | Interface cards

APPLE II+ main boards not working but believed repairable from £45. ditto floppy drives from £25. ditto various cards from £10. All sold "as is". Tel: 0924 499500.

APPLE IIe, near new, 128k, twin Apple drives, monitor, 80 column card, ProDos, Dos 3.3, joystick. Ideal business/home buy. Bargain £700 o.n.o. Tel: Anderson 01-486 9121, 01-889 4230.

APPLE II+, twin disc drives, monitor, serial printer card, 80 column card £380. Microsoft Z80 card + CP/M £100. 16k language card £40.00. Tel: 0203 687093 after 6pm.

EXCHANGE your Apple software from £2.00 per exchange (originals only!) please send a stamped S.A.E. for details together with a list of software you want to exchange to: P. Hughes, Clayton Holt End, Underhill Lane, Clayton, Hassocks, West Sussex BN6 9PL.

APPLE II+ 64k, Saturn 32k RAM board, Videx 80 column card, Tymac printer card, twin Apple drives, Kaga green monitor, joystick 50 discs plus misc. £500. Tel: Broughton 865862 evenings.

GAMES! all original, as new. Ultima VI £25, Ultima II £15, Bard's Tale £25, Archon II £13, Hitchhikers Guide £10, Zork II £10, Sargon II £5. Tel: Brian 0734 669464.

IMAGEWRITER I mint condition, 9 months old £200. Macintosh S/S disc drive £150. Tel: Bicester 0869 244579.

APPLE IIe software for sale, surplus to requirement, originals only. Wishbringer £20, Bag of Tricks £15, Skyfox £8, Structured Basic £20, Printshop £15. Many others. Tel: 0722 24176.

APPLE IIe 128 compatible system including disc drive, Appleworks, CP/M, 80 column, serial £300. Tel: 0865 723989.

WANTED Apple Mouse IIe. Tel: Lee with details 0734 693262.

APPLE IIe twin disc drives, monitor, 80 column card, joystick, printer card, Pascal, manuals, other software £550. Tel: 06073 5828.

APPLE peripheral cards: Z80 runs CP/M £30. Disc controller, 16k language, Speech (SAM) £30 each. Grappler parallel printer £35, RS232 serial £35, Communications £35. (All with cables). Wildcard, Copycard £35 ALF Music card £45, IC test card, software and manual £75. 80 column (II+) with Softswitch £45, Rana Elite III 640k drives £105. Post included Tel: 01-736 7809.

MICROSOFT Premium Softcard IIe, Z80, CP/M-80, MBasic, 80 column, 64k European version. £135. Tel: 0493 662563.

SOUNDCHASER music system complete with 4 octave keyboard £100. Tel: 0636 73690.

IIc plus Scribe, mouse, monitor, stand. All manuals plus software (various) £900 o.n.o. U.G.C Slough Tel: 651330 evenings.

COMPUTER Checkup Diagnostic Program from PFS/Power up list wanted. Tel: 0533 886437.

APPLE III 128k plus monitor £250. Apple III Microsoft CP/M card complete £200 or will exchange for Profile and Apple DMP. John Figes, Kellaways House, East, Tytherton, Wilts SN15 4LX. Tel: 0249 74312.

TWIN 8in drives DS/DD for Apple II+ with Icon Research controller 1.2mb each. Manuals, CP/M, Pascal etc. £300. Tel: 0533 811109 evenings.

APPLEWORKS £75, Flight Simulator II £15, Skyfox £7, Wizardry III £10, all originals. Paul Tombling, Supply Squadron, RAF Brize Norton, Oxford OX8 3LX.

APPLE II+, monitor, disc drive, software £240. Tel: Mick 01-806 2427 9am-10am or late evening.

APPLE IIe 1 megabyte complete system. Flipper card, Superserial, 2 drives, monitor, Qume daisywheel 55cps plus tractorfeed, Nightingale modem, Mastercard, TV modulator, extensive business communications, games software, manuals, joystick, covers discs etc. Tel: Nigel 01-586 7285. £1,750 the lot.

APPLE III 256k plus monitor, two external disc drives, Applewriter III. Tel: 0679 62439 evenings.

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 Apple User.
- Your accompanying cheque should be made payable to Apple User.
- 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.

					10 words £2.00
					15 words £3.00
					20 words £4.00
					25 words £5.00
					30 words £6.00

Cheque enclosed for £_____

Name_____ Address _____

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

PROFESSIONAL W/P FOR THE HOME USER

By HERBIE BRENNAN

THE original Fulltext, released in New Zealand in 1983, was designed as a word processor which could be used on a totally unmodified 48k Apple II+ yet still deliver better than 40 columns screen display and a full upper and lower case character set.

Early the following year a memory resident 64k version was released and only a few months later this was followed by a full 80 column version for users with 80 column cards.

By this time the Fulltext success story was beginning to roll, with the product making inroads into the UK and mainland Europe. It was also continuing to develop, culminating in the 55/80 column version 4.3 currently under review.

A ProDOS version is on the drawing board with even more features promised, but this has not been released at time of writing.

The evolution of Fulltext shows plainly in the 55/80 version and the results, quite simply, are superb. The package, a boxed double sided disc and a well written manual, now delivers not only a word processor – which can under certain configurations print mixed text and graphics – but also a mailer, a spelling checker, a sort program and, of all things, an assembler.

It also delivers exceptional ease of use which, combined with its power, must make it a very attractive proposition in an office environment where operator training can be a lengthy and costly business.

Review testing was carried out on a 64k II+ system with Sup'R Terminal 80 column card and Apple Super Serial card as interface to the Epson printer.

On first impression it appeared that Fulltext enjoyed a novel form of copy protection in that page 15, which tells you how to duplicate the disc, was missing from my manual. Apple's CopyA program would not do the trick, but a little investigation of the Fulltext master quickly unearthed a copy program that would.

With my original stored safely away and the duplicate in drive 1, I switched on to one of the most trouble-free word processing experiences of a lengthy writing career. The disc booted first time, recognised my system without prior configuration and informed me on the 40 column screen that the 80 column version was being loaded. When the drive stopped, I switched cables and there it was.

The master menu screen announced the current drive number, asked me for a filename and presented single keystroke options of F:iler, L:oad, S:ave, N:ew, E:dit, P:rint, V:iew, A:ux and Q:uit.

Even without the manual it was not difficult to figure out what most of these meant. L:oad obviously loaded a file from disc to memory, S:ave stored the current text on disc, N:ew presumably cleared memory to allow me to begin a new file, E:dit permitted me to make changes in the text, P:rint printed text and Q:uit sent me gaily back to Basic.

I guessed that F:iler was an option which would permit me more or less direct disc access for cataloguing, locking and so forth. On investigation, it gave me an added bonus – a two keystroke loading of any text file.

V:iew on the main menu remained something of a mystery, as did A:ux. The latter, it transpired, stood for auxiliary programs and gave access to the spelling checker or assembler, depending on which had been previously installed. The purpose of the former only became really evident after I began to use the processor.

Fulltext is a little unusual in that it divorces text entry from editing – separate modes are required for each. During text entry, control characters – required for formatting – and carriage returns appear on screen.

The V:iew command removes these and formats the text screen as it will appear when printed. The benefits are obvious – especially when you are new to the program – and allow you to experiment with a wide range of format options without wasting paper.

The Editor contains all the options you would expect – F:ind, I:nsert, D:elete and so on – and one or two you would not. In the latter category falls the immensely useful U:ndelete for those grim moments when you find you have accidentally savaged your most important paragraph and – another boost for business users – a K:alculator function.

Calculator mode, which is spelled with a K because C is already in use for the C:opy text from disc function, is worth a little more attention since it is one of those immensely useful and very obvious add-ons which seldom seem to find their way into other packages of this nature.

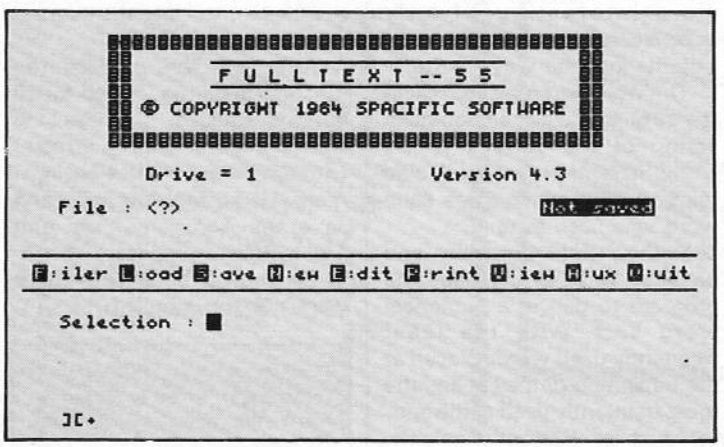
If you have used a word processor, you will be familiar with the problem. In the middle of a lengthy piece of text you find you need to calculate the result of a complex formula. If you have a pocket calculator handy, well and good. But if not you are forced to save your file, abandon your word processing program and go back to Basic to make your calculation. Then you reboot your word processor, reload your file, find your place and add in the result.

Not with Fulltext. Pressing K from Edit mode allows you to make any calculation you could make in Applesoft, including functions like COS, LOG and TAN, and automatically inserts the end result in your text. Very simple. Very neat. And very impressive.

While extremely fast to learn and easy to use, one peculiarity of the editing system did irritate. When entering text, a switch of mode loses any text to the right of the current cursor. In other words, unless your cursor is positioned at the end of your text when you hit Control-C, you will find yourself missing all copy between the cursor and the end of the file.

The authors of Fulltext are aware of the danger and highlight all text at risk by displaying it inverse. Which is, of course, little use when you are using a card which does not support inverse display.

This niggle aside, the word processing functions of Fulltext proved as powerful as any program I have yet used,



Main menu

extremely fast to learn and very easy to use.

The Fulltext spelling checker is based on a 40,000 word dictionary featuring English – as opposed to American – spellings. You have the option of adding to this dictionary – an important feature for anyone engaged in writing scientific or other specialist reports. There is also an option which allows the really ambitious to create a whole new dictionary for themselves.

When you access the spelling checker you may consult the dictionary using wildcard characters to help you pinpoint any word of which you are uncertain, or simply have the system proof read your current document.

Proof reading obviously takes time, but is not unacceptably slow. It begins with a read-out of the word count of your current text and ends by displaying the number of suspect words found.

A suspect word is defined as one not found in the system dictionary, which may or may not mean it is incorrectly spelled. At this stage the program will display each suspect word highlighted in context, print it out, or simply mark it in the text with the symbol ^.

You then have the option of correcting or inserting it into the dictionary. Like almost everything else about Fulltext, a very easy system to use.

Printout of your text involves sight of the current print parameters, with the option to change these to suit your present configuration.

Saving from this screen stores amended parameters on disc in a file which may be loaded automatically on boot-up. In other words, you can configure your favourite system at the outset then accept or reject your own default values as the need arises.

Interestingly, the print parameters include one which specifies the number of printed copies you want. This would seem a fundamental and obvious necessity for any word processor – except that it seems to be missing from a good many others I have used.

The Fulltext mailer is not a separate program, but rather a built-in enhancement of the word processor itself. It has an important limitation in that both document and mailing list must be of such a size that they are capable of being held simultaneously in memory.

In practice this means a list of about 300 addresses, married to a two or three page letter, when using the 55 column version with a little more elbow room promised for the 80 column version. Larger mailings can, of course, be handled by splitting, although it must be fairly obvious that this is not the system for a major professional mailing program.

Which is almost a pity, for the mailer allows personalisation of letters beyond the simple address and even the insertion of different copy elements within them. While inelegant – it uses codes like "/ . !!" – it is remarkably simple to use and effective in operation.

Linked to the mailer – in usefulness if not in function – is the sort utility, which is also available from within the main word processor.

Sorting options are word sort or mail-file sort, both of which require a little free space in memory and insist you save your file before juggling it around.

The advantages of a mail-file sort are fairly obvious. It will leave you with addresses in alphabetical order. But I have to confess I found the word sort far more interesting, if only because it gave me so many insights into the way I write.

The word sort replaces text in memory with an alphabetical listing of the various words within it. Optionally, it will also tell you how many times each word was used in text.

With a little ingenuity and patience you can persuade the program to deliver a numerical word sort, with the least frequently used words placed at the beginning of the list and the most frequently used at the end.

Apart from stylistic insights, the main use of a word sort is in indexing, an occupation as boring as it is difficult and one in which I would welcome any technological help available.

It is probably fair to say that for the vast majority of Fulltext users, the assembler package is something that will never emerge from the depths of the disc to greet the light of day. But it is added value to programmers.

The package is a two-pass assembler designed to cope with both 6502 and 65C02 code. Memory limitations will typically confine you to about 1300 lines of program, generating approximately 2,300 bytes of code.

Fulltext 55/80 is a powerful, easy-to-learn, easy-to-use word processing package for the 64k Apple II+, IIe and IIc, offering substantial added value with an integrated calculator, mail merge, spelling checker and, for specialists, assembler.

A little informal research carried out in preparation for this review showed the package to be equally attractive to a first-time computer user, an occasional writer with some experience of word processing, and a professional with substantial word processing experience.

The manual is well laid out and very clearly written – an achievement in itself.

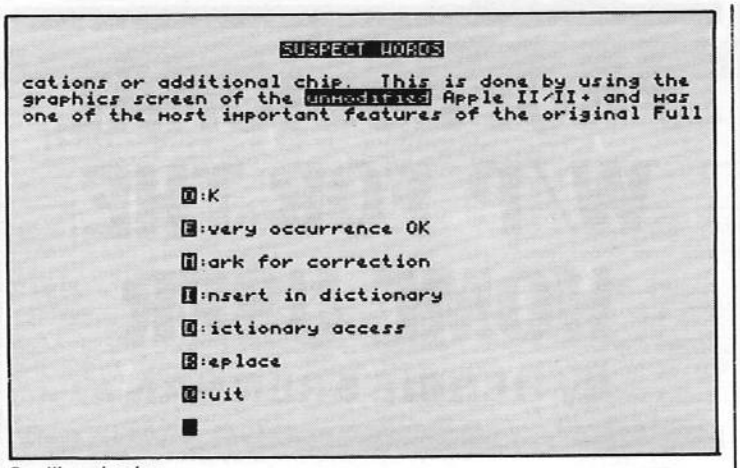
Discovered flaws in the package were minor. One of the worst was the necessity of amending the boot program in order to configure the system.

The program is in Basic, the amendments needed simple and clearly explained, but the authors have obviously forgotten what terror this sort of exercise strikes into the heart of a non-programmer.

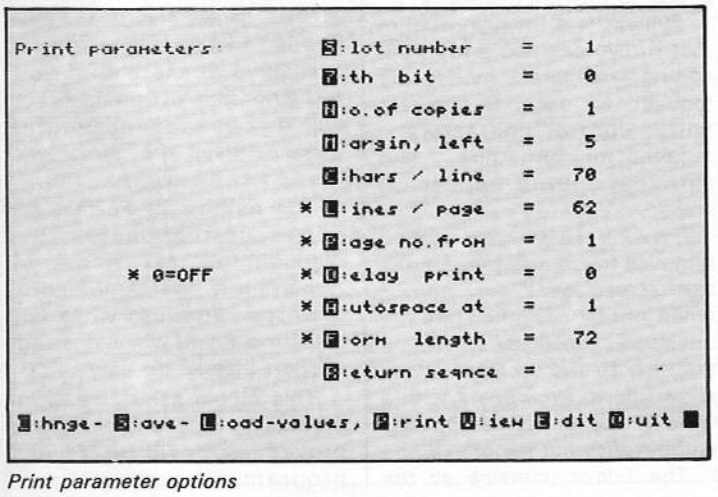
Although the mail merge function is a little limited for all but the smallest business, the word processor itself could cope with anything an office environment is likely to throw at it – and save the company time and money in the process.

For home use, you could want nothing more.

Product: Fulltext 55/80
Description: Word processor
Publisher: Spacific Software, New Zealand



Spelling checker



Print parameter options

Global Village Newsletter

Published by Dark Star Systems Ltd. SUMMER/AUTUMN 1986

Welcome to issue number 2 of our Global Village customer newsletter. Inside, you'll find news of exciting new products from Dark Star Systems and others that are helping to keep the Apple II right at the forefront of the continuing personal computer revolution.

Those of you who haven't yet been introduced to our product range will find answers to all your questions inside these pages as well.

For owners of Dark Star software products, there are also full details of the new features to be found in the latest versions of all our programs, and instructions on how to upgrade. In addition, we have been sent a number of useful Snapshot tips and applications from customers worldwide that we're happy to pass on to everyone. If you are using any of our products to achieve something noteworthy with your Apple, why not drop us a line and give *your* idea to the world?

Again, we have done our best to keep our customer records straight. However, if we didn't get your name and address right this time, you can ensure that we know all about it simply by filling in the Blunder Box on the Business Reply Coupon (postage free in the UK) on the back page. Use the Blunder Box too if you obtained this newsletter with a magazine (or by some other means) but wish to receive it by mail in future.

Send all other correspondence to:

Customer Services Dept.
Dark Star Systems Ltd.
78 Robin Hood Way
Greenford
Middlesex UB6 7QW
England
Electronic Mailboxes:
The Source: BCJ456
Compuserve: 73317,3015
MicroLink: MAG20297

Dark Star Goes Down Under

In the Northern Hemisphere, Australia is generally better known for sun, cricket, and Fosters lager than for electronics innovation. We hope to change all that soon through our link with Cybernetics Research of Melbourne, with whom we have just signed a contract to manufacture and distribute Dark Star products in Australasia and the Far East.

As part of the deal, we hope to bring some innovative new Apple II products from the outback to Europe. Of particular interest is a great co-processor card with the Apple-compatible 8 and 16 bit 65C816 processor on-board, complete with 16 bit versions of Basic and Pascal. This powerful, lightning-fast board has the potential to make your Apple take off!

More details in the next issue of the Global Village Newsletter. Meanwhile, Dark Star product users in Australia and New Zealand should address all enquiries to:

Cybernetics Research Ltd.
576 Malvern Road,
Prahran, Victoria 3181
Australia

Telephone: (03) 529 4844
Telex: 39741 ASIPAC AA

A Word on Price Labelling

One or two of our UK customers have asked why Dark Star Systems (in common with many other UK computer accessory companies) does not include VAT in its stated prices.

Our reason for leaving *you* to work out the VAT is simply this: We don't know about other companies, but a growing proportion of our business (over 45% at the last count) is done overseas. Orders from outside the United Kingdom are not subject to VAT, and we don't want to inconvenience people with complicated calculations. (It's much easier for us in the UK to work out VAT on basic prices than it would be for our overseas customers to work out the tax proportion of prices that included VAT.)

Legal Stuff

CONTENTS

darkStar SYSTEMS

GOOD NEWS FOR APPLE II OWNERS

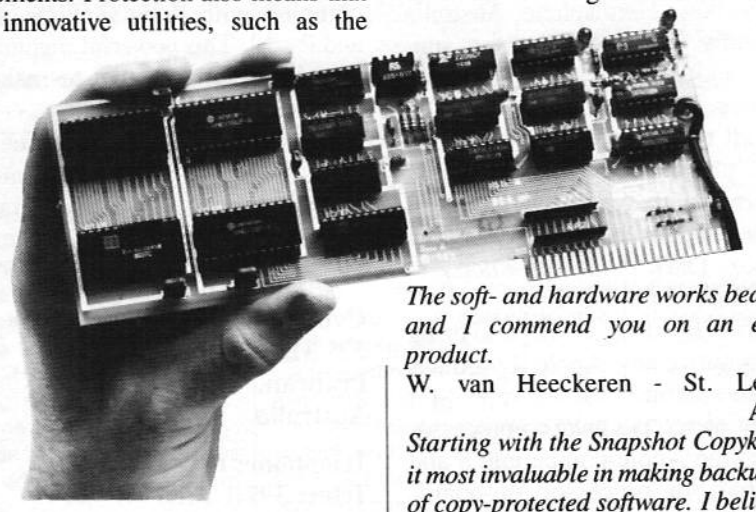
NEW LOW PRICES ON PAGE 15

Why Apple users need the Snapshot system

Many computer users were originally attracted to the Apple II by the sheer number and diversity of the programs written to work with it.

Unfortunately, because so many programs for the Apple are copy-protected and/or use outdated — or customized — disk operating systems, many users cannot even begin to exploit its full potential.

Copy-protected programs restrict your ability to make backups, make screen dumps, and tailor software to your own requirements. Protection also means that many innovative utilities, such as the "program manager" for Cirtech's one Megabyte "Flipper" card, just won't work with most commercial programs.



In order to give Apple users a way to get the most from their hardware and software investment, Dark Star's engineers set out to design a system that could by-pass *any* operating system and *all* copy-protection. The result of their endeavours is the Snapshot card, a device with a remote trigger switch that can be installed in any vacant slot of the Apple II. When Snapshot's trigger is pressed, it causes a hardware interrupt that lets you suspend any running program, manipulate it, and then resume running it from the point of interuption.

The manipulation part is handled by a family of Snapshot software packages (Shuttle, Printerrupt, UniCopy 3.5, etc.) that can be loaded into the card and give you complete control over a variety of the Apple's essential functions. Here are some comments from customers on those Snapshot software packages:

I think that Snapshot is the most useful card I've ever found for my Apple.

Massimo Gentilini - Bologna, Italy

Snapshot has proven to be very good value for money for my business, to the point where I consider that it has really more than paid for itself already.

Full marks, Dark Star.... I shall be singing your praises!

R. Williams - Harpenden, England

Thanks to Snapshot, I can put the originals in the archives, and use the copy to do what has to be done.

I'm glad I decided to invest in the Dark Star Systems card. (Just wish you folks were on this side of the pond!)

P. K. Pagel - Connecticut, USA

The soft- and hardware works beautifully, and I commend you on an excellent product.

W. van Heeckeren - St. Leonards, Australia

Starting with the Snapshot Copykit, I find it most invaluable in making backup copies of copy-protected software. I believe that, having purchased a piece of expensive software, I have the right to make backup copies for my own use. An additional advantage of having a Copykit backup is that one can avoid unnecessary pre-amble and have a version (of a program) that goes straight to the useful part.

The Snapshot Shuttle is very useful for switching from one program to another quickly. When working on the graphics for my lectures, for example, I am able to use two different graphics systems virtually simultaneously in this way, without having to re-boot to go from one to the other.

The Snapshot Printerrupt is, for my purposes, the most useful package of the three. It makes it very easy to interrupt any program, dump the display onto a dot-matrix printer and then resume running the program. I produce lecture notes that way, as well as pictures for research papers, reports, or even transparencies (by using our Xerox copier to transfer the picture from paper to an acetate sheet). It is wonderful to be able to position the picture on the sheet correctly, to crop or invert it if necessary and to select the density of the print, to name a few of the many features available.

In addition to the usefulness of the system itself, I find you and your colleagues at Dark Star most approachable and helpful indeed....

Dr. L. Svarovsky - Deputy Chairman
University of Bradford, England

The Snapshot system reviewed in Australian Apple Review - January 1986

In summary, we have always found this one of the most useful cards on the Apple II and there is no doubt the programs supporting the card get more useful and sophisticated by the year.

We have found that most serious enthusiasts have one and would not be without it.

Even Great Products Need Great Backup

Certainly, a lot of Apple users find the Snapshot system very useful. But as one of our above-quoted customers suggests, the *usefulness* of a system is only part of the story. Buying computer products can sometimes be a risky business. Even the *best*-designed hardware and software manufactured to the highest possible specifications can present the unwary with unforeseen difficulties. We want you to feel confident about ordering products from us. That's why we at Dark Star Systems back everything we sell with an unbeatable service package that includes a 12 months no-quibble guarantee and free-of-charge technical support.

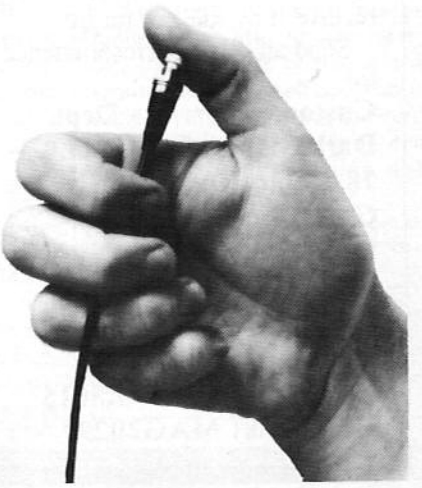
There are no hidden costs with the products we sell; everything you need to get up and running is included. And, in the United Kingdom, there is no charge for postage and packaging. If your configuration is unusual, we'll bend over backwards to support it. (Our engineers will sometimes spend weeks rewriting one of our programs to work with obscure equipment unavailable in the UK.)

We're happy to say that we've received many acknowledgements of our efforts to provide good service. Here are some extracts from our correspondence on the subject:

We were very pleased with the speed and quality of your technical back up. This service is important to us and we will have pleasure in recommending Dark Star whenever possible.

A. D. McNair - Chief MLSO
Department of Laboratory Medicine,
Ruchill Hospital, Glasgow, Scotland

(Continued on page 3, column 1)



(Continued from page 2)

I would like to say how impressed I am with the technical back-up you provide for your products.
M. A. Ray - Bromley, England

I feel the service from Dark Star Systems is excellent.
C. Barden - Eastbourne, England

Many thanks for your most helpful attitude and kind assistance, it's nice to find a dealer who cares about customer support.
Mike Jones - Rayleigh, England

We would like to congratulate you upon your efficient way of doing business, which we will certainly bring to the attention of other organisations in this part of the world.
A. McDermott - Principal
Moreau College, Dunedin, New Zealand

I am so grateful that you have gone to so much trouble to assist me with my Print Shop problem. I envy your obvious thorough knowledge of the subject.
Jim Goody - Southend-on-Sea, England

.... it's a pity other companies I have dealt with in the past didn't give the same excellent service and back up that you and Dark Star Systems have given me and I have no hesitation in recommending your products to other Apple owners.
L. Fava - Northern Territories, Australia

I would like you to know that I was very impressed by your company's efficiency. I am just not used to computer peripherals, programs, etc. that I have ordered arriving almost by return of post!
R. Williams - Harpenden, England

The Snapshot Shell. Now Applesoft programmers can write Snapshot software too!

All the Snapshot software packages Dark Star publishes have a common element which we call the "Shell". This is the Snapshot card's "house keeper"; a sort of memory manager and mini operating system which allows Snapshot software to work with an interrupted program.

Last year, we decided to make The Snapshot Shell available to software developers and other programmers so they could store their own machine-code routines in the Snapshot card and make use of its interrupt-and-resume facilities. Now, if you can program in Applesoft Basic, you too can write Snapshot software.

> *The Shell is complete enough, and powerful enough, to make the techies among us salivate.*
> **Michael Fischer - Apple II Computing, June 1986**

Using the Shell, you can interrupt whatever your computer is doing and take control of it with a Snapshot package written by yourself. It might be a super debugger, a graphics editor, a comms package, or a machine control program; the only restrictions are space (just over 4K available), and your imagination. When you have finished with your Snapshot program, you can return control of your computer to the interrupted software without it ever knowing it was disturbed.

The Shell comes with menu-building routines which give you the ability to create software packages just like ours. If you wish to commercially exploit your Snapshot software, you may do so without any licence from — or payment to — Dark Star Systems Ltd. Snapshot cards can be purchased for marketing with your work by arrangement.

The Snapshot Shell.....£20.00

Now's the time for Snapshot and Snapshot Two owners to upgrade to the version //e Snapshot system.

If you are the owner of one of the original Snapshot or Snapshot Two cards designed for use with the Apple II+, you can still take advantage of our hardware upgrade offer. The version //e system is compatible with the Apple II+ and //e, and upgrading means you can join the thousands of Apple users worldwide who benefit from the latest Snapshot multitasking, printing, backup and custom-software enhancements — at a *considerable* saving.

Simply send us your original Snapshot disk and payment of £100.00 (plus VAT, or airmail postage and packaging as appropriate) and we will immediately despatch your Snapshot version //e card complete with Copykit, Shuttle, Printerrupt and Shell software packages.

Snapshot One/Two Upgrade.....£100.00

Snapshot software package updates — what the latest versions have to offer:

- Support for all the popular Apple II+ 80-column cards (Videx, Sup'R'Term, Vision 80, etc.)
- Support for the enhanced Apple //e with MouseText ROM, etc.
- Support for double hi-res graphics programs
- Support for Apple Mouse programs (MouseCalc, MouseDesk, MousePaint, etc.)
- Faster operating system - DS-DOS with TLIST command for reading text files (like CP/M TYPE command)
- Shuttle support for all the new ramcards and up to four 128K programs
- Printerrupt option for viewing and printing MousePaint pictures
- More sophisticated Copykit "self-locating loader"
- Support for Applesoft Basic programs in the Shell

Price £15.00 each for the Copykit, Shuttle, Printerrupt and Shell; £50.00 for combination pack containing all four packages. (Original disk(s) must accompany order).

Dark Star Supports Apple's New UniDisk 3.5

The UniDisk 3.5 gives your Apple more storage space with greater speed and reliability too. It uses robust double-sided 800K diskettes that have over five times the storage capacity of your highly fragile 5.25" floppies, and their data are saved and loaded up to 50 times faster. In short, Apple's new drive resembles its predecessor about as much as a Jumbo Jet resembles a bi-plane.

What about DOS 3.3?

On the downside for faithful Apple users is the fact that Apple is abandoning DOS 3.3 and supporting Prodos and Pascal 1.3 only on the UniDisk 3.5. However, as is usual when Apple creates a gap in the market, there's always someone around to fill it. A couple of US companies (MicroSPARC and Nordic Software), and now Cirtech have been quick to jump into the breach with enabling software for users of DOS 3.3 and other operating systems. No doubt there'll be more programs like these coming along soon, but here are potted reviews of the three that are available at the time of our going to press:

UniDOS 3.3 from MicroSPARC (publishers of the indispensable Nibble Magazine) lets you format 3.5" disks that automatically boot DOS 3.3. It lets you have two 400K volumes per disk and will support two daisy-chained UniDisks addressable as drives 1 - 4. Price: $49.95

Profix 2.1 is similar to UniDOS 3.3 but has some extra advantages. Profix lets you use DOS 3.3 or Beagle Brothers Pronto DOS on any mass storage device having a Prodos interface.

Cirtech's Uni-Mate

Now, Cirtech has entered the fray with its own UniDisk 3.5 product — Uni-Mate. Like its American cousins, Uni-mate is designed to enable users to run unprotected programs on the UniDisk 3.5 under operating systems that Apple hasn't seen fit to support.

Where Cirtech's program differs from the rest is, as usual, best measured in terms of performance against cost. The following list of its features shows quite clearly enough why we are offering Uni-Mate to *our* customers rather than either of the others:

- creates twoo 400K DOS 3.3 volumes accessed as drives 1 and 2 on the first UniDisk 3.5, as drives 3 and 4 on a second
- will accept as many UniDisk controller cards as you have room for under DOS 3.3
- supports up to two Unidisk 3.5 drives under Pascal 1.1 or 1.2, with 797K file-storage capacity on each diskette
- supports up to two UniDisk 3.5 drives under CP/M 2.20B or 2.23 with 784K file storage capacity on each diskette

Cirtech Uni-Mate.....£25.00

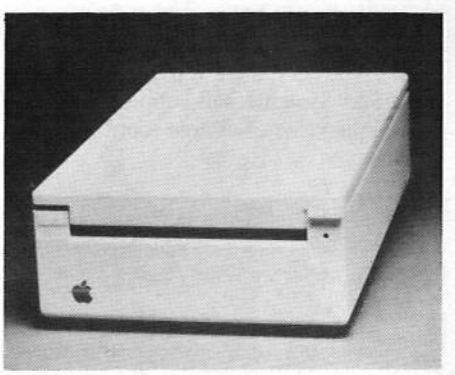
Introducing the Snapshot UniCopy 3.5

For those of you wanting to transfer copy-protected programs from those old disaster-prone 5.25" floppies to relatively secure 3.5" disks and take full advantage of all that extra storage capacity too, we're offering a major improvement over those software utilities: Snapshot UniCopy 3.5 — a Copykit for the UniDisk 3.5.

UniCopy 3.5 uses the interrupt-and-resume power of the Snapshot card to let you load *any* memory-resident program and then save it to a UniDisk 3.5 diskette in just a few seconds. You can have up to twelve programs — using twelve different operating systems if necessary — on the same diskette. Switching programs can be accomplished with the minimum of effort by using UniCopy 3.5 to interrupt one, save its current status, and then load another. Each program on an UniCopy diskette resumes running at the point of interruption, so time-consuming disk I/O operations and searching for where you left off are *both* eliminated.

As with all the other Snapshot software packages, UniCopy 3.5 features an easy-to-use menu-driven interface that means you can learn its operation in just a few minutes.

Snapshot UniCopy 3.5.....£20.00



Some people go to extraordinary lengths to get a good picture

Frustrating, isn't it? That dot-matrix printer and expensive interface card were supposed to let you print your Apple's display whenever the fancy took you.

But to get a print-out, you have to crash your program or make a file. Either way, it's a slow and tedious business. Then there's that long list of control commands you need to learn.

And nowhere in the manual does it explain how you are meant to capture that help-menu, those on-screen instructions, that record-breaking high-score, that bar-chart, or those brilliant graphics when almost *all* your favourite software is copy-protected.

But hold on, you don't have to reach for the camera yet!

The Snapshot Printerrupt. Perfect pictures every time

The Snapshot Printerrupt is a different kind of printing utility. It doesn't matter what program your Apple II or //e is running, the Printerrupt can interrupt it, print its display, and resume running it as though nothing had happened. No files needed, no photography, and no frustration.

What's more, the Printerrupt's easy-to-use menu features a galaxy of really useful options which put other printing utilities to shame: You can crop text and graphics displays; independently expand both axes of the graphics screen; rotate clockwise and anti-clockwise; invert and shade; XOR, OR, or AND Pages 1 and 2, or print them side-by-side; specify your printer's different dot densities; check the form position visually and aurally; automatically centre and adjust left and right margins, and set up your printer's different character sets, fonts, etc.

Phew! And as if all that weren't enough, Epson and Epson-compatible owners even have an option which gets rid of those horizontal "pin-stripes" from their graphics print-outs!

The Printerrupt will work with your dot-matrix printer, with your printer interface card (whether it has graphics features or not), and with all the popular 80-column cards. If the equipment you own is unusual, Dark Star Systems will support you with its unique free-of-charge configuration service.

I would like to take this opportunity to congratulate you on the Printerrupt. I have been using this program for some months now and it works perfectly

P. Tombling — Supply Squadron
Royal Air Force, Brize Norton

The Snapshot Printerrupt and Thirdware's FingerPrint compared by Apple User -July 1985

Thirdware must try to make the card (FingerPrint) a lot more user-friendly, and they could do a lot worse than having a look at Dark Star Systems' Printerrupt package.

This is a software package — one of many — that is intended for use with their well-established Snapshot card. It must surely be one of the simplest packages to use anywhere.

When the present bewildering assortment of keypresses in the FingerPrint is compared to the menu-driven and apparently crash-proof approach in the Printerrupt, then I have to come down clearly in favour of the latter.

Making a better impression: More Printer utilities from Dark Star

For MousePaint pictures on *any* printer, *any* way you choose — It's got to be MousePrintz.

MousePrintz is a patch program which adds great new features permanently to Apple's graphics painting package, MousePaint. It not only lets you print your MousePaint pictures directly to virtually any dot-matrix printer, but gives you a mouth-watering menu of versatile screen-editing and printing features as well. (See Table 1 for full details.) Options include:

- Full-screen viewing of the current picture
- Full-screen image inversion
- Full-screen mirror image
- Full-screen upside-down image
- Full-screen cropping
- Independent expansion of the X and Y screen axes
- Clockwise and anti-clockwise rotation through 360 degrees
- Shading of black or white areas
- Setting of all available printer dot densities
- Visual and aural checking of the form position
- Chart recorder mode
- Auto-centering and adjustment of left and right margins
- Removal of Epson "pin-stripes"

MousePrintz is compatible with the 128K Apple //e and the Apple //c. Price: £25.00

MousePrintz works very well and has a lot of very useful features

P. Taylor - Manchester, England

Thank you for your fine product! It sure improves MousePaint for us Epson Printer users.

Doug Trusty - Washington, USA

Merge Text and Graphics quickly and simply with your ImageMaker and the Bit Image Printer program

Bit Image Printer (BIP) by Mike Glover and Peter Meyer is an Applesoft program that lets you define all or part of a hi-res graphics screen and then save it to disk as a regular text file of hexadecimal values. Capturing graphics in this way lets you read pictures into documents produced by wordprocessors, like Applewriter, that let you use embedded printer control commands. When printed, the resulting mixture of text and graphics makes for beautiful presentations in business and education, and gives a unique stamp to your personal correspondence.

BIP also lets you create an EXEC file from a hi-res screen that will write a short Applesoft program which lets you print your picture out.

BIP requires a printer interface card with an ImageMaker EPROM installed.

Bit Image Printer..... £10.00

ScreenSnapper — The Programmer's Printing Program

ScreenSnapper is a software printing utility that makes the purchase of an expensive graphics printer card unnecessary. It is designed to greatly enhance your current printing configuration, and is intended primarily for use with your own Applesoft and machine-code programs (or other unprotected software) running on the Apple II+, //e and //c.

ScreenSnapper lets you interrupt and resume running programs in order to print the screen in a variety of ways with menu options offering enlargement, rotation, inversion, shading, etc. (See Table 1.) The menu can be called up from the keyboard, or from within a running program.

ScreenSnapper adds an extremely useful extension to Applesoft Basic that provides graphics programmers with a complete set of commands for double hi-res plotting plus additional commands which access the ScreenSnapper on-screen utilities. (See Table 2.) Other features include "what you see is what you get" facilities, and built-in print commands which can be slaved to virtually any printer card in emulation of a sophisticated graphics interface. (See Table 3.)

ScreenSnapper Price:.....£30.00

I have had a look round ScreenSnapper and am suitably impressed. The documentation is easy to understand and well written. The presentation is interesting and thorough.

Jim Goody - Southend-on-Sea

The ImageMaker series of Printer card EPROMs.

The ImageMaker EPCI: A very good product - it vastly improves Epson 8132 card use.
Fred Wright, Medical Physics Dept.
District General Hospital, Sunderland

By simply replacing the ROM chip from one of the supported printer cards with an ImageMaker EPROM, you get access to a vast range of advanced features (see also Table 1):

- Grappler-compatible graphics commands for hi-res screen dumps
- selection of all features from standard control codes as used by other popular graphics printer cards
- use of all the ImageWriter's different print densities
- full compatibility with Pascal and CP/M (*and* Appleworks)
- fast, easy selection of print modes, fonts and international character sets, page-length setting, fan-fold perforation skipping, margin setting and word-wrap
- insertion of text commands within wordprocessor documents and, use of bit image graphics in Applewriter files

ImageMaker EPROMs are available for the Apple Super Serial card, Epson 8132 (APL-B, C, D & E) cards, and pre-Champion Cirtech parallel cards. Price: £25.00

Table 1. Dark Star Printer Utilities Feature Guide

Feature	Printerrupt	ScreenSnapper	MousePaint	ImageMaker
Apple supported	II+ & //e	II+, //e & //c	//e & //c	II+ & //e
Dot-matrix printer supported	All	All	All	Epson compatibles and ImageWriter
Printer interface supported	All	All	All	Epson 8132, Super Serial & Cirtech
Operating systems supported	All	DOS 3.3	Prodos	All
Programs supported	All	Unprotected	MousePaint	All text and graphics printing programs incl. AppleWorks, Wordstar, Print Shop, etc. & users' own AppleSoft programs
Program interrupt-and-resume	Yes	Yes	Yes	No
Menu-driven	Yes	Yes	Yes	No
Uses industry-standard control commands	N/A	Yes	N/A	Yes
Built-in Double Hi-Res Support	Yes	Yes	N/A	No
Enables mixing of Text and Graphics	Yes	Yes	N/A	Yes
80-column text screen dumps on Apple //e	Yes	Yes	N/A	Yes
80-column text screen dumps on Apple II+	Yes	Yes	N/A	No
Magnification of the X and Y axes up to 8 times	Yes	Yes	Yes	Yes
Clockwise rotation	Yes	Yes	Yes	Yes
Anti-clockwise rotation	Yes	Yes	Yes	No
Inversion	Yes	Yes	Yes	Yes
Supports all available printer fonts and character sets	Yes	Yes	Yes	Yes
Supports all available printer dot-densities	Yes	Yes	Yes	Yes
Optional printed shading of black or white picture areas	Yes	Yes	Yes	Yes
And/or/ex-or of Pages 1 and 2	Yes	Yes	Yes	Yes
Visual and aural indication of the form position	Yes	Yes	Yes	No
Auto-centering of form position	Yes	Yes	Yes	No
Left and right margin setting	Yes	Yes	Yes	Yes
Chart recorder mode	Yes	Yes	Yes	Yes
Enables removal of Epson pin-stripes	Yes	Yes	Yes	Yes
On-screen viewing of MousePaint picture	Yes	No	Yes	No
On-screen viewing of all standard text and graphics pages	Yes	Yes	N/A	No
On-screen image inversion	No	Yes	Yes	No
On-screen mirror image	No	Yes	Yes	No
On-screen upside-down image	No	Yes	Yes	No
On-screen cropping window	Yes	Yes	Yes	No
Adds commands to Applesoft	No	Yes	No	Yes
Prints hi-res graphics stored as regular text files of hex values	No	Yes	No	Yes

Table 2. ScreenSnapper Basic Extension Commands

In addition to its menu-driven screen-dump and printer-card slaver capabilities, ScreenSnapper offers Applesoft Basic programmers an extended set of versatile Basic commands for on-screen special effects and double hi-res plotting:

1. Double Hi-Res Graphics Commands (for Apple //e with extended 80-column card and //c only):

& HGR	Display and clear to black the DHIRES (double hi-res) screen (560 x 192).
& HCOLOR= n	Set colour (from 0 to 15) to be used by plot. If n = 128 then colour = reverse (XOR plotting). Colours are the same as lo-res.
& HPLOT x, y	Use same as standard HPLOT but X co-ord up to 559; also use HPLOT TO for lovely straight lines.
& HI	Set point mode for maximum definition. Has some colour restrictions (eg., colour lines may be broken).
& LO	Set full 16 colour mode. No colour restrictions (contiguous lines but less definition than HI).
& GMERGE	Convert hi-res pictures on Pages 1 and 2 to one double hi-res picture and display it. (Note that colours are not preserved.)

2. Utility Commands (used in your programs for on-screen special effects):

& OR	Logical OR of hi-res screens 1 and 2. The result is copied to the current work screen.
& AND	Logical AND of hi-res screens 1 and 2.
& XOR	Logical XOR of hi-res screens 1 and 2.
& VFLIP	Flip current work screen upside down.
& HFLIP	Mirror-image current work screen.
& WIPE m1 ,m2	Cause a smooth video wipe between modes 1 and 2. (m= video switch. See below, "3. Valid Switches".)
& SPLIT m1, m2, p, n	Split screen: Top = mode 1, Bottom = mode 2, position = p (1 to 191), duration = n fiftieths of a second (1 to 32768) or until a keypress.
& SW m1,m2,etc.	Set video soft switches indicated. Any number of switches may be given, but they must be separated by commas.

3. Valid Switches (equal to m in Utility commands):

G	Set GRAPHICS switch
T	Set TEXT switch
N	Set NO MIX switch (all text or all graphics).
M	Set MIX switch (for mixed TEXT and GRAPHICS modes).
1	Set PAGE 1
2	Set PAGE 2
L	Set LO-RES switch
H	Set HI-RES switch
4	Set 40-column switch (//e and //c only).
8	Set 80-column switch (//e and //c only).
S	Set SINGLE resolution switch
D	Set DOUBLE resolution switch

Examples:

& SW G,M,8,D	Display the double resolution screen mixed mode.
& WIPE G,T	Smooth wipe from Graphics to Text.
& SPLIT T,G,95,50	Split screen to Text at the top and Graphics at the bottom at line 95 (half way down) for 1 second (or until a keypress).

Note that SPLIT and WIPE are not available on the Apple //c.

Table 3. ScreenSnapper and ImageMaker Printer Control Commands

Intelligent printer interfaces feature control commands which you can use to fully exploit all the graphics features of your dot-matrix or ink-jet printer. An industry-standard command set (based on Orange Micro's Grappler) is now generally adhered to in order to ensure software compatibility. Both ScreenSnapper's printer-card slaver and the ImageMaker firmware rigidly comply with this standard and offer several unique features besides. Here's the checklist:

<Ctrl>I followed by:	Function:
£	Substitute £ for $
$	Re-enable $ symbol
n<	Send n to printer as 8-bit byte
n?	Applesoft TAB-fix
n>	Send Hexadecimal string of bytes to printer
@	Initialise printer, reset defaults
A	Turn ON Auto-linefeed
B	Turn ON Bell
C	Turn OFF Bell
D	Set Double strike mode
E	Set bold (Enhanced) mode
nF	Select Font/character set number n
G	Dump Graphics (see below)
H	Pass High bit of data to printer
I	Turn ON screen echo
J	Turn OFF screen echo
K	Turn off (Kill) auto-linefeed
nL	Set Left margin
M	—
nN	Set line length to maximum of n columns
O	—
nP	Set page length to n lines &skip page breaks
nQ	Set print density to n
nR	Set Right margin for word-wrap
nS	Dump text Screen
nT	Set Transparent mode for next n characters
U	—
V	Turn OFF double strike/width or bold mode
W	Set double Width text mode
X	Mask high bit
Y	Disable printer card (like PR£0)
Z	Reset printer card defaults

Graphics Command Summary

<Ctrl>IG followed by:	Function
2	Select Page 2 for printing
D	Print Double size
E	Print Enhanced
F	Overstrike (Epson "pin-stripe" Fill)
I	Print Inverse
J	Shade white areas
K	Shade black areas
O	OR pages 1 and 2
P	AND pages 1 and 2
Q	EX-OR pages 1 and 2
R	Rotate
S	Scale X axis x 2
T	Scale X axis x 3
U	Scale X axis x 4
V	Scale X axis x 5
W	Scale Y axis x 2
X	Scale Y axis x 3
Y	Scale Y axis x 4
Z	Scale Y axis x 8

It might even happen to *your* software

Even *experienced* professionals have their off days. Can you be certain you will never accidentally corrupt or erase your copy-protected program disks? And what will you do when those irreplaceable disks finally wear out?

Of course you may be lucky. For you, a damaged disk may mean only weeks, maybe months, of waiting for a costly replacement. If you're *not* so lucky, the company that produced the software you depend on is now out of business.

The Snapshot Copykit. Peace of mind at the press of a button.

The only *effective* way to safeguard your software investment is to make backups. Some publishers encourage you to copy their products, others use copy-protection to make it as difficult as possible.* The Snapshot Copykit is an easy-to-use device which helps you to make backups of your essential programs whether they're copy-protected or not. It will copy memory-resident software in less than half a minute, and it's invaluable for dealing with multi-access programs too.

Using Copykit backups rather than your valuable originals doesn't just make sense from a security point of view. Fast saving and loading of total memory saves hours of time when you need to work with spreadsheets or other programs which take an eternity to handle large files. And if games are your thing, there's no need to go through the easy, boring levels of play every time you resume the action — you can use the Copykit to go straight to the highest levels and return to them again and again.

* Check the terms of your software license - by making even an archival backup, you may be in breach of Copyright.

Why the Copykit is better

Bit-copiers like Locksmith and Copy II+ are quickly overtaken by new copy-protection methods and hardware updates, and they're expensive to upgrade. They'll only work with a limited number of operating systems, and the backups they create are exact duplicates of the protected (and inconvenient) originals.

The Copykit isn't troubled by copy-protection and will work with *any* operating system, non-standard or otherwise. And Dark Star's cheap update policy makes it easy for you to upgrade to keep up with new hardware. Copykit backups are easily examined and customized, and can be transferred to other media, thus reducing your dependence on easily-damaged 5.25" floppies.

The Copykit is also more versatile. Taking frequent backups of work in progress, for example, is an essential part of *sensible* computer use. Yet this is seldom — if ever — done, because it is time-consuming and inconvenient to close down your program, make a copy of the work-disk, re-boot and find the place where you left off. The Copykit's ability to save the entire contents of memory to disk at any time and then resume running your program from the point of interruption overcomes such difficulties and makes the loss of many hours work much less likely. And try using a bit-copier to suspend a running program while you answer the telephone or make a cup of coffee!

The Snapshot Copykit reviewed in Hardcore - April 1985

The ability to save a program at the point of use is, I believe, distinctly advantageous. For instance, Printshop can be saved at the point of producing a set printing routine, like a letterhead, and it will then always be ready to print this item without having to go through the setting-up procedures.

Game players will find the system an answer to their prayers.... I have found it without doubt the most useful utility I possess....

The Snapshot Shuttle.
A flexible alternative to integrated software

You too have probably considered the benefits of buying a program that does several different jobs from one disk. After all, *most* computer users need to switch from one task to another several times a day. And repeatedly closing down your current program, booting a different disk and then trying to find where you left off wastes valuable time and disrupts your flow of work.

Integrated software would be the obvious solution if it weren't for the fact that one Apple II user is likely to have very different needs from another.

The remarkable Snapshot Shuttle is an inexpensive device that gives you a simple alternative to worrying about the *drawbacks* of integration. It lets you keep up to four different programs in memory at any one time.

You want to combine the best word-processor with the fastest spreadsheet, a versatile comms package and *Hitchhikers' Guide to the Galaxy?* Fine. With the Shuttle you're free to choose.

You can switch rapidly between your programs with just the flip of a switch, and each one resumes running exactly where it was interrupted. No fuss, no waiting. The Shuttle even works happily with integrated software!

You already know everything you need to know to use the Shuttle. There are no new commands for you to memorize and no piles of impenetrable documentation to wade through. And because it uses the interrupt-and-resume power of the Snapshot card, the Shuttle gives you access to a whole new world of great, easy-to-use utilities that will enhance your Apple at home and in the office.

System Requirements
Apple II+ or //e with minimum 128K RAM and 1 disk drive.

Memory expansion cards
The Shuttle will let you load 2 x 64K programs into a 128K Apple. Naturally, the more memory you have, the more programs you will be able to load. The Shuttle works with all the popular RAM cards. (See page 9 for more details).

The Snapshot Shuttle.....£20.00
With Snapshot Card.....£115.00

Snapshot Shuttle reviewed in Apple User - May 1986

The beauty of the Shuttle system is that it will work with any program designed to run on an Apple II, whether it is copy-protected or not, and no matter what operating system it uses. .....I have to admit that I'm very impressed with this addition to the Snapshot range of utilities. The Shuttle is a well-proven product that is very easy to use, and the range of RAM cards and 80-column cards that Dark Star Systems supports is large, and growing larger all the time. The Shuttle's menu-driven front-end reduces the learning curve for users to just a few minutes and obviates the need for extensive (and expensive) written documentation. Of course, there will always be those who feel the only use for this kind of facility is for rapidly hiding the latest adventure game and switching over to the wordprocessor or spreadsheet program just as the boss appears But, for serious computer users, the Shuttle provides an inexpensive and effective introduction to the joys of multi-tasking.

The Snapshot Shuttle reviewed in Australian Apple Review - January 1986

We now use it (the Shuttle) to run a wordprocessing program and a spelling checker with an 80,00 word dictionary. We create a text file, switch to the spelling checker, correct the spelling and then switch back again. It means we never have to bother with loading and unloading programs from disks.

Data transfer made easy with Quality Software's Universal File Conversion

If you use more than one Apple II operating system, Universal File Conversion is going to make life a lot easier for you. Use it to move programs and data among the five main Apple operating systems — DOS 3.3, CP/M, Pascal, SOS, and Prodos. Now you can merge a section of your Visicalc spreadsheet into a CP/M Wordstar document, use Prodos AppleWorks data with Pascal Apple Business Graphics, use data from one program with just about any other! Using the program, you can also:

- format disks for any operating system
- create CP/M files without a Z-80 card
- convert Basic programs from one operating system to another

The Universal File Conversion comes complete with an interesting and thorough manual that will teach you everything you need to know about how your various operating systems store files on diskette.

Universal File Conversion.....£32.00

Bill Allen explains why Dark Star recommends Universal File Conversion for use with the Shuttle multitasker (from Apple User - May 1986):

It is only fair to point out that there is more to integration than just swapping from one kind of program to another - data have to be swapped as well. Many manufacturers of the more popular suites of business packages are fully aware of this, and offer a common format for transporting data from one program to another. For example, the well-known DIF (Data Interchange Format) is very useful for such packages as Visicalc, Visiterm, and Visiplot. (DIF files are recognized by virtually all other spreadsheet, database and business graphics programs as well.)

Programs like AppleWorks and the Prodos version of AppleWriter //e, which run under a common operating system, are also able to interchange standard text files.

Data transfer problems do arise, however, if we have a CP/M program - Wordstar, say - running in one workspace, and Visicalc running in another. How do we get that section of the spreadsheet over to our wordprocessor file? The people at Dark Star have anticipated that question and have a ready answer in the shape of the "Universal File Conversion" program (UFC for short) which they buy in for their customers from the American-based publisher, Quality Software. So, in our hypothetical example, we would simply print the appropriate section of our Visicalc spreadsheet to disk as a text file, switch to the workspace containing the UFC and convert the Visicalc file to CP/M, and then switch to Wordstar in order to load it into our document. True, you could do all this without the Shuttle, but you could also go grey doing all the closing down, disk-swapping, re-booting, and searching for the place you left off, many times over, that such a task would normally entail.

Dark Star SYSTEMS

The Power to Grow
Memory Expansion Cards for the Apple II

Over the last year or so, the cost of RAM chips has plummeted to a level that places the benefits of memory expansion well within the financial reach of most Apple II users.

What are those benefits? Traditionally, there have been two reasons to invest in more RAM: For storage use, as a high-speed, solid-state, pseudo-disk drive (generally referred to as a ramdisk), or as a means of enlarging the available work area of applications programs like spreadsheets, databases, etc.

To these stalwarts may be added a relatively recent innovation: The partitioning of memory to hold several different programs (and/or operating systems) at once and allow rapid switching between them. This is a built-in — but limited — feature of Cirtech's Flipper one MegaByte card; it is a feature which can be added to *any* memory card with Dark Star's Snapshot Shuttle. The Flipper's program manager will only work with unprotected programs, and then *only* when the user is at operating system command level. The more-powerful Shuttle can interrupt *any* running program, copy-protected or otherwise, and resume it from the point of interruption.

These days, prospective purchasers of extra Apple memory are faced with a bewildering — and burgeoning — variety of different cards, each with its own "unique" features and benefits. While it is impossible to provide here a definitive guide through the memory maze, what follows is an attempt to provide an overview of what is available *and* what is possible. We'll also try to highlight some of the pitfalls which await the unwary.

There are basically two types of memory expansion card the average Apple owner (if any such animal exists) can install: the first is designed to fit into any of the standard slots on the Apple II, II+ or //e backplane. The second, because it doubles as an Apple //e 80-column card, must be installed in the //e auxiliary slot and is therefore (not surprisingly) useless for owners of any computer other than the //e.

Honourable mention might also be given to two other categories of memory card: the dedicated ramdisk with a back-up battery that keeps data in a viable condition at power-off, and the "bubble" memory card which (like ROM) retains data until it is erased and rewritten. The high cost of such cards precludes their consideration by the general Apple user and they are thus excluded from further discussion here.

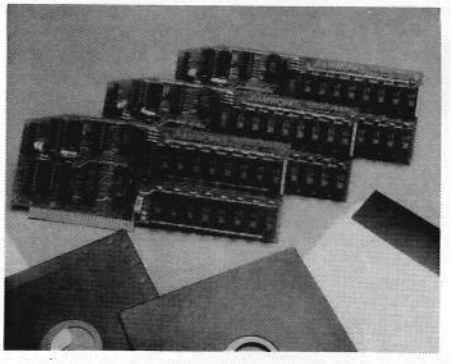
The Saturn 128K Standard

Until relatively recently, the most prevalent memory expansion cards were those designed to use any standard Apple II slot, and the most popular of them was the Saturn 128 made by Titan Technologies of Ann Arbor, Michigan in the United States. The Saturn card was marketed with software which made it useful as a DOS 3.3, Pascal or CP/M ramdisk, and as a speadsheet expander. The latter use in particular led to its initial great success. With the Saturn 128 installed in a 48K Apple II and using a program called VC Expand, a Visicalc user could increase the size of his or her spreadsheet from a paltry 18K to about seven times that.

As often happens with an idea whose time has come, other manufacturers were quick to jump on the bandwagon. Their efforts were sometimes compatible with the Saturn card (eg, Ramrod, Ramex, U-Ram and Vision 128) and sometimes not (eg, Legend 128 and Rocon 128). The Saturn "standard" prevailed over the rest, probably because after a while the world's markets became flooded with ex[illegible] — but inexpensive — copies of Titan's card and soft[illegible]re emanating from the Far East.

Apple //e Memory Expansion

The 1983 introduction of the Apple //e offered Apple users an alternative means of memory expansion through the "extended" 80-column card designed for



installation in the //e's auxiliary slot 3. This had the advantage over the old-style memory cards of leaving the other Apple slots free for different uses — a considerable asset in view of the plethora of available peripherals which make use of those slots.

The extra 64K available on the extended 80-column card was designed primarily for use by applications programs running under Prodos, Apple's successor to DOS 3.3. Prodos programs could automatically recognize the extra memory and invade it. A Visicalc spreadsheet, then, could be expanded to 95K, the AppleWorks "Desktop" to 55K, and so on. For users of programs running under DOS 3.3 or CP/M which didn't recognize the extra 64K, that memory could be configured as a ramdisk with utilities like RamDrive.

Another useful feature of the auxiliary 64K was its enhancement of graphics resolution on the //e. That extra RAM enabled graphics programs like Broderbund's Dazzle Draw, and Beagle Brothers' Beagle Graphics to take advantage of the far superior display capability of the double high-resolution screen (560 x 192 instead of the normal 280 x 192).

The Titan Neptune Card

While several hardware manufacturers introduced their own 64K extended 80-column cards to compete with Apple's version, it was Titan Technologies who again led the way to further memory expansion with the introduction of their Neptune card. This was an extended 80-column card which could be expanded in increments of 64K to a maximum of 192K which (again with the appropriate software) could be used either for ramdisk storage or for increasing the size of spreadsheets.

Ramworks

The Neptune card had the large Apple //e memory field pretty much to itself for quite a while. Then, in late 1984, Applied Engineering introduced a reasonably priced extended 80-column card called Ramworks which was expandable to 1 Megabyte (1024K). Ramworks was different because it was aimed specifically at owners of the AppleWorks integrated wordprocessor, spreadsheet and database program. The main benefit offered was the ability to expand the AppleWorks Desktop from 55K to an amazing (at the time) 736K. (See below for details of what this so-called Euro version of Ramworks can do now.)

Ramworks II

Ramworks, like its predecessors from Titan Technologies, has its imitators. Again, some of these are direct copies (like the Glanmire 512K card and MegaRamPlus from AST Research), some are not. Applied Engineering responded to this competition in late 1985 by introducing a refinement to Ramworks called (with great originality) Ramworks II. This one goes right up to 5 Megabytes of RAM, but that's as much as we intend to say about it because, for European Apple //e owners, it has a major drawback: It was designed for US-manufactured Apples. US Apples are identical to European Apples in virtually every respect bar one - the situation of the auxiliary slot. On the American motherboard, the auxiliary slot is situated at the side, close to the power supply. This position allows the installation of very large cards, and yes, you guessed it: Ramworks II is too large to fit into an European Apple. No matter. Applied Engineering have updated the original Ramworks card to almost the same level as Ramworks II, and are marketing the thing as the Euro version.

MultiRam //e

Another card with a design problem was Checkmate Technology's Ramworks-workalike (expandable to 6MB), the MultiRam //e. The trouble with the Checkmate card was that although not physically too big to fit in the case of the European Apple, its bottom rear-end would clash with the standard Slot if installation were attempted. The Checkmate designers have since re-jigged their card, but European buyers should be wary of ordering MultiRam without seeing which version they're getting. (The one to beware of has RAM chips at the back, roughly in line with the gold edge-connector.)

The Apple II Memory Expansion Card

Apple itself has now entered the memory expansion market with its own 1 Megabyte card, and it is likely that *this* one will establish a new standard to which software publishers will adhere in future. The Apple card is designed to look like a disk drive to DOS 3.3, Prodos and Pascal 1.3 programs, and therefore needs no special ramdisk software. It is certain that future versions of popular applications programs will automatically use all or part of the 1 MegaByte card for expansion space as well as disk-caching.

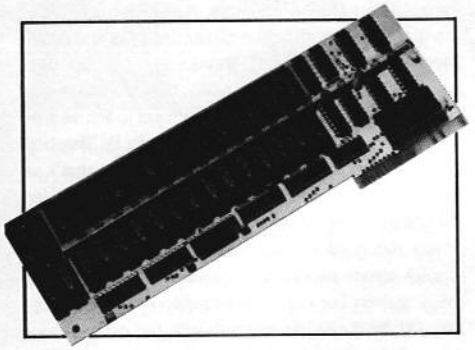
Unlike Ramworks, MultiRam, Neptune, *et al*, the Apple II Memory Expansion card uses a standard — rather than the auxiliary — slot. While this does mean you have to take up a valuable slot to use it, it also means that (1) if you already own an ordinary //e 80-column card, you don't have to replace it, (2) it will

work on the good old II+, and (3) you can install one Megabyte of memory for every vacant slot you've got.

Other manufacturers have not been slow to see which way the wind is blowing, and the Apple card has now been joined by compatibles from AST Research in the US with their (256K expandable to 2 Megabyte) "SprintDisk" and the UK's very own Cirtech with their 1 Megabyte "Flipper".

The Cirtech Flipper

Cirtech's Flipper is the big-memory card Dark Star Systems recommends to Snapshot Shuttle users and others because, at the moment, it has to be *the* most inexpensive, versatile and compatible ramcard. Unlike most of its more expensive rivals, the Flipper is designed to emulate Apple's own Apple II Memory Expansion Card. That means future software compatibility is guaranteed — no small consideration in view of the high value of the average user's software and hardware investment.



Like Apple's card, the Flipper requires no pre-boot software to act as a ramdisk for programs running under Prodos, DOS 3.3, Pascal 1.3, and CP/M (versions 2.20B, 2.23 and 3.0). And you can use it to expand the AppleWorks 1.3 Desktop to 1012K. But the nicest thing about the Flipper is the way its lets you segment its memory for a variety of purposes. You can use part of the card for the Snapshot Shuttle, while you allocate several different ramdisks (under several different operating systems) to the remainder. For example, you can have a CP/M program in one Shuttle workspace which uses files stored in a segment of the Flipper's memory designated as a CP/M drive; a Prodos program in another Shuttle workspace accessing files from the Prodos ramdisk, and so on. No other memory expansion card on the market gives you this sort of versatility at any price.

The next best thing to a Flipper in the Apple //e is a Ramworks Card

For //e owners, Applied Engineering's Ramworks is the next best choice — especially if you are short of slots. And the price has now tumbled to a much more affordable level. The Euro-Ramworks is now expandable from 128K to 2.5MB (2560K). AppleWorks owners with a Ramworks card containing 256K and up can now load the entire program into memory (saving a considerable amount of time used in disk access), and increase the size of the AppleWorks Desktop to an incredible size.

Ramworks also offers AppleWorks users additional benefits like print-spooling, over three times the normal number of records possible in a database file, and auto-segmenting of large files so they can be saved to several different disks. In addition, software for DOS 3.3, Prodos, Pascal and CP/M ramdisks, as well as Visicalc expansion is available. A useful hardware add-on for the card is an RGB option which saves another slot when colour display is required.

Ramcard Feature Comparisons

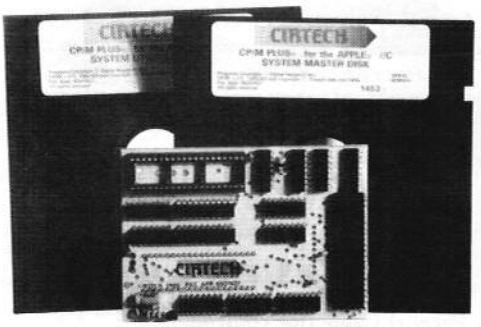
Ramcard		Compatible Computer	Maximum RAM	AppleWorks Desktop Expansion	Ramdisk Software	Price *
Titan/Saturn RAM (Titan)	32K	II, II+ & //e	32K	NO	DOS 3.2,	$ 179.00
	64K		64K		DOS 3.3,	$ 199.00
	128K		128K		CP/M & Pascal	$ 239.00
Titan Neptune (Titan)	64K	//e	192K	NO	DOS 3.3,	£ 229.00
	128K				CP/M & Pascal	£ 264.00
	192K					£ 309.00
Ramrod 128 (Dark Star)	128K	II, II+ & //e	128K	NO	DOS 3.2, DOS 3.3, CP/M & Pascal	£ 90.00
Special Features: Compatible with Saturn 128K and supporting software.						
Legend 'S' Card (Legend)	64K	II, II+ & //e	1MB	YES	DOS 3.3, CP/M & Pascal	$ 315.00
	128K					$ 375.00
	192K					$ 435.00
	256K					$ 495.00
	512K					$ 595.00
	768K					$ 695.00
	1MB					$ 795.00
Legend 'E' Card (Legend)	64K	//e	1MB	YES	DOS 3.3, CP/M & Pascal	$ 299.00
	128K					$ 359.00
	192K					$ 389.00
	256K					$ 419.00
	512K					$ 519.00
	768K					$ 644.00
	1MB					$ 769.00
MultiRam //e (Checkmate)	64K/RGB	//e	1.5MB	YES	DOS 3.3, Prodos, CP/M & Pascal	$ 185.00
	128K/RGB					$ 203.00
	320K					$ 222.00
	576K/RGB					$ 279.00
	768K					$ 334.00
	1024K/RGB					$ 579.00
	1280K/RGB					$ 520.00
	1536K/RGB					$ 548.00
	1792K/RGB					$ 578.00
Special features: includes AppleWorks expansion software; has port for connection to optional 65C816 (16-bit) co-processor card, and RGB included.						
Ramworks (Applied Engineering)	128K	//e	2.5MB	YES	DOS 3.3, Prodos. CP/M & Pascal	£ 199.00
	256K					£ 219.00
	512K					£ 269.00
	1.0MB					£ 369.00
	2.5MB					£1499.00
	RGB Option					£ 129.00
Special features: includes AppleWorks expansion software, print-spooling, and ramdisk software.						
Ramworks II (Applied Engineering)	64K	//e	3MB	YES	DOS 3.3, Prodos, CP/M & Pascal	$ 179.00
	256K$ 219.00					
	512K					$ 269.00
	1.0MB					$ 389.00
	1.5MB					$ 549.00
	3.0MB					$1699.00
	RGB option					$ 129.00
Special features: includes AppleWorks expansion software, print-spooling, and ramdisk software; has port for connection to optional 65C81 (16-bit) co-processor card.						
Apple II Memory Expansion Card (Apple)	256K	II, II+ & //e	1MB	YES	NO	£ 245.00
	512K					£ 300.00
	768K					£ 355.00
	1MB					£ 410.00
Special features: automatically recognized as a ramdisk by DOS 3.3, Prodos and Pascal 1.3.						
Cirtech Flipper (Cirtech)	1MB	II, II+ & //e	1MB	YES	NO	£ 350.00
Special features: automatically recognized as a ramdisk by DOS 3.3, Prodos, Pascal 1.3 and Cirtech CP/M Plus; includes memory management firmware allowing co-residence of several different operating systems.						

** Prices are at the latest published level at the time of going to press and are marked in US Dollars unless a product is generally available in the UK. Sterling prices are either Manufacturers Recommended Retail Prices or those set by the British distributor, and are exclusive of VAT. Check our price list for discounts on some cards.*

CIRTECH:
More power to your computer

Cirtech CP/M Plus (CP/M 3.0) systems for the Apple //e and //c

Cirtech's new //e and //c Z80 modules are two of the finest Apple co-processors available today. Cirtech's superior design skills give you not only the best available price/performance ratio, but better reliability, greater efficiency, *and* a cooler running Apple too.



Both modules come supplied with your passport to some of the world's finest business software — Cirtech's unique version of CP/M Plus from Digital Research. Imagine the power of DBase II or Wordstar running with an operating system that offers features like these:

- Compatibility with Prodos-oriented devices like the Flipper 1MB card, the Apple II Memory expansion card, Unidisk 3.5, and ProFile hard disk
- Full use of the 128K of program memory available on the extended Apple //e and //c
- Print-spooling (12,000 character printer buffer)
- Password protection and file time/date-stamping
- //c printer, disk drive and modem port support with invisible buffering of input/output from both serial ports *and* the keyboard
- "Toolkey", an innovative range of functions that can be accessed at any time — even while running a program — allowing disk copying and formatting, instant screen dumps, etc.
- "Mousekey", a tool which allows you to use the Apple //c Mouse with any CP/M program (current version does not support Apple //e Mouse)
- A disk-based Help system and "user-friendly" error messages which let you retry without sending you back to system level

Save a slot!

The Cirtech //e CP/M Plus module features the *double*-fast 8MHz Z-80H processor, and it plugs straight into your Apple's motherboard — no slot required. You will, however, need an extended //e 80-column card installed in auxiliary slot 3.

Cirtech //e Z80 module with CP/M Plus..... £108.00
Cirtech //c Z80 module with CP/M Plus..... £175.00

The CP/M Plus Programmer's Pack

For Apple CP/M developers who have been waiting for the opportunity to toss ALDS out of the window, the CP/M Plus Programmer's Pack is available as a separate item. Programming utilities like MAC and RMAC (macro assemblers), ZSID (symbolic debugger), LINK, LIB, SAVE, HEXCOM, ED, DUMP and XREF come complete with documentation which is both comprehensive *and* informative.

CP/M Plus Programmer's Pack..... £89.00

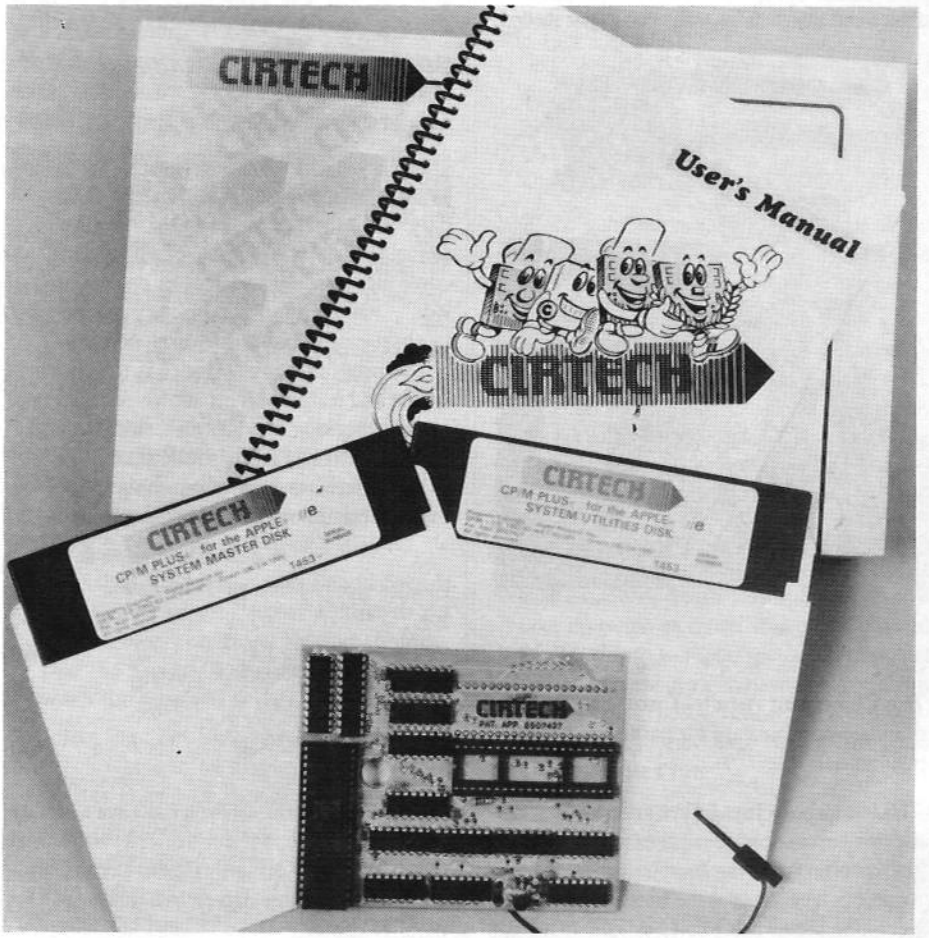
Apple II+, //e and //c Z80 Co-processors for CP/M versions 2.20B and 2.23

Cirtech's Z80 cards for the Apple II+ and //e are functional equivalents of the Microsoft Softcard, but are less than half the size and use half as many components. Apart from the obvious benefit to your pocket, that tight design means that unlike the Z80 co-processors offered by other manufacturers, the Cirtech cards won't give you a hard time trying to keep your Apple cool.

The original Cirtech Apple //c Z80 module simply plugs into the motherboard, right inside the case! Once it's installed, you can run all your standard Apple II CP/M programs without modification. DOS and Prodos programs run as normal.

If you're quite happy to continue using CP/M versions to 2.23, a Cirtech Z80 co-processor card or module is the ideal replacement for — or addition to — your existing set-up.

Cirtech Z80 II+ version..... £40.00
Cirtech Z80 //e version..... £40.00
Cirtech Z80 //c version..... £77.00

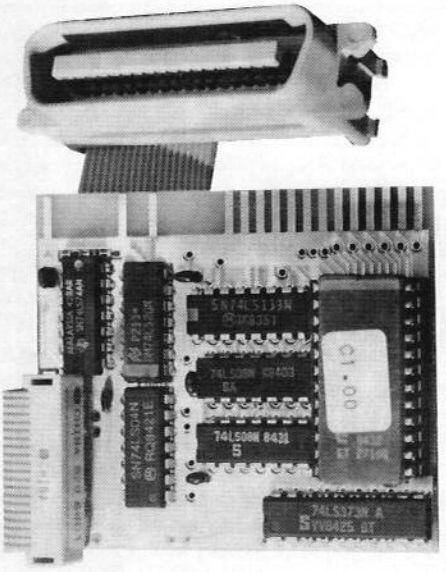


Getting into print with the Champions!

Making the most of your printer's graphics features can be an expensive business, particularly if you already own a "dumb" — or non-standard — printer card.

If you don't own a card which can be upgraded with one of Dark Star's ImageMaker EPROMs, Cirtech's "Champion" printer cards are the next best option. They give you more features at less cost than other "intelligent" printer interfaces, and software compatibility is maintained with a full set of Grappler-type commands just like the ImageMakers'.

All the Champions are fully compatible with DOS 3.3, Prodos, Pascal and CP/M, and work perfectly with programs like AppleWorks that give less intelligent printer cards big headaches. And every Champion card comes complete with all the necessary cables and instructions you need to get started.



The Champion Parallel Card - the standard graphics-capable card for parallel dot-matrix printers..... **£45.00**

The Champion ImageWriter Interface - for owners of Apple's excellent ImageWriter printer who want the best industry-standard graphics capabilities at the best possible price. (Includes serial cable)..... **£60.00**

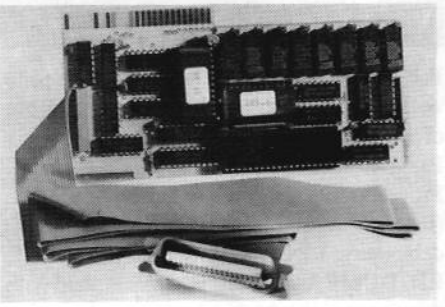
The Champion Serial Adaptor - with this easily installed addition to your Champion card, you can benefit from telecommunications facilities by switching from parallel to serial mode with a single control-command. All the standard Champion print features are available through the serial interface, so it's a great way to get the most from your serial printer too..... **£15.00**

Serial Printer Cable - for printing with the Champion Serial Adaptor..... **£9.00**

The Champion CacheCard 16K and CacheCard 64K - for those of us who don't want to wait while printing monopolizes our valuable computing time, here are two buffered versions of the Champion printer card;

CacheCard 16K for everyday printing needs..... **£85.00**

CacheCard 64K for extra long print runs..... **£108.00**



The Cirtech CacheBox - the CacheBox is a 64K in-line buffer for use with your existing parallel or serial port. It comes in several different versions for maximum versatility:

Serial and Parallel..... £157.00
Serial/Serial..... £135.00
Parallel/Parallel..... £135.00

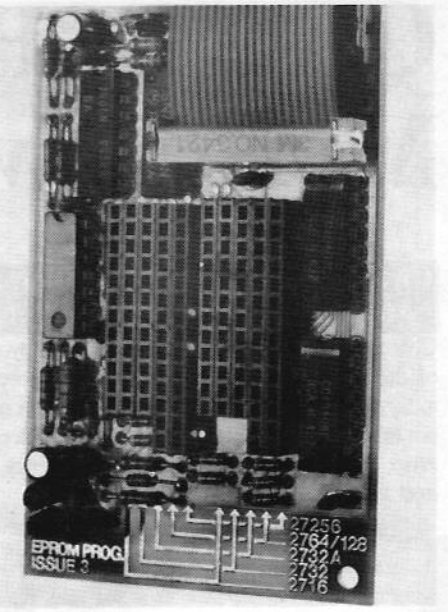
Fast, hassle-free EPROM blasting

Cirtech's easy-to-use EPROM programmer sits outside the Apple case, attached to its controller card by two feet of cable. So you won't waste time scrabbling around the motherboard looking for dropped chips!

The programming software is fully menu-driven and features automatic verification and erasure checking. And it's all resident in ROM on the controller card, so there are no disks to load. Here are the programming speeds for Intel-compatible EPROMs:

	Programming Time in Seconds		
EPROM type	Minimum	Maximum	Typical
2716	1.5	112	92
2732/A	2.5	225	190
2764	46	450	70
27128	92	900	120
27256	154	1800	300

If you're a printer user, you can save a slot by using the EPROM controller's additional parallel port as an Epson command-compatible printer driver. All you need is a parallel cable!



EPROM Programmer with controller card..... £81.00

EPROM Programmer (for controller card owners)..... £50.00

Controller card..... £31.00

Parallel Cable (for controller card printing)..... £9.00

80-column cards for the Apple //e

The Cirtech //e 80-column cards function *exactly* like everyone else's, but no other company can match Cirtech quality at these prices!

There are two versions; one with 64K extended memory, and one without. The extended card lets you access the full data-handling capabilities of 128K programs like SuperCalc3A and AppleWorks, and the double high-resolution displays of Dazzle Draw, Fantavision, MouseCalc, etc.

If you want the standard unextended 80-column card right now, you can always return it to us for upgrading when you need the extra memory. So long as you bought the card from us, it arrives in its original packaging and is still in working order, we'll exchange it for the 64K version there and then.

Standard //e 80-column card..... £27.00
Extended 64K //e 80-column card... £54.00
Standard for Extended exchange..... £27.00

Dark Star SYSTEMS

Different Strokes From Different Folks

Here's some useful information supplied by our technical department and by Dark Star customers that will help you take your Apple closer to the limit of its capabilities.

Jaromir Smejc of the Czechoslovak Centre of Fine Arts in Prague has made some interesting points concerning use of the Copykit and Printerrupt Snapshot software packs which we're happy to pass on here. Thank you Jaromir!

Remember: if you find that one of our products has helped you to solve a problem that's had you tearing your hair out up until now, you may be able to save some of your fellow Apple users from premature baldness as well by passing your tip to us for printing in the Global Village Newsletter. We're not offering pots of gold for your services, but just think how great you'll feel basking in the warm glow of admiration that envelops you as thousands of your fellow sufferers give thanks to the person who led them out of darkness into light!

Using the Copykit to speed-up AppleWriter with Videx's Ultraterm Card

Jaromir Smejc was irritated by the tedious necessity to boot two disks and make about ten keystrokes before he could start work with AppleWriter and its Glossary on the Ultraterm screen. Here's his method for cutting out most of that hard work by taking advantage of the Copykit's ability to save and reload total memory at any point in the operation of a running program:

1. Use the Copykit 'Boot a disk' option to load in Ultraterm's Preboot and go through all the stages until AppleWriter is working on the Ultraterm screen as normal.
2. Load your glossary file (if necessary).
3. Use the Snapshot trigger to interrupt AppleWriter after disk I/O has taken place. Since Ultraterm is *not* a standard text display card, pressing the Snapshot trigger will appear to freeze AppleWriter, but will do nothing else. In order to get to the Copykit Menu displayed on the 40-column screen, press the <Ctrl> and <Reset> keys simultaneously.
4. Place a Copykit disk in the appropriate drive and use the "Save" option from the menu to dump memory to disk. (If you are working with an US-made Apple //e which contains both an extended 80-column card *and* Ultraterm, select the 64K dump option to get an auto-booting disk.)
5. You now have a copy of AppleWriter which will automatically use Ultraterm without a preboot or all those keypresses. When you come to boot that disk, remember to press <Ctrl><Reset> in order to display the Ultraterm screen when your disk-drive stops spinning.

Using the Printerrupt to overcome bugs in Fontrix's print drivers

According to Jaromir Smejc, Fontrix versions 1.0 and 1.2 don't adequately support Epson FX80 and FX85 printers. The problem appears to be with dot density settings which distort the aspect ratio and create badly proportioned hard-copy of screen images. This is quite a common problem, and not just with Fontrix. Some programs (MousePaint, for example) don't support Epson and other popular dot-matrix printers at all!

Hitherto, the only way to overcome this problem was to quit Fontrix after creating a graphic and use printer card control commands to achieve a correctly proportioned print-out. As Jaromir writes: *"This was a very time-consuming process, especially if you wanted to create more screens. Now, thanks to the Printerrupt, using Fontrix and printing the results in the right proportions (Printerrupt Density Option 1) is a breeze!"*

How to capture graphics screens from protected programs and save them to disk.

A lot of programs feature great graphics displays but offer you no facilities for saving them to disk. No problem if the program you're running isn't copy-protected, but..... Needless to say, we've had a lot of requests from Printerrupt owners to supplement the dump-to-printer option with a dump-to-disk feature.

Unfortunately, Printerrupt author Andy Beveridge packed so many features into the space available in Snapshot's RAM that there's barely room to swing a byte let alone a fat disk I/O routine. All is not lost, however. There is a simple way to capture and save-to-disk a hi-res picture from a copy-protected program using the Snapshot Copykit. Here it is:

DOS 3.3 and Prodos Hi-Res Dumps

1. First, round-up the essential ingredients: Your program disk, a formatted Prodos or DOS 3.3 disk and a Copykit disk.
2. Load the Copykit into your Snapshot card and use the menu "Boot" option to get your subject program up-and-running. Use the Snapshot trigger to interrupt it when the required screen is displayed.
3. Select the "Set Video Mode" option and check whether the display you want is on Hi-Res Page 1 or Page 2.
4. Select the Exit to Monitor option and, if the display you want sits on Page 1, enter the following line:

6000>2000.3FFFM <Return>

("<Return>" means press the Return key and should not be typed out in full)

or if your display is on Page 2:

6000<4000.3FFFM <Return>

5. Insert your formatted disk into Drive 1 and boot it from the monitor by entering:

6<Ctrl>-P <Return>

("<Ctrl>-P" means pressing the <Ctrl> key and the upper-case "P" key simultaneously)

When you get the Basic prompt, enter:

BSAVE <name>,A$6000,L$2000 <Return>

That's it — you now have a hi-res binary file containing the screen as it appeared at the moment of interruption. Check it out if you like by entering;

HGR2 <Return>
BLOAD <name>,A$4000 <Return>

Double Hi-Res Dumps

In all their excitement at discovering the Double Hi-Res (DHi-Res) screen, Apple forgot to give us a standard method of storing it on disk. Below is a method for saving and loading DHi-Res files using Dark Star's ScreenSnapper printing utility. Since there is no effective standard, however, we don't guarantee that you'll be able to use ScreenSnapper files in conjunction with other DHi-Res programs:

1. Load the Copykit into your Snapshot card and use the menu "Boot" option to get your subject program up-and-running. Use the Snapshot trigger to interrupt it when the required screen is displayed.
2. Place your ScreenSnapper disk in Drive 1, select the "Exit to Monitor" option from the Copykit menu, and enter:

6 <Ctrl>-P <Return>

3. When ScreenSnapper loads, use <Ctrl-B> or & <Return> in the usual way to get the menu on-screen. Go to the Default Menu and set the screen defaults to "Graphics" and "80-columns."
4. Place a formatted DOS 3.3 diskette in the ScreenSnapper default drive. (Remember that a Double High-Resolution file will take up twice as much space as a normal Hi-Res dump — ie, 60 sectors as opposed to 30 — so ensure you have enough room on your disk.) Now Select the Disk Sub-menu and use the "Save" option to create your DHi-Res file.

NB - You will need to have ScreenSnapper in memory to load files made in this way. Be sure that screen defaults are set to "Graphics" and "80-Columns" before using the "Load" option from the Disk Sub-menu.

Using ScreenSnapper for "Iron-on Transfer" printing

One increasingly popular use of dot-matrix printers is to load them with special ribbons containing thermal-transferable ink and iron-on the resulting print-outs to book-covers, T-Shirts, and other materials which are impossible to print on directly.

Both Jaromir Smejc and Tim Resche of San Francisco, California have pointed out a major drawback to the use of such ribbons. That is, if you want to transfer graphics containing text messages to articles using the iron-on method, your text will end up back-to-front. The simplest way to deal with this problem is to use ScreenSnapper to load in the desired graphic and select the mirror-image option from ScreenSnapper's Utilities sub-menu before printing.

Using the Shuttle with expanded programs

Now that memory expansion cards are more popular with Apple users, we're beginning to see more programs which know how to find and make use of all that extra RAM. In particular, the extra 64K of memory on the Apple //e's extended 80-column Card is automatically recognized by applications like Visicalc //e, AppleWorks, Flashcalc, AppleWriter //e, Apple Logo, and all Prodos-based programs.

When you start up a program from the Shuttle menu, you are asked if that program will use 128K (that is, if it will use both the main 64K *and* the 64K on the Extended 80-column Card). If you say it will, the Shuttle is careful to make room in the Extended 80-column Card for the program.

If you tell the Shuttle that a particular program will use 64K, but in fact it uses 128K, you will have trouble. The program will overflow the main 64K and interfere with whatever program the Shuttle is storing in the auxiliary 64K. One or both programs will behave oddly they may "freeze", or random characters may appear on the screen. Most often, the program which you booted second will mess up the program you booted first.

If you find that this sort of thing is happening in some circumstances, try allocating 128K to each of your programs — or at least to the one whose size you are uncertain of. If that solves the problem, then you know that one or more of your programs uses 128K.

Rules of thumb to follow are:

- Any ProDOS-based program uses 128K
- Any program that uses double hi-res graphics is 128K
- Most Mouse programs are 128K
- Any program with "works" in its name probably uses 128K
- Visicalc //e, Applewriter //e, Apple Logo, Flashcalc, AppleWorks and Pascal 1.3 all use 128K
- If a program can run on a 64K Apple, it may still use 128K on an Apple with an extended 80-column card

Having discovered that some of your programs are larger than you thought, you may find that you don't have enough memory in your Apple to "shuttle" all the applications you want. Since memory is now so cheap, the best solution is to add another RAM card or, if possible, expand the one you already own. However, if you're short of cash as well as memory and you're quite happy to work with 128K programs in their 64K form, there's a software solution: You can use the Snapshot Copykit to *fool* programs into thinking there's no extended 80-column card present. To do so, you need to beg, borrow or steal a standard (ie, non-extended) 80-column card and make a 64K Copykit backup of each of your expandable programs.

When you load these backups into your 128K Apple (using the Shuttle's "Load" option), they will be blissfully unaware of the extra available memory and continue to use 64K only. (See below for information on using the Copykit to curb the appetite of other memory-hungry programs.)

Preboot Expansion Software and Invasive Programs

Some programs can make use of other memory cards if they are specifically configured (ie, modified) to use them. For example, there are Visicalc "preboot" programs which you can use to modify Visicalc to use a Ramrod/Saturn-type memory card. You have to specify which slot the card is in. This poses no problem for the Shuttle you just have to make sure that when you configure the Shuttle you do not tell it to use the memory card that Visicalc is using. When you want to switch out of Visicalc and run some other program, the Shuttle will move only that part of Visicalc that sits in main memory. The expanded part will remain snug in its card, untouched until you return control to Visicalc again.

Likewise, if you use an AppleWorks expansion preboot, you can configure the Shuttle to ignore Ramworks (or whatever) and use only your other RAM cards for storing Workspaces. (With some versions of AppleWorks expansion software, you may be able to segment Ramworks, Multiram, etc. for both Shuttle and expanded Desktop use. Consult Dark Star's friendly techies for advice.)

A small minority of invasive programs can cause problems for the Shuttle. These RAM-gluttons search the slots of your Apple for memory cards other than the Extended 80-column Card, and then invade that extra memory and use it for their own purposes. An invasive program may locate memory used by the Shuttle to store programs and wipe them out. (You can sometimes identify one of these software equivalents to Atilla the Hun by looking at the lights — if any — on your memory card. If they flash when the program is in use, it has invaded the card. PinPoint, Locksmith 5.0 and Flashcalc are invasive programs.)

In order to explain how to nip this problem in the bud, we will look at one popular invasive program Flashcalc. Flashcalc, when it starts running, searches all your Apple's slots and makes use of any memory cards it recognizes. It knows how to use the Saturn, Neptune, Ramrod, Glanmire, Ramworks, and other cards as well. It does this automatically, without asking or notifying you. This of course can wipe out any other programs stored in a RAM card by the Shuttle.

Unfortunately, there is no way to physically block Flashcalc from invading your extra RAM. We need to use the Copykit in a similar way to that described above to fool Flashcalc into thinking that the additional memory isn't there. That way, it will restrict itself to the normal 64K or 128K. The Copykit will backup Flashcalc by letting it begin running, freezing it in memory, then copying the frozen image out to a disk. The frozen image can later be reloaded into memory and set running again. It will resume running from the point at which it was initially frozen.

If Flashcalc is frozen after it searches the Apple for memory cards, then later, when we unfreeze it, Flashcalc will carry on as though it had never been interrupted. It will still remember the arrangement of memory cards that it found when it searched for them. If we have added more memory cards in the meantime, they will be ignored. This gives us a strategy for fooling Flashcalc. Here is the method:

1. Remove all memory cards except the Extended 80-column Card from the Apple. (If you have a super-extended 80-column card like Ramworks, remove all but the first 64K bank of RAM chips.) Use the Copykit to make a 128K backup of Flashcalc, following the instructions in the Copykit manual.

2. Put the memory cards back in the Apple. Configure the Shuttle (if you haven't already done so) to use those cards. Start up the Shuttle.

3. Use the Shuttle's "Load" option to load the Flashcalc backup into a 128K workspace. Use the "Resume" option to resume running it.

4. Now you can use Flashcalc like any other program running under the Shuttle. Flashcalc will not bother the Shuttle's memory cards, as it thinks it is running on a 128K Apple.

Order Information

Address Details

The name and address immediately below will be taken as the delivery address for goods and/or further copies of the Global Village Newsletter. (If your invoice address is different, please complete the address form in the Payment Details section below as well.)

Title (Mr., Ms., etc.) _____ Forename(s) _____

Surname _____ Company/Institution _____

Address _____

Town/City/Postcode _____ County/Country _____

Prices Checklist (all prices are exclusive of VAT)

SNAPSHOT PRODUCTS	Price £
Snapshot Version //e Card (requires Snapshot Software)	95.00
Shuttle Software Pack (requires Snapshot Card)	20.00
Printerrupt Software Pack (requires Snapshot Card)	20.00
Copykit Software Pack (requires Snapshot Card)	20.00
Shell Software Pack (requires Snapshot Card)	20.00
UniCopy 3.5 Software Pack (requires Snapshot Card)	20.00
Snapshot Combination Pack*	55.00
Snapshot One/Two Upgrade	100.00

** Specify any four Snapshot Software Packs*

PRINTER CARDS & UTILITIES	
Dark Star MousePrintz	25.00
Dark Star ScreenSnapper	30.00
Dark Star ImageMaker EPCI (for Epson 8132 card)	25.00
Dark Star ImageMaker CPCI (for Cirtech Parallel I/F)	25.00
Dark Star ImageMaker SSCI (for Apple Super Serial)	25.00
Leicester Bit Image Printer (requires ImageMaker)	10.00
Cirtech Champion Parallel Card (inc. parallel cable)	44.00
Cirtech Champion ImageWriter I/F (inc. serial cable)	60.00
Cirtech Champion Serial Adaptor (requires Serial Printer Cable)	15.00
Cirtech Serial Printer Cable	9.00
Cirtech CacheCard 16K (inc. parallel cable)	85.00
Cirtech CacheCard 64K (inc. parallel cable)	108.00
Cirtech CacheBox Serial and Parallel (inc. cables)	157.00
Cirtech CacheBox Serial/Serial (inc. cable)*	135.00
Cirtech CacheBox Parallel/Parallel (inc. cable)	135.00
Cirtech Controller Card (requires Parallel Cable)	31.00
Cirtech Parallel Cable	9.00

** Specify whether Super Serial, //c or Macintosh*

MEMORY EXPANSION CARDS	Price £
Cirtech Extended 64K //e 80-column card	54.00
Dark Star RamRod 128 (compatible with II, II+ & //e)	90.00
Cirtech Flipper 1MB (compatible with II, II+ & //e)	315.00
Applied Engineering Ramworks 128K (Apple //e only)	190.00
Applied Engineering Ramworks 256K (Apple //e only)	210.00
Applied Engineering Ramworks 512K (Apple //e only)	255.00
Applied Engineering Ramworks 1.0MB (Apple //e only)	330.00
Applied Engineering Ramworks 2.5MB (Apple //e only)	1420.00
Applied Engineering Ramworks RGB option	125.00

MISCELLANEOUS HARDWARE & SOFTWARE	
Quality Software Universal File Conversion	32.00
Cirtech Uni-Mate	25.00
Cirtech EPROM Programmer (inc. Controller Card)	81.00
Cirtech EPROM Programmer (requires Controller Card)	50.00
Cirtech Standard //e 80-column Card	27.00
Cirtech Standard for Extended 80-col. Card exchange	27.00
Cirtech //e Z80 module with CP/M Plus	108.00
Cirtech //c Z80 module with CP/M Plus	175.00
Cirtech CP/M Plus Programmer's Pack	89.00
Cirtech Z80 II+ version (for CP/M versions to 2.23)	40.00
Cirtech Z80 //e version (for CP/M versions to 2.23)	40.00
Cirtech Z80 //c version (for CP/M versions to 2.23)	77.00
Glanmire GE Clock	85.00

Blunder Box

Please tick the appropriate box and fill in the form at the top of the page with your full name and address.

- ☐ One Global Village Newsletter is enough thank you. Please check your mailing list for duplications of my name and address.
- ☐ One Global Village Newsletter is one too many. Please strike my name and address from your mailing list.
- ☐ I would like to be sure of receiving the Global Village Newsletter regularly by mail, so make sure you put my name and address on your mailing list pronto.

Order Form

QTY.	ITEM	PRICE

QTY.	ITEM	PRICE
	Sub-total	
	VAT @ 15%	
	Postage and packing	
	Total	

TERMS

Orders must be accompanied by payment in Pounds Sterling (or, if on behalf of an European government/state institution, by an official purchase order). Dealer and distributor terms are available on application.
Shipping — United Kingdom: All goods by First Class Mail Free of Charge

Air Letter Shipping — Europe: Any quantity of Software.....£2.00 Hardware (inc. hardware & software packages) £2.00 per item. Air Parcel Shipping — Outside Europe: Any quantity of Software.....£5.00 Hardware (inc. hardware & software packages) £7.00 per item.

Payment Details

(Please tick the appropriate box):

- ☐ I enclose a cheque/money order for £_____ . _____
- ☐ I wish to pay by Visa
- ☐ I wish to pay by MasterCard/Access
- ☐ I wish to pay by American Express

My Credit/Charge card account number is:

Expiry Date / Amount £ . Signature _____

Invoice address/Cardholder name and address if different to that above:

Title (Mr., Ms., etc.) _____ Forename(s) _____

Surname _____

Company/Institution _____

Address _____

Town/City/Postcode _____

County/Country _____

FOLD D

FOLD C

FOLD A

BUSINESS REPLY SERVICE
Licence No HA2474

2

Dark Star Systems Ltd.
78 Robin Hood Way
Greenford
Middlesex
UB6 7BR

TUCK IN E

FOLD B

Now let's start making money

CHRIS BURRIDGE concludes his description of a spreadsheet model based on Stock Market securities

YOU'LL know if you're still with me that the first half of page 3 forms an ongoing record of all sale transactions. Included are stagging operations – new issues subscribed for and immediately sold for a quick buck – always assuming you've been lucky in the inevitable weighted ballot.

Formulae in the table are similar to those already described – dates and dividends are recorded as well as net and gross proceeds. For those needing a little hand-holding the thornier calculations in cells H94 and 094 respectively are:

= IF(D94=0,0,ROUND ((D94/B94)*100,1))

and in percentage format:

= IF(N94=0,0,N94/F94)

The extreme right column evaluates the salient net yields you've contrived by your efforts. With luck you'll be able to blow a loud raspberry at your building society manager and tell him to "Eat his heart out"! But before you start practising you'll need a gain of at least 16 per cent – being the best net building society interest rates plus say six per cent to cover your share dealing expenses.

Further down this page is a thought-provoking prediction schedule which calculates both on a present and discounted cash flow basis. Your future wealth will be based on assorted components – additional stakes by way of lump sums or standing orders and the weighted compound annual growth of your investments. Obviously you should adjust the monthly savings of £65 a month in the example to suit your budget. More on lump sums in a moment.

The formulae in this entire section require explanation. The start of year capital valuation at D115 is clearly carried over from the end of the previous year. It's important to mention that when year end is reached the results should be crystallised by converting them into absolute values.

This can be done in Excel by cutting then pasting specially as values. With Visicalc clones just remove the formulae and type in the plain figures. If there's no value calculated for the previous year then as a built-in safeguard the answer will be zero. The next row merely multiplies the figure in B116 – in this case £65 – by 12, although for six months only in 1985. So much for the easy bit.

The calculation of lump placings in row 117 is an eccentric trade-off intended to automatically balance the portfolio's changing value so that at year-ends the figure bears some relation to reality.

The longish modus operandi can be seen in Figure II showing cell E117 – produced courtesy of Excel's ability to increase font sizes.

What this means in plain-speak is if the start year balance added to standing orders, plus 16 per cent growth you've chosen in F111, is more than the projected net proceeds at B85, then display a nominal £400, which is mainly for future years' lump sums.

Otherwise, deduct from the projected net proceeds the start year balance plus standing orders plus 11 per cent of projected net proceeds.

The effect of the latter part is to recognise that you may provide lump sums at any time in a year and not just January 1.

Accordingly, the formula is weighted so only a portion is compounded during the year – hence the 11 per cent compromise which proves surprisingly accurate in practice. Down a row and D118's formula of:

= (D115+(D116+D117)/4• F111/100

works out the annual growth at the magic 16 per cent compound target discussed above. This rate of growth is not written in tablets of stone – feel free to experiment and have fun doing your own What-Ifs.

You'll be surprised how a small rate change can alter your potential fortunes. But the advantages of arranging a common percentage rate in its own separate cell won't be lost on you.

The net present value in row 122 exploits an Excel function also available on some other programs like expanded Visicalc. Discounted cashflow sounds highfalutin' but is based on the common sense premise that £100 in the hand today is worth more than £100 received in 12 months' time. The percentage change of net worth at the bottom is self explanatory and compares the total change of net worth over the previous year.

A historical section in page 4 provides archival graphing data suitable for charting and comparing a company's high or low prices at varying times of the year. This is often a good method of picking out the most advantageous time to buy and sell as trends often repeat themselves.

It's also possible to compare with stock indices like the FT ordinary/all share or even the Dow Jones industrial average from across the pond.

Producing charts with Excel is rapid and sheer joy. Simply select a spreadsheet row or column and open a New Chart from the pulldown menu. Then hey presto you've got a neat column chart automatically scaled in its own expandable scroll box like the one in Figure III.

Readers with Microsoft Chart will have to create a link or cut and paste via the clipboard to produce a similar effect. In both cases numerous graph formats and embellishments are available on tap – you can also stack

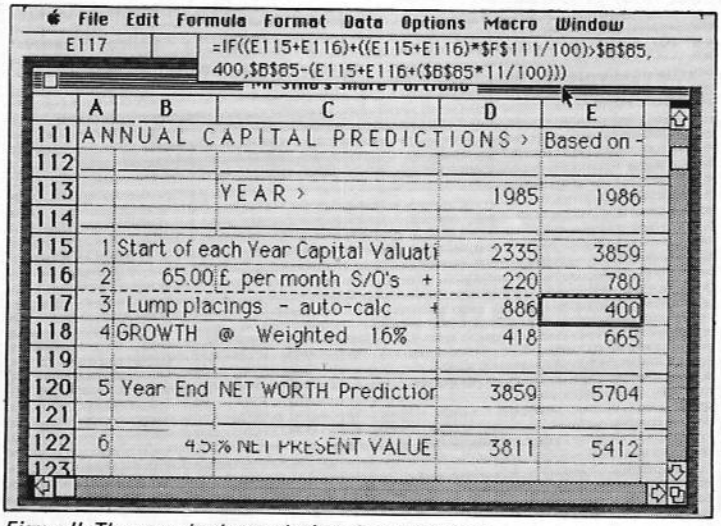


Figure II: The complex lump placings formula in cell E117 helps by ensuring the fidelity of changing value

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
87	SALES > page 3						Mr B. I. G. STAG's Portfolio						as	15-Mar-86	
88	HOLDINGS SOLD>						& = get manually from Div. work Tables, top right.								
89												NET SALE	<GAINS & LOSSES incl. DIVS>		
90	Hldg	NUMBER	Title of	< O R I G I N A L >						Sold		PROCEEDS	GROSS	NET	NET
91	No.	Shares	H O L D I N G	GROSS Invst	Purchase	Total COST	CUM DIVS	BUY PRICE	SALE	at	Sale	£	£	£	%
92		SOLD		£	Expenses £	£	Received £	Moving Ave	PRICE p	DATE	Expenses £				
93							&								
94	1	400	Brit.Telecom 25p(50pPd)	200.00	0.00	200.00		50	95.5	11-Dec-84	8.15	373.85	182.00	173.85	86.93%
95	2	200	Abbey Life New fpd. 5p ord	360.00	0.00	360.00		180	235	20-Jun-85	8.92	461.08	110.00	101.08	28.08%
96	3	1177.97	County Global Income Tst	560.00	0.00	560.00		47.5	47.115	2-Oct-85	0.00	555.00	-5.00	-5.00	-0.89%
97	4	43.89	M&G American & Gen Acc	100.00	0.00	100.00		227.9	221.8	15-Nov-85	0.00	97.34	-2.66	-2.66	-2.66%
98	5	300	Laura Ashley 5p New 5p	405.00	0.00	405.00		135	193	9-Dec-85	10.98	568.02	174.00	163.02	40.25%
99	6	200	Britoil 10p ordy	370.00	0.00	370.00	9.00	185	202	18-Dec-85	8.05	395.95	42.00	33.95	9.18%
100	7	200	Really Useful Group 5p	660.00	0.00	660.00		330	338	23-Jan-86	12.82	663.18	16.00	3.18	0.48%
101						0.00		0				0.00	0.00	0.00	0.00%
102						0.00		0				0.00	0.00	0.00	0.00%
103						0.00		0				0.00	0.00	0.00	0.00%
104						0.00		0				0.00	0.00	0.00	0.00%
105						0.00		0				0.00	0.00	0.00	0.00%
106				2655.00	0.00	2655.00	8.00				48.92	3114.42	516.34	467.42	17.61%
107															
108							1. Unit Trusts average gain just contra's 6% Men.Chrge at 10% growth rate					2. At Year End cut & paste results as Absolute values.			
109							Based on ->	16	% Compound annual growth assumed.						
110															
111	ANNUAL CAPITAL PREDICTIONS >														
112		YEAR >		1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
113															
114	1	Start of each Year Capital Valuation >		2335	3859	5704	7843	10326	13205	16545	20419	24913	30127	36174	43189
115	2	65.00 £ per month S/O's + >		220	780	780	780	780	780	780	780	780	780	780	780
116	3	Lump placings - auto-calc + >		886	400	400	400	400	400	400	400	400	400	400	400
117	4	GROWTH @ Weighted 16% >		418	665	960	1302	1699	2160	2694	3314	4033	4867	5835	6958
118															
119	5	Year End NET WORTH Prediction >		3859	5704	7843	10326	13205	16545	20419	24913	30127	36174	43189	51327
120															
121	6	4.5 % NET PRESENT VALUE £>		3811	5412	7227	9291	11646	14341	17431	20981	25066	29774	35205	41476
122															
123	7	ACTUAL previous Yr End NET WORTH >		3859											
124															
125	8	£ CHANGE of Net Worth on PREV Year>		1524	0	0	0	0	0	0	0	0	0	0	
126															
127	9	% CHANGE of Net Worth on PREV Year>		65.27%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00
128															
129															

or overlap data in series on the same chart. Steve Lambert's excellent Microsoft publication, Presentation Graphics on the Apple Macintosh, shows how to create many interesting formats.

When trying to spot trends in graphs be wary of distortions from short term data. As a guide always start the vertical value axis at zero to avoid scaling the heights – a common statistical trick to steepen plotted lines. Witness Figure IV which uses the same data as Figure III – the apparent meteoric rise in share prices is an illustion.

At this stage note the deliberate REF error in cell B150. This is what you get after deleting cells or portions containing formulae. The spreadsheet tries to refer to old cells no longer present – they're not automatically adjusted like cut and paste – so be careful.

The lower part of the page is devoted to a historical dividend table which is partly copied from the dividend work table. Don't forget the good news that total dividend income will gradually wipe out the relative buying and selling expenses.

It's worth spending time on the organisation of printed output – getting the page set-up and margins right will greatly affect final presentation. To do this expansive spreadsheet justice I've used the slower print sideways Wide option – in US legal $8\frac{1}{2}$ inches by 14 inches format.

Grid lines are beneficial to the eyes for quick reading of results and repay the extra printing time. The drawback is that draft mode isn't supported with this set up. In practice you probably won't need to print the whole spreadsheet each time – it's best to select a portion or individual page, typically the page 2 valuation.

Excel's unique option of a print preview is helpful – you get a full miniature replica of how your page will look before

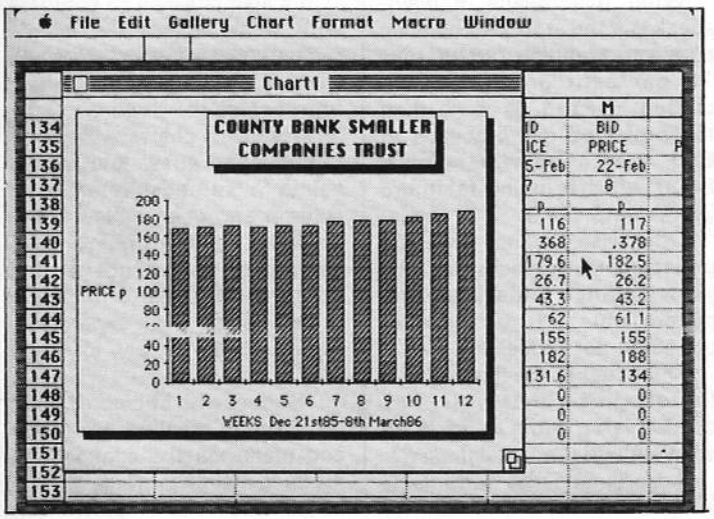


Figure III: Excel allows quick conversion of data into automatically scaled simple column charts

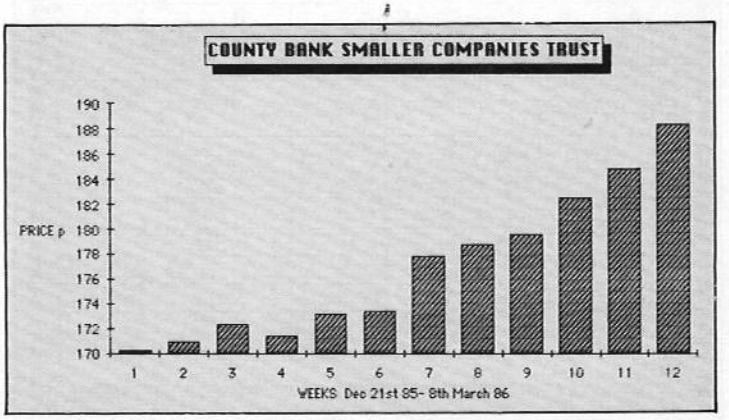
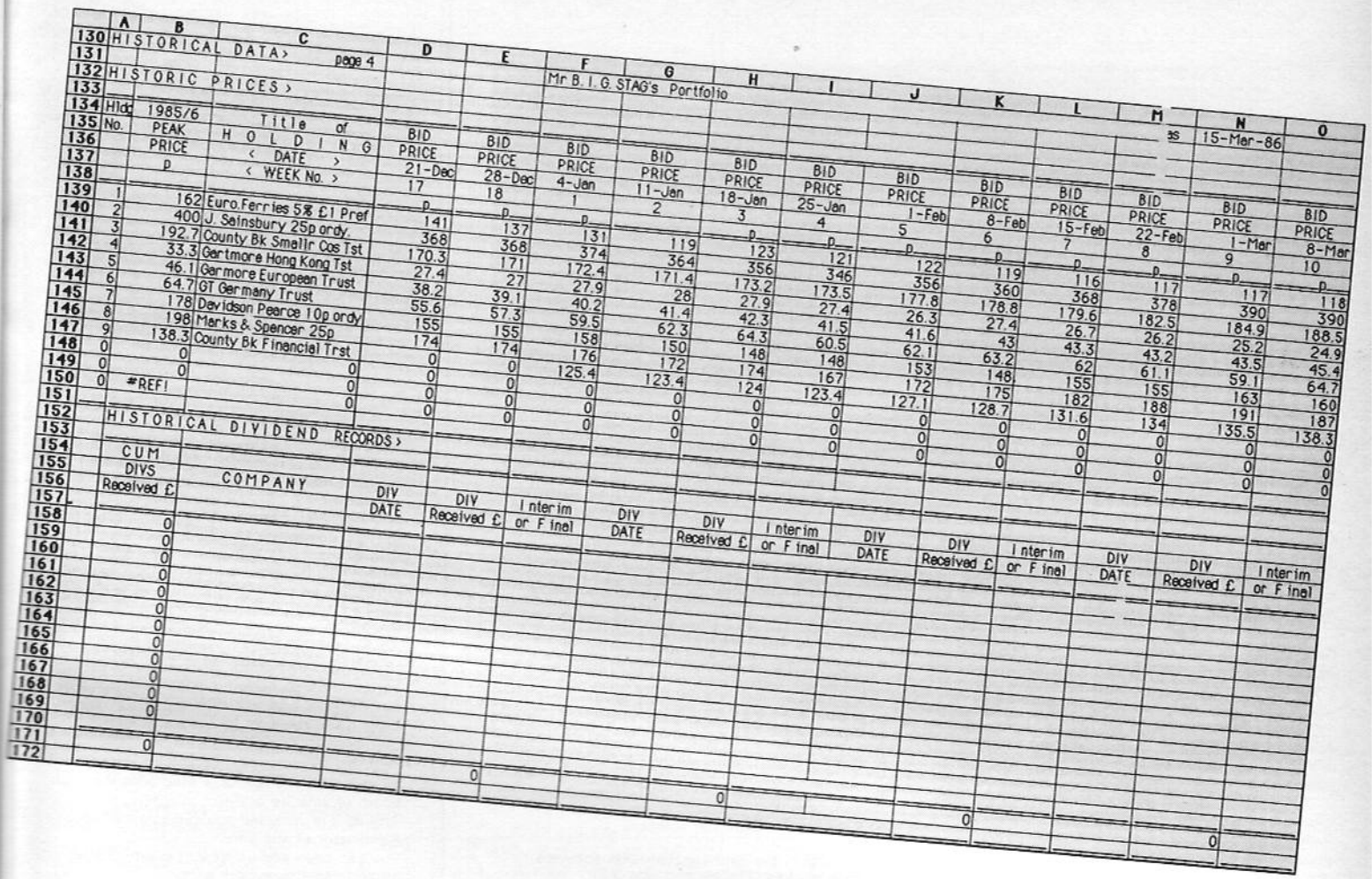


Figure IV: Scaling the heights using similar data to Figure III. The sharp rise in your shares is an illusion



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
130	HISTORICAL DATA> page 4					Mr B. I. G. STAG's Portfolio							as	15-Mar-86	
131															
132	HISTORIC PRICES >														
133															
134	Hldg	1985/6	Title of	BID	BID	BID	BID	BID	BID	BID	BID	BID	BID	BID	BID
135	No.	PEAK	H O L D I N G	PRICE	PRICE	PRICE	PRICE	PRICE	PRICE	PRICE	PRICE	PRICE	PRICE	PRICE	PRICE
136		PRICE	< DATE >	21-Dec	28-Dec	4-Jan	11-Jan	18-Jan	25-Jan	1-Feb	8-Feb	15-Feb	22-Feb	1-Mar	8-Mar
137		p	< WEEK No. >	17	18	1	2	3	4	5	6	7	8	9	10
138				p	p	p	p	p	p	p	p	p	p	p	p
139	1	162	Euro.Ferries 5% £1 Pref	141	137	131	119	123	121	122	119	116	117	117	118
140	2	400	J. Sainsbury 25p ordy.	368	368	374	364	356	346	356	360	368	378	390	390
141	3	192.7	County Bk Smallr Cos Tst	170.3	171	172.4	171.4	173.2	173.5	177.8	178.8	179.6	182.5	184.9	188.5
142	4	33.3	Gartmore Hong Kong Tst	27.4	27	27.9	28	27.9	27.4	26.3	27.4	26.7	26.2	25.2	24.9
143	5	46.1	Garmore European Trust	38.2	39.1	40.2	41.4	42.3	41.5	41.6	43	43.3	43.2	43.5	45.4
144	6	64.7	GT Germany Trust	55.6	57.3	59.5	62.3	64.3	60.5	62.1	63.2	62	61.1	59.1	64.7
145	7	178	Davidson Pearce 10p ordy	155	155	158	150	148	148	153	148	155	155	163	160
146	8	198	Marks & Spencer 25p	174	174	176	172	174	167	172	175	182	188	191	187
147	9	138.3	County Bk Financial Trst			125.4	123.4	124	123.4	127.1	128.7	131.6	134	135.5	138.3
148	0	0		0	0	0	0	0	0	0	0	0	0	0	0
149	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
150	0	#REF!	0	0	0	0	0	0	0	0	0	0	0	0	0
151			0	0	0	0	0	0	0	0	0	0	0	0	0
152	HISTORICAL DIVIDEND RECORDS >														
153															
154	CUM														
155	DIVS														
156	Received £		COMPANY	DIV	DIV	Interim	DIV	DIV	Interim	DIV	DIV	Interim	DIV	DIV	Interim
157				DATE	Received £	or Final	DATE	Received £	or Final	DATE	Received £	or Final	DATE	Received £	or Final
158															
159	0														
160	0														
161	0														
162	0														
163	0														
164	0														
165	0														
166	0														
167	0														
168	0														
169	0														
170	0														
171															
172	0				0			0			0			0	

deciding to go to press. A few other delights of Excel are bold text highlighting, automatic numerical conversions into dates and support of percentage and pound signs.

After a test print don't be shy to change the setup if you're not satisfied with the results. This advice extends to the template itself – after all you may only require a simplified version to suit your own investment needs. Notice that pages incorporate a typed title including latest valuation date on the right, printed automatically by linking to cell B28. In case you're wondering, I particularly didn't want the actual date printed and accordingly left the standard Headers feature alone.

Hopefully you've enjoyed doing the model building and have pins poised over the Investors' Chronicle ready to pick your share choices.

If your head's fuzzy and all else fails why not be contrary for a change – with my compliments. This stands my previous conventional advice on its head and involves buying when everyone else is selling then holding until the inevitable cyclical rebound when everyone else is euphorically buying. The psychology does work and can make substantial profits – but you need to be brave to take advantage!

No matter whether your game plan turns you into a bull, bear or crafty stag you'll probably get hooked on a serious money-making hobby – well breeched to reach the beers others can't afford. It'll also change your breakfast lifestyle. You won't touch your bacon and eggs until you've scanned the City prices. Ah well, page 3 was becoming a bore!

appletip

Use this program to investigate "new" colours obtained by mixing two of the usual high resolution colours. The order in which the two colours is entered will affect the result.

These are some of the colours I obtain:

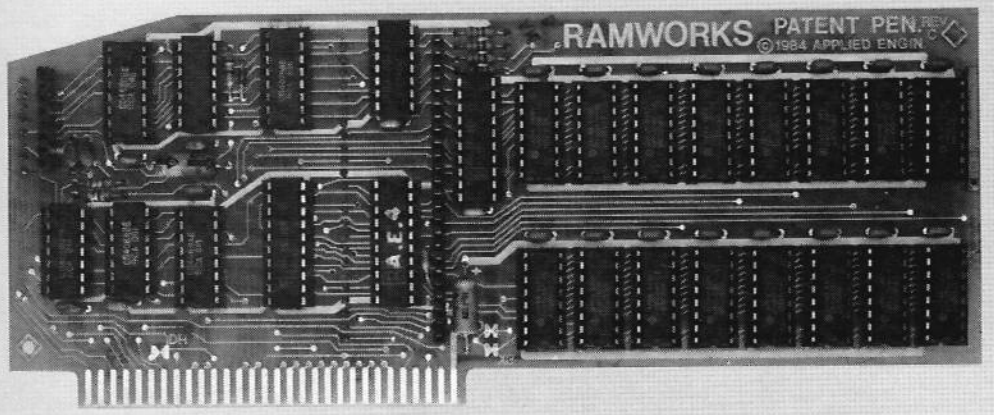
5 + 6 dark green
6 + 5 dark purple
1 + 6 turquoise
1 + 2 blue 1
2 + 1 grey
6 + 2 blue 2
2 + 5 dark pink
5 + 2 maroon
1 + 5 brown 1
5 + 1 yellow brown
3 + 5 pink
5 + 3 brown 2
3 + 1 light green
2 + 3 purple

M. Shaw

```
5  ONERR  GOTO 1000
10  TEXT : HOME
20  INPUT "MIX WHICH 2
   COLOURS";A
30  INPUT "AND COLOUR";B
40  HGR2 : REM  SET UP
   SCREEN
50  FOR P = 0 TO 245 STEP 35
60  HCOLOR=  INT (P / 35)
70  FOR I = P TO P + 34
80  HPLOT I,160 TO I,191:
   NEXT
90  NEXT
100  HCOLOR= A: REM   PLOT
   FIRST COLOUR
110  FOR C = 0 TO 158 STEP 2
120  HPLOT 0,C TO 279,C
140  NEXT
160  HCOLOR= B: REM  NOW
   SECOND COLOUR
165  FOR C = 1 TO 159 STEP 2
170  HPLOT 0,C TO 279,C
180  NEXT
200  GET A$: GOTO 10: REM
   RETURN FOR NEW COLOURS
1000  TEXT : HOME
1010  PRINT "ILLEGAL COLOUR
   ERR": END
```

RAMWORKS

Compatible with IIe



RAMWORKS is the sensational best selling memory card for the Apple IIe. Not only does RamWorks enhance and expand a vast array of other programs, it gives enhancements and expansion to AppleWorks that no other card can match or even come close.

No wonder people say: RamWorks for AppleWorks!

RamWorks – A card that plugs into the Apple IIe auxiliary slot and functions EXACTLY like Apple's extended 80 column card. But with RamWorks you get more memory, 80 column text, AppleWorks enhancements for ALL versions of AppleWorks, plus room to grow without using more slots. A design so advanced there's a patent on it.

With the included RamDrive software, RamWorks can also be used as an ultra high speed RAM disk operating about 20 times faster than mechanical floppy drives and about 5 times faster than a hard disk. RamDrive software is included for ProDos and Dos 3.3, CP/M and Pascal available as low-cost options.

The AppleWorks Amplifier

While RamWorks is recognised by all modern memory intensive programs, NO other expansion card comes close to offering the multitude of enhancements to AppleWorks that RamWorks does. (RamWorks was the first to offer a desktop greater than 55K, and a year later it's still way ahead, and improving all the time – updates available). Not only will RamWorks increase the desktop (Max is approx 1800K with 2.5 Meg RamWorks), but will simultaneously automatically load itself into RAM so dramatically accelerating operation by eliminating the time required to access the program disk drive. Now switch from word processing to spreadsheet to database at the speed of light with no wear on the disc drives.

RamWorks removes Appleworks' internal memory limits, increasing the number of database records available from 1,350 to over 15,000; increasing the number of lines permitted in word processing from 2,250 to over 15,000 and expands the clipboard so it can hold 2,000 lines or records.

RamWorks even offers you a built-in printer buffer (for Super Serial Cards only) so you won't have to wait for your printer to stop before returning to AppleWorks. RamWorks even auto-segments large files so they can be saved on two or more disks. It even provides the time and date on the screen with virtually any ProDos compatible clock. And it provides this for ALL versions of AppleWorks, not just 1.3+.

Without doubt, when it comes to AppleWorks on the IIe there's only one expansion card – RAMWORKS!

PLUS COLOUR

Even that's not the end of the story. Because as well as super sharp 80 column text and double-hi-res graphics as standard (monochrome) you can choose to add RGB colour without wasting another valuable slot. The RGB option simply plugs onto the back of RamWorks and provides outputs not only for Apple compatible monitors but also IBM standard outputs. So now you can have double high resolution graphics and 80 column text in colour, and you can add the option at any later date.

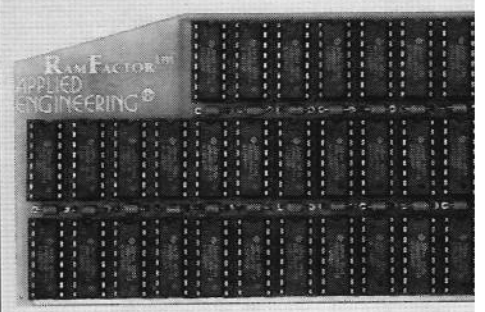
IT'S GOT IT ALL

- Super Sharp 80 Col Text (with or without RGB opt).
- Double high resolution graphics (with or without RGB opt)
- User upgradeable
- 100% compatible with ALL IIe software
- Built-in self-diagnostic software
- RamDrive, the ultimate Ram-Disk software included free (ProDos and Dos 3.3)
- Ram-Disk software for Pascal and CP/M available as low cost options
- Only uses 1 slot (auxiliary slot 3)
- Low power consumption (patent pending)
- Software industry standard
- The longest established large RAM card
- Used by Apple Computer, Steve Wozniak and virtually all software companies
- Expands AppleWorks to over 1800K desktop (2.5 Meg RamWorks)
- Accelerates AppleWorks by eliminating disk access
- Increases AppleWorks Database to over 15,000 records
- Increases AppleWorks Word Processor to over 15,000 lines
- Increases AppleWorks Clipboard to 2000 lines or records
- Built-in AppleWorks printer buffer (for Super Serial Cards)
- Auto-segments large files so that files greater than disk capacity can be spread over two or more disks
- Expands ALL versions of AppleWorks – V1.0, V1.1, V1.2, V1.3 and greater
- Displays time and date on AppleWorks screen with any ProDos compatible clock.
- Compatible with ALL IIe hardware (except Slot 3) including hard disks, unidisk, accelerators, modems etc, etc
- 1 year warranty
- 10 Day Money Back Guarantee

256K Ramworks **£219.00**
512K Ramworks **£269.00**
1 Meg Ramworks **£369.00**

RAMF

Compatible v



While RamWorks is the clear winner for the auxiliary slot of a IIe, RamFactor sets the standard for IIe main slots and the II+.

Like RamWorks (and Z-RAM), RamFactor follows the Apple software standard. RamFactor also follows the Apple II Memory Expansion standard for Ram cards which permits limited expansion of AppleWorks 1.3 or later. But, as you would expect from the creators of RamWorks, this card has additional features which make it far more powerful than any other memory expansion card (RamWorks excepted). These features include battery back-up option, a linear addressed 16 bit co-processor port and total expansion using a piggy-back board to 16 Meg!!

With RamFactor, you'll be able to instantly add another 256K, 512K or 1 Meg onto the main board of your IIe or II+.
And as it is socketed you can upgrade your RamFactor at any time.
You can even add up to 4 or even 16 Meg with an additional piggyback card.

Virtually all modern software is already automatically compatible with RamFactor: software such as AppleWorks, PinPoint, SuperCalc 3a, ProFiler, Catalyst 3.0 and more. And RamFactor is fully ProDos, Dos 3.3, Pascal 1.3 and CP/M compatible.

APPLEWORKS POWER

As well as giving AppleWorks a larger desktop, RamFactor increases AppleWorks' internal memory limits so that the Word Processor can have 5,300 lines, and the database 5,300 records. Plus it also automaticlaly loads AppleWorks into RAM and so accelerates AppleWorks by eliminating program disk access. It will also auto-segment large files across 2 or more floppy disks. It even provides the time and date on the screen with virtually any ProDos compatible clock. Furthermore, all this performance is available on the II+ as well as o the IIe. Unlike RamWorks, however, the AppleWorks must be version 1.3 or greater. An you still require an 80 column card (for the II+ we recommend ViewMaster).

True 65C816 16 Bit Power

RamFactor has a built-in 65C816 CPU port for direct connection to our IIe 65C816 card for linearly addressing up to 16 Meg for the most powerful 16 bit applications.

Powerful Program Switcher

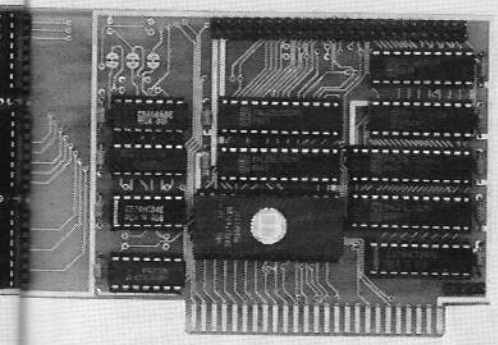
With RamFactor, you can organise memory into

ALL PRODUCTS CARRY A TEN-DAY NO-QUIBBLE "MONEY BACK IF NOT DELIGHTED" OFFER. PLUS ONE YEAR GUARANTEE.

BIDMUTHI
P.O. BOX 264, HA
Tel: 01-907 851
G (R
Also available

FACTOR

with IIe and II+



multiple work areas and and switch between them. Each work area can contain different programs and even different operating systems. And with the Battery Back-up option, you can have permanent storage for up to 10 years.

Features

- Up to 16 Meg total memory. 256K to 1 Meg on main board. Up to 16 Meg with additional memory on piggyback card
- Fully socketed and user upgradeable
- Fully Apple II Memory Expansion compatible
- Compatible with Apple IIe and II+
- Built-in self-diagnostic software
- Built-in RamDrive, the ultimate Ram-Disk software (ProDos and Dos 3.3)
- Fits any main slot except slot 3
- Battery Back-Up option allows you to turn on your Apple and run your favourite programs in less than 1 second!
- Automatically recognised by ProDos, Dos 3.3, Pascal 1.3 and CP/M
- Automatically expands AppleWorks V1.3 or later
- Accelerates AppleWorks by eliminating disk access
- Low cost option allows your II+ to run AppleWorks
- Increases AppleWorks Database to 5,300 records
- Increases AppleWorks Word Processor to 5,300 lines
- Auto-segments large files so that files greater than disk capacity can be spread over two or more disks
- Displays time and date on AppleWorks screen with ProDos compatible clock.
- 1 year warranty
- 10 Day Money Back Guarantee

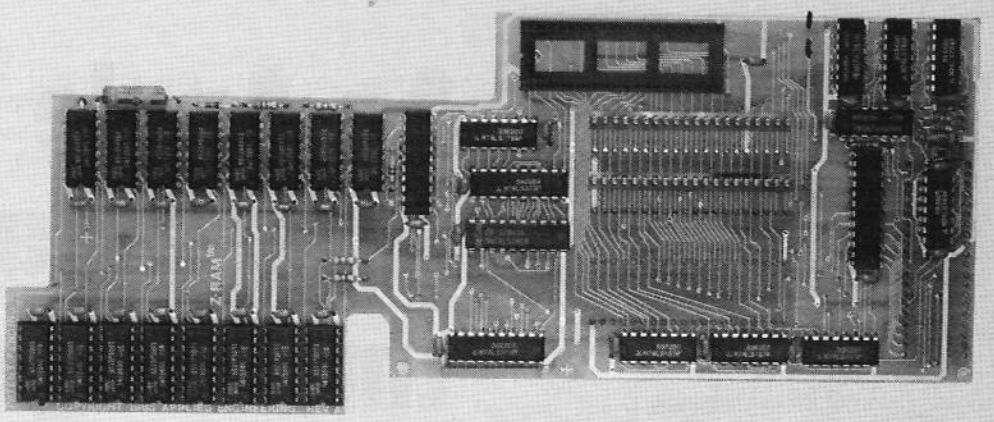
256K RamFactor **£239.00**
512K RamFactor **£289.00**
1 Meg RamFactor **£369.00**

TCHNOLOGIES
Rv, MIDDX. HA3 9AY
Te 8950511 ONEONE
: 154001)
Your Local Dealer

ORDERING INFORMATION
Add £1.00 P&P per order.
Add VAT at 15%

Z-RAM

Compatible with IIc



Z-RAM is the sensational memory plus card for the Apple IIc that powers the IIc to new heights.

AppleWorks is expanded to a desktop size of 413K (that's about 8 times bigger than a standard IIc), PLUS you can run CP/M programs like dBase II, Wordstar, Turbo Pascal, Microsoft Basic and over 3,000 other CP/M programs. And there's more – but only with Z-RAM.

The 640K IIc

Z-RAM is available with either 256K or 512K of additional memory PLUS a powerful Z-80B microprocessor for running CP/M software. Added to the IIc standard 128K of memory, that gives 384K or 640K of Ram, which gives an AppleWorks desktop size of 229K or 413K.

Z-RAM and AppleWorks will knock your socks off.

As well as expanding the desktop size, Z-RAM will expand the database, word-processor and clipboard. Plus it will simultaneously load the AppleWorks program into memory thus eliminating the need for a second disk drive. This Ram-Disking means that AppleWorks will now run about 10 times faster in your IIc with one disk drive than in other IIc's with two disk drives. (Loading the program into memory doesn't reduce the desktop available.)

And don t worry about the desktop files being larger than floppy disk capacity – if the file is bigger than the remaining space on a disk Z-RAM will automatically segment the file and prompt you when to insert subsequent disks.

Z-RAM removes AppleWorks' internal memory limits, increasing the number of database records available from 1,350 to over 15,000; increasing the number of lines permitted in word processing from 2,250 to over 15,000 and expands the clipboard so it can hold 2,000 lines or records. Z-RAM even offers you a built-in printer buffer (up to 64K) so you won't have to wait for your printer to stop before returning to AppleWorks.

With the addition of the System Clock IIc, Z-RAM provides the time and date on the AppleWorks screen plus auto time/date entry into the database plus file time/date stamping. And it provides this for ALL versions of AppleWorks, not just 1.3+.

With the included RamDrive software, Z-RAM can also be used as an ultra high speed RAM disk operating about 20 times fater than mechanical floppy drives and about 5 times faster than a hard disk. RamDrive software is included for ProDos and Dos 3.3, CP/M and Pascal.

As well as all that extra memory Z-RAM has a built-in high speed Z-80 processor chip that allows you to run CP/M programs like dBase II, Wordstar, Turbo Pascal and over 3,000 other CP/M programs.

Z-RAM is 100% compatible with ALL IIc software and hardware including mouse, 2nd disk, UniDisk, modems and printers.

Installation

Z-RAM installs easily and securely inside the IIc in less than half an hour. Installation is easy. Full, clear and precise instructions show you how and all you need is a screwdriver. (Absolutely no soldering).

With Z-RAM installed, your IIc is still a IIc but you have the advantage of all that extra memory that AppleWorks and other programs need. Plus you can run CP/M software.

Z-RAM is easily handled by the IIc power supply as power consumption is kept very low by using two custom integrated circuits and a patent-pending power saving design.

Features

- Two memory sizes – 256K and 512K. The 512K Z-RAM gives a total IIc memory of 640K
- Runs all CP/M versions 2.0 or greater
- 100% compatible with ALL IIc software
- Built-in self-diagnostic software
- RamDrive, the ultimate Ram-Disk software included free (ProDos, Dos 3.3, Pascal and CP/M)
- Low power consumption (patent pending)
- Software industry standard
- Expands AppleWorks to over 400K desktop
- Accelerates AppleWorks by eliminating disk access
- Increases AppleWorks Database to over 15,000 records
- Increases AppleWorks Word Processor to over 15,000 lines
- Increases AppleWorks Clipboard to 2000 lines or records
- Built-in AppleWorks printer buffer
- Auto-segments large files so that files greater than disk capacity can be spread over two or more disks
- Expands ALL versions of AppleWorks – V1.0, V1.1, V1.2, V1.3 and greater
- Displays time and date on AppleWorks screen with System Clock IIc
- Compatible with ALL IIc hardware (except internally fitted) including hard disks, unidisk, modems etc, etc
- 1 year warranty
- 10 Day Money Back Guarantee

256K Z-RAM **£359.00**
512K Z-RAM **£419.00**

An Apple Pascal screen dump for the Imagewriter

Last month's Feedback covered some of the problems associated with the IIc and its serial port. The skeleton program outlined there is here presented in an expanded, more useful form.

By D. JONES

I BOUGHT my Apple because at the time it seemed to have the best version of Pascal available on a small micro. Over the last two years I have not regretted my choice of machine, but this does not mean that I have found Apple Pascal to be perfect.

The features offered seem to have been frozen as those supplied with the original 1.0 version. I am sure I am not the only user who would now expect the language to support all the current machine features, such as the mouse and double hi-res graphics, especially as Apple asks such a high price for the product. Now if Turbo Pascal had been written for the 6502 processor . . .

One routine which I tried to develop early on was a graphics dump procedure for my Imagewriter. For speed and to get round the problems of transmitting graphics bytes, assembly language must be used.

Stuart Bell's recent articles on Pascal have done an excellent job of explaining the use of the UCSD Assembler and Linker, so I will assume these articles as a reference for a newcomer to this aspect of programming.

I found the main obstacle to progress with my IIc was Apple's policy of not supplying technical documentation with its newer machines, and at the same time not selling the Apple IIc reference manual in the UK. It is now available.

Even when an Imagewriter manual was finally supplied – my printer was delivered without any documentation at all – it was no help.

The graphics examples carefully avoid control codes which will upset the IIc printer port. No doubt seasoned users of the Super Serial card would have known what was going on, but in the documentation I had there was absolutely no information on how to handle the ports.

Eventually I managed to get hold of the much needed and excellent reference manual, and progress could continue. The end result is the procedure program included here. It is written specifically for an Imagewriter connected to port 1 on an Apple IIc, but the code should work as it stands with a Super Serial card in slot 1 of any Apple II.

It should not be too difficult to adapt the code to output via a different card or slot, and even to a different printer. No doubt seasoned 6502 programmers will see ways of improving on my coding – I have written for clarity rather than efficiency.

I have also failed to find any way of getting the UCSD assembler to load absolute addresses associated with labels other than the jump-table method utilised by the string-output procedure. ProDOS DOS 3.3 assemblers do not seem to suffer from this limitation and you might bear this in mind if adapting the code.

Starting at the beginning the directives first set up various equates. Note that the printer slot is entered as an equate, so that only this needs to be changed if a different slot is used. Zero page workspace is then declared – the manual states that bytes $00 through to $35 can be used, so there is room for expansion here. The usual pop and push macros are then defined.

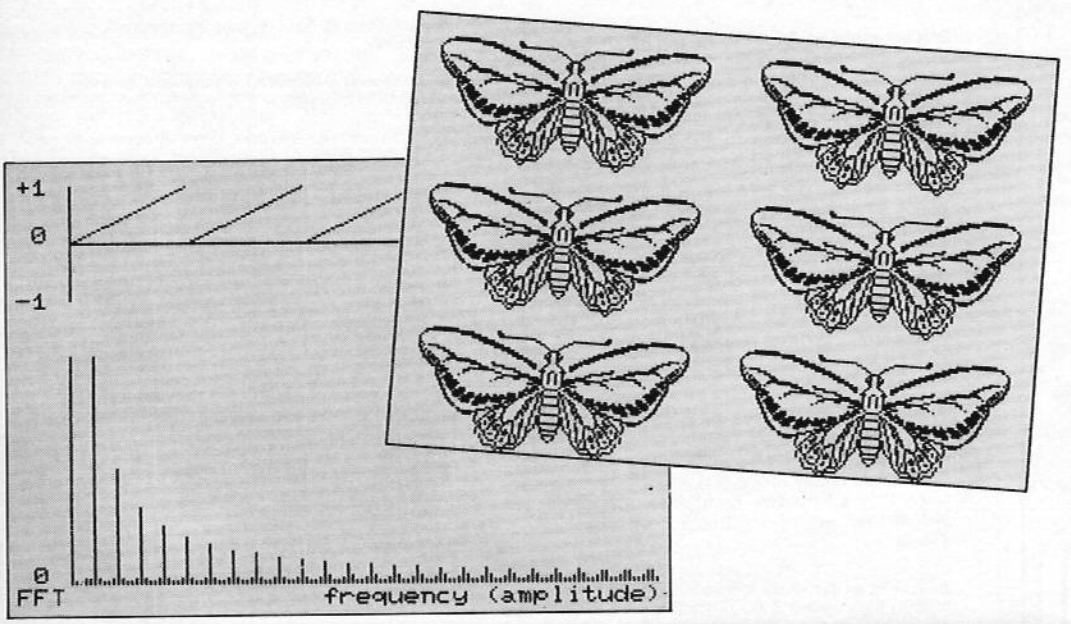
Now the code proper starts. The return address must be popped to allow access to the procedure parameter, and this is popped next into FLAGS. The Pascal stack is managed with word boundaries, but only the first byte of FLAGS is really needed. Bits 0 and 1 flag double size and inverse print, respectively.

It is better to move them to bits 6 and 7 however, for easier testing. The BIT operation on FLAGS will set the N and V flags in the processor status register according to the value of bits 6 and 7 in memory regardless of the contents of register A.

Memory is then set to a standard configuration – select main bank, page 0 and 1, and read ROM so that the firmware routines can be used. The links to the firmware port routines are then built, PINIT (initialise) and PWRITE (write) being required.

The technique for doing this is described under the heading firmware entry point address is IIc Reference Manual and I will only summarise the relevant parts of the protocol here.

The high-order of each firmware entry-point address is $Cn, where n is the port – slot – number. The low order bytes



are stored at the following locations for port n:

$Cn0D: initialisation entry address – PINIT.

$Cn0E: read-routine entry address.

$Cn0F: write-routine entry address – PWRITE.

$Cn10: status-routine entry address.

On entry to any of the routines the X register must contain $Cn and the Y register must contain $n0. On entry to PWRITE register A must contain the character to be written.

As only PINIT and PWRITE are needed here it takes just seven lines of assembler to set them up – plus the firmware links. The resulting code will be hardware independent and it avoids the usual problems associated with direct access to ACIAs and other I/O chips – for instance, it appears that the ACIA is wired differently in the IIc port compared to the Super Serial card.

To see how the procedure uses PWRITE you should examine the subroutine COUT and the firmware link at WRITELINK in Program I. There is no need to check the error code in this particular application.

It is then necessary to stop the port responding to control codes – it must be zapped with Control-I Z. All graphics bytes will then be freely transmitted, as well as any printer control codes. The final step before the dump proper is to set up the Imagewriter ready for graphics.

The graphics dump can now start. I have split the code into a number of subroutines apart from the main body. This was originally necessary to prevent branches from becoming too long, but it also has the advantage of splitting the code into functional units.

Hopefully this will make life a little easier for anyone investigating screen dump techniques for the first time. At this point a full description of the code used becomes impractical, not that there is anything novel here.

The best I can suggest is that if you want to know more get hold of a reference manual and take a deep breath. Steve Wozniak brilliantly designed his machine to save on chip cost and not to make screen addressing easy.

The final part of the program code resets the printer and port. You can reset the Imagewriter using just Esc C, but this has the disadvantage that any margin or tab settings will be lost. The string I have given restores settings to those recommended in the Imagewriter manual.

To use another slot you must change the equate for SLOT to the appropriate value. To use another printer it will be necessary to change the printer set-up strings.

I also understand that Epson printers need their graphics bytes upside down when compared to the Imagewriter. If this is correct, apart from the set-up string changes, all the ROL A op-codes in PBYTE will have to be changed to ROR A if you use an Epson.

The code can be typed in as presented – less comments if you prefer – and it should assemble without any problems. Save the object code so that it can be linked into a host program. The second program is a simple test that declares the procedure to be external.

Test should be compiled and then linked, the system library and grafdump being named as libraries. Program III shows a simple UCSD unit which allows the dump procedure to be incorporated into a library – note that the unit must be an intrinsic unit or the linker will not accept it as a host file.

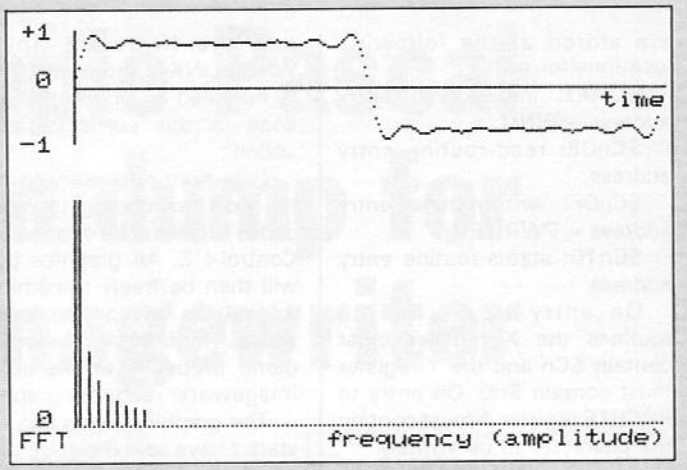
I hope that DOS and ProDOS users will also find the source-code to be of interest. There appears to be some reluctance to adopt the proper Apple firmware protocols, even though they are not difficult to use, as I have tried to show.

This is a pity because because they exist to avoid just the kind of problems that Apple users have encountered when transferring routines from the IIe to the IIc.

Program I

```
Current memory available:   9100
00001                       .TITLE "Pascal Screen Dump.  Copyright 1986, D Jones."
00001                       .NoMacroList
00001
00001                   ;-------------------------------------------------------;
00001                   ;                                                       ;
00001                   ; Listing Number 1.                                     ;
00001                   ;                                                       ;
00001                   ; Apple ImageWriter Screen-Dump Procedure.              ;
00001                   ;                                                       ;
00001                   ; Written for Apple //c and Pascal 1.1 .                ;
00001                   ;                                                       ;
00001                   ; Uses standard Apple II slot protocols.                ;
00001                   ;                                                       ;
00001                   ; Dumps high-res graphics page 1 (Pascal graphics page).;
00001                   ;                                                       ;
00001                   ; Copyright 1986, D Jones.                              ;
00001                   ;                                                       ;
00001                   ;-------------------------------------------------------;
00001
00001                   ; All numbers are hexadecimal.
00001
00001                   ;*** Equates
00001                   ;    -------
00001
00001 0001              n       .EQU 01         ; printer port (slot) number
00001 C008              MAIN01  .EQU 0C008      ; select main bank, page 0 and 1
00001 C08A              RDROM   .EQU 0C08A      ; read ROM, bank 1
00001 C088              RDRAM   .EQU 0C088      ; read RAM, no write, bank 1
00001 000D              CR      .EQU 0D         ; carriage-return
00001 000A              LF      .EQU 0A         ; line-feed
00001 0007              NBITS   .EQU 07         ; valid bits per graphics byte
00001 0028              NBYTES  .EQU 28         ; bytes per graphics line
00001 00C0              NLINES  .EQU 0C0        ; graphics lines per page
00001 0020              PGIMSB  .EQU 20         ; graphics-page-1 msB
00001 0004              ADDINC  .EQU 04         ; msB increment for succesive lines
00001 0000              IDMASK  .EQU 00         ; identity mask
00001 00FF              INVMASK .EQU 0FF        ; mask to invert byte (EOR)
00001
00001                   ;*** Zero-page work-space
00001                   ;    --------------------
00001
00001 0000              ADD1    .EQU 00  ; graphics line addresses
00001 0002              ADD2    .EQU 02  ; will be built here...
00001 0004              ADD3    .EQU 04
00001 0006              ADD4    .EQU 06
00001 0008              ADD5    .EQU 08
00001 000A              ADD6    .EQU 0A
00001 000C              ADD7    .EQU 0C
00001 000E              ADD8    .EQU 0E
00001
00001 0010              RETURN  .EQU 10  ; Pascal return address
00001 0012              FLAGS   .EQU 12  ; mode parameter (0,1,2,3)
00001
00001 0014              TEMP    .EQU 14  ; temporary storage
00001 0015              LNCOUNT .EQU 15  ; graphics line
00001 0016              T1      .EQU 16  ; used to build printer bytes
00001 0017              T2      .EQU 17
00001 0018              T3      .EQU 18
00001 0019              T4      .EQU 19
00001 001A              T5      .EQU 1A
00001 001B              T6      .EQU 1B
00001 001C              T7      .EQU 1C
00001 001D              T8      .EQU 1D
00001 001E              STRPTR  .EQU 1E
00001
00001 0020              PINIT   .EQU 20  ; vectors to slot firmware
00001 0022              PWRITE  .EQU 22
00001
00001                   ;*** Macros
00001                   ;    ------
00001
00001                           .MACRO POP      ; pops 16-bit address
00001                           PLA
00001                           STA %1
00001                           PLA
00001                           STA %1+1
00001                           .ENDM
00001
00001                           .MACRO PUSH     ; pushes 16-bit address
```

```
0000|                           LDA %1+1
0000|                           PHA
0000|                           LDA %1
0000|                           PHA
0000|                           .ENDM
0000|
0000|
2 blocks for procedure code  8272 words left
0000|                           .PROC GRAFDUMP,1        ; one parameter
Current memory available:    8223
0000|                           ;=============
0000|
0000|                     ;*** Main Body
0000|                     ;    ---------
0000|
0000|                           POP RETURN      ; save return address
0006|                           POP FLAGS       ; get parameter into FLAG
000C|
000C| 66 12                     ROR FLAGS       ; move value (0..3) to
000E| 66 12                     ROR FLAGS       ; bits 6 & 7 so BIT can be
0010| 66 12                     ROR FLAGS       ; used to set N & V in P reg.
0012|
0012|                           ; N set = inverse.
0012|                           ; V set = double size.
0012|
0012| 8D 08C0                  STA MAIN01      ; select main bank, page 0 and 1
0015| AD 8AC0                  LDA RDROM       ; select read ROM, bank 1
0018|
0018|                           ; Set links to port firmware for PINIT and PWRITE
0018|                           ; obeying Apple firmware protocol.
0018|                           ; n = port (slot) number
0018|
0018| A9 C1                     LDA #0C0+n      ; Port n: set vector for:
001A| 85 21                     STA PINIT+1     ;   initialisation.
001C| 85 23                     STA PWRITE+1    ;   output.
001E| AD 0DC1                  LDA 0C0+n*100+0D        ; get Cn0D
0021| 85 20                     STA PINIT
0023| AD 0FC1                  LDA 0C0+n*100+0F        ; get Cn0F
0026| 85 22                     STA PWRITE
0028|
0028| AD ****                  LDA JZAP+1      ; zap the port
002B| AE ****                  LDX JZAP+2
002E| 20 ****                  JSR STROUT
0031| AD ****                  LDA JPRINIT+1   ; initialise printer
0034| AE ****                  LDX JPRINIT+2
0037| 20 ****                  JSR STROUT
003A| A9 00                     LDA #00
003C| 85 15                     STA LNCOUNT     ; initialise line count
003E|
003E|                           ; Calculate the addresses of the first bytes
003E|                           ; of the next graphics lines
003E|
003E| 20 ****             NEWLINE JSR LADR
0041|
0041| 24 12                     BIT FLAGS
0043| 70**                      BVS DBLPRE      ; graphics-line preamble:
0045| AD ****                  LDA JGLN+1
0048| AE ****                  LDX JGLN+2      ; normal
004B| 4C ****                  JMP SKIP1
0043* 09
004E| AD ****             DBLPRE  LDA JDBLGLN+1
0051| AE ****                  LDX JDBLGLN+2   ; double
004C* 5400
0054| 20 ****             SKIP1   JSR STROUT
0057|
0057| A0 00                     LDY #00         ; Y counts bytes
0059|
0059|                           ; get the screen bytes for printing
0059|
0059| 20 ****             NEWBYTE JSR GETBYTS
005C|
005C| A2 07                     LDX #NBITS      ; X counts bits
005E|
005E|                           ; transfer bit-image into A and print
005E|
005E| 20 ****                  JSR PBYTE
0061|
0061| C8                        INY             ; check on bytes done
0062| C0 28                     CPY #NBYTES
0064| D0F3                      BNE NEWBYTE     ; line finished?
0066| A9 0D                     LDA #CR         ; yes, terminate
0068| 20 ****                  JSR COUT
006B| A9 0A                     LDA #LF
006D| 20 ****                  JSR COUT
0070| E6 15                     INC LNCOUNT     ; increment the linecount
0072| A5 15                     LDA LNCOUNT
0074| C9 C0                     CMP #NLINES     ; all done ?
0076| D0C6                      BNE NEWLINE     ; no, so do next set of lines
0078|
```



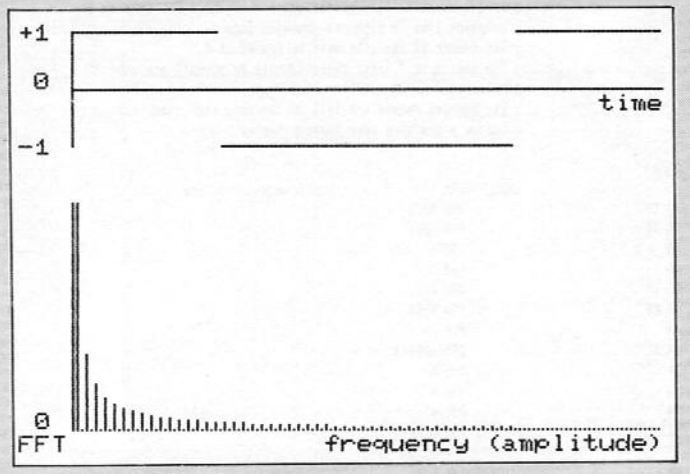

```
0078| AD ****                  LDA JPRST+1     ; yes, so restore the printer
007B| AE ****                  LDX JPRST+2
007E| 20 ****                  JSR STROUT
0081| 20 ****                  JSR INITLINK    ; restore the port
0084| 8D 88C0                  STA RDRAM       ; select read RAM, no write, bank 1
0087|                           PUSH RETURN     ; restore return address
0088| 60                        RTS             ; return to Pascal
008E|
008E|                     ;*** Subroutines
008E|                     ;    -----------
008E|
008E|                     ;-----------------------------------------------
008E|                     ; Subroutine to Output a Character to Port n.
008E|                     ; Char in A; X and Y needed for firmware protocol.
008E|                     ; Assumes slot vectors at PINIT and PWRITE.
008E|                     ; Register contents are preserved.
008E|
006E* 8E00
0069* 8E00
008E| 85 14               COUT    STA TEMP        ; don't trash char
0090| 48                          PHA             ; save registers
0091| 8A                          TXA
0092| 48                          PHA
0093| 98                          TYA
0094| 48                          PHA
0095| A5 14                       LDA TEMP        ; retrieve the char
0097| 20 ****                     JSR WRITELINK   ; out it goes
009A| 68                          PLA             ; restore registers
009B| A8                          TAY
009C| 68                          PLA
009D| AA                          TAX
009E| 68                          PLA
009F| 60                          RTS             ; end of COUT
00A0|
00A0|                     ;---------------------------------------
00A0|                     ; Subroutine to output a string via COUT.
00A0|                     ; The string must be preceeded by a count
00A0|                     ; of the number of characters.
00A0|                     ; A passes lsB of string address.
00A0|                     ; X passes msB of string address.
00A0|                     ; Contents of A,X and Y are destroyed.
00A0|                     ;
007F* A000
0055* A000
0038* A000
002F* A000
00A0| 85 1E               STROUT  STA STRPTR      ; point STRPTR
00A2| 86 1F                       STX STRPTR+1    ; to string
00A4| A0 00                       LDY #00         ; prime index
00A6| B1 1E                       LDA @STRPTR,Y   ; get char count
00A8| AA                          TAX
00A9| F0**                       BEQ STRDNE      ; any to do?
00AB| C8                  STRNXT  INY             ; yes, get next char
00AC| B1 1E                       LDA @STRPTR,Y
00AE| 20 8E00                     JSR COUT        ; print it
00B1| CA                          DEX             ; decrement count
00B2| D0F7                       BNE STRNXT      ; more to do?
00A9* 09
00B4| 60                  STRDNE  RTS             ; no, done
00B5|
00B5|
```

```
00B5I                   ;-------------------------------------------------------
00B5I                   ; This subroutine returns the address of the first byte of a
00B5I                   ; graphics line in high-res graphics page 1.
00B5I                   ; The number of the line must be passed in A.
00B5I                   ; The next 3 or 7 first-bytes (double or normal) are also
00B5I                   ; returned.
00B5I                   ; The address values are left in the zero page ready for
00B5I                   ; use as a graphics page look-up table.
00B5I
003F* B500
00B5I 48                LADR    PHA             ; public-domain routine
00B6I 29 C0                     AND #0C0
00B8I 85 00                     STA ADD1
00BAI 4A                        LSR A
00BBI 4A                        LSR A
00BCI 05 00                     ORA ADD1
00BEI 85 00                     STA ADD1
00C0I 68                        PLA
00C1I 85 01                     STA ADD1+1
00C3I 0A                        ASL A
00C4I 0A                        ASL A
00C5I 0A                        ASL A
00C6I 26 01                     ROL ADD1+1
00C8I 0A                        ASL A
00C9I 26 01                     ROL ADD1+1
00CBI 0A                        ASL A
00CCI 66 00                     ROR ADD1
00CEI A5 01                     LDA ADD1+1
00D0I 29 1F                     AND #1F
00D2I 09 20                     ORA #PG1MSB
00D4I 85 01                     STA ADD1+1
00D6I
00D6I                   ; Now build the next 3 or 7 addresses
00D6I
00D6I A5 00                     LDA ADD1
00D8I 85 02                     STA ADD2        ; lsB unchanged
00DAI 85 04                     STA ADD3
00DCI 85 06                     STA ADD4
00DEI
00DEI 24 12                     BIT FLAGS       ; double size?
00E0I 70**                      BVS OK3
00E2I
00E2I 85 08                     STA ADD5        ; no, so set next 4
00E4I 85 0A                     STA ADD6
00E6I 85 0C                     STA ADD7
00E8I 85 0E                     STA ADD8
00EAI
00E0* 08
00EAI A5 01             OK3     LDA ADD1+1      ; msB is incremented by
00ECI 18                        CLC             ; ADDINC for each new line
00EDI 69 04                     ADC #ADDINC     ; Add the address increment
00EFI 85 03                     STA ADD2+1      ; to each additional
00F1I E6 15                     INC LNCOUNT     ; graphics line.
00F3I 69 04                     ADC #ADDINC
00F5I 85 05                     STA ADD3+1
00F7I E6 15                     INC LNCOUNT
00F9I 69 04                     ADC #ADDINC
00FBI 85 07                     STA ADD4+1
00FDI E6 15                     INC LNCOUNT
00FFI
00FFI 24 12                     BIT FLAGS       ; double size?
0101I 70**                      BVS OK32
0103I
0103I 69 04                     ADC #ADDINC     ; no, so set next 4
0105I 85 09                     STA ADD5+1
0107I E6 15                     INC LNCOUNT
0109I 69 04                     ADC #ADDINC
010BI 85 0B                     STA ADD6+1
010DI E6 15                     INC LNCOUNT
010FI 69 04                     ADC #ADDINC
0111I 85 0D                     STA ADD7+1
0113I E6 15                     INC LNCOUNT
0115I 69 04                     ADC #ADDINC
0117I 85 0F                     STA ADD8+1
0119I E6 15                     INC LNCOUNT
0101* 18
011BI 60                OK32    RTS             ; end of LADR
011CI
011CI                   ;-------------------------------------------------
011CI                   ; Subroutine to get the graphics bytes from the
011CI                   ; graphics page, inverting them if required.
011CI
005A* 1C01
011CI A9 00             GETBYTS LDA #IDMASK     ; non-inv. mask
011EI 24 12                     BIT FLAGS       ; invert?
0120I 10**                      BPL NONINV      ; no, mask is ok
0122I A9 FF                     LDA #INVMASK    ; yes, set inv. mask
0120* 02
0124I 85 14             NONINV  STA TEMP        ; save mask in TEMP
0126I B1 00                     LDA (ADD1),Y    ; get graphics byte
0128I 45 14                     EOR TEMP        ; possibly invert
012AI 85 16                     STA T1          ; save in zero page
012CI B1 02                     LDA (ADD2),Y    ; do each byte...
012EI 45 14                     EOR TEMP
0130I 85 17                     STA T2
0132I B1 04                     LDA (ADD3),Y
0134I 45 14                     EOR TEMP
0136I 85 18                     STA T3
0138I B1 06                     LDA (ADD4),Y
013AI 45 14                     EOR TEMP
013CI 85 19                     STA T4
013EI
013EI 24 12                     BIT FLAGS       ; double size?
0140I 70**                      BVS DONE        ; yes, so done
0142I
0142I B1 08                     LDA (ADD5),Y    ; no, do next 4
0144I 45 14                     EOR TEMP
0146I 85 1A                     STA T5
0148I B1 0A                     LDA (ADD6),Y
014AI 45 14                     EOR TEMP
014CI 85 1B                     STA T6
014EI B1 0C                     LDA (ADD7),Y
0150I 45 14                     EOR TEMP
0152I 85 1C                     STA T7
0154I B1 0E                     LDA (ADD8),Y
0156I 45 14                     EOR TEMP
0158I 85 1D                     STA T8
0140* 18
015AI 60                DONE    RTS             ; end of GETBYTS
015BI
015BI                   ;-------------------------------------------------
015BI                   ; Subroutine to build the next printer graphics byte
015BI
005F* 5B01
015BI 24 12             PBYTE   BIT FLAGS
015DI 70**                      BVS DPBYTE
015FI
015FI 66 1D             PB1     ROR T8          ; normal size
0161I 2A                        ROL A           ; transfer the graphics
0162I 66 1C                     ROR T7          ; bits into A in the
0164I 2A                        ROL A           ; correct sequence
0165I 66 1B                     ROR T6
0167I 2A                        ROL A
0168I 66 1A                     ROR T5
016AI 2A                        ROL A
016BI 66 19                     ROR T4
016DI 2A                        ROL A
016EI 66 18                     ROR T3
0170I 2A                        ROL A
0171I 66 17                     ROR T2
0173I 2A                        ROL A
0174I 66 16                     ROR T1
0176I 2A                        ROL A
0177I 20 8E00                   JSR COUT        ; and print them
017AI CA                        DEX
017BI D0E2                      BNE PB1
017DI 60                        RTS
017EI
0150* 1F
017EI 66 19             DPBYTE  ROR T4          ; double size
0180I 08                        PHP             ; transfer the graphics
0181I 2A                        ROL A           ; bits into A
0182I 28                        PLP
0183I 2A                        ROL A
0184I 66 18                     ROR T3
0186I 08                        PHP
0187I 2A                        ROL A
0188I 28                        PLP
0189I 2A                        ROL A
018AI 66 17                     ROR T2
018CI 08                        PHP
018DI 2A                        ROL A
018EI 28                        PLP
018FI 2A                        ROL A
0190I 66 16                     ROR T1
0192I 08                        PHP
0193I 2A                        ROL A
0194I 28                        PLP
0195I 2A                        ROL A
0196I 20 8E00                   JSR COUT        ; and print them
0199I 20 8E00                   JSR COUT        ; twice
019CI CA                        DEX
019DI D0DF                      BNE DPBYTE
019FI 60                        RTS             ; end of PBYTE
01A0I
01A0I
01A0I                   ;*** Firmware Links
01A0I                   ;    --------------
01A0I
```

```
0098* A001
01A0! A2 C1              WRITELINK      LDX #0C0+n      ; observe protocol
01A2! A0 10                             LDY #10*n
01A4! 6C 2200                           JMP 2PWRITE     ; vector to firmware
01A7!
0082* A701
01A7! A2 C1              INITLINK       LDX #0C0+n      ; observe protocol
01A9! A0 10                             LDY #10*n
01AB! 6C 2000                           JMP 2PINIT      ; vector to firmware
01AE!
01AE!
01AE!                    ;*** Printer Strings
01AE!                    ;   ---------------
01AE!
01AE!                    ; String jump-table
01AE!
002C* B001
0029* AF01
01AE! 4C ****            JZAP   JMP ZAP
0035* B301
0032* B201
01B1! 4C ****            JPRINIT JMP PRINIT
0049* B601
0046* B501
01B4! 4C ****            JGLN   JMP GLN
0052* B901
004F* B801
01B7! 4C ****            JDBLGLN JMP DBLGLN
007C* BC01
0079* BB01
01BA! 4C ****            JPRST  JMP PRST
01BD!
01BD!
01BD!                    ; String to zap the port
01BD!
01AF* B001
01BD! 02 09 5A           ZAP    .BYTE 02,09,5A
01C0!
01C0!
01C0!                    ; String to initialise printer for graphics
01C0!                    ;
01C0!                    ; extended, left-to-right printing,
01C0!                    ; line-spacing 16/144"
01C0!
01B2* C001
01C0! 08 1B 6E 1B 3E 1B 54  PRINIT  .BYTE 08,1B,6E,1B,3E,1B,54,31,36
01C7! 31 36
01C9!
01C9!
01C9!                    ; String to precede graphics line
01C9!                    ;
01C9!                    ; 035 bytes of graphics follow
01C9!
01B5* C901
01C9! 05 1B 67 30 33 35  GLN    .BYTE 05,1B,67,30,33,35
01CF!
01CF!                    ; 070 bytes of graphics follow
01CF!
01B8* CF01
01CF! 05 1B 67 30 37 30  DBLGLN .BYTE 05,1B,67,30,37,30
01D5!
01D5!
01D5!                    ; String to restore normal printer mode
01D5!                    ;
01D5!                    ; elite, bi-directional, 6 lines per inch
01D5!
01BB* D501
01D5! 08 1B 45 0F 1B 3C 1B  PRST    .BYTE 08,1B,45,0F,1B,3C,1B,41,0D
01DC! 41 0D
01DE!
01DE!
01DE!                           .END    ; end of assembly
```

Program II

```
Program Test;
Uses turtlegraphics;

Const
  xmin =   0;
  xmax = 279;
  ymin =   0;
  ymax = 191;

Type
  mode = (normal, double, inv_normal, inv_double);
```




```
Var
  message: string;

Procedure GrafDump(format: mode);  External;

Begin
  initturtle;
  moveto(xmin, ymin);
  pencolor(white);
  moveto(xmax, ymin);
  moveto(xmax, ymax);
  moveto(xmin, ymax);
  moveto(xmin, ymin);
  moveto(xmax, ymax);
  pencolor(none);
  message:='This is a screen-dump test';
  moveto(xmin + ((40 - length(message))div 2)*7, ymax div 2);
  wstring(message);
  readln;
  textmode;
  GrafDump(normal);
  writeln('First done...');
  GrafDump(double);
  writeln('Second done...');
  grafmode;
  fillscreen(reverse);
  readln;
  textmode;
  GrafDump(inv_normal);
  writeln('Third done...');
  GrafDump(inv_double);
  writeln('All done...')
end.
```

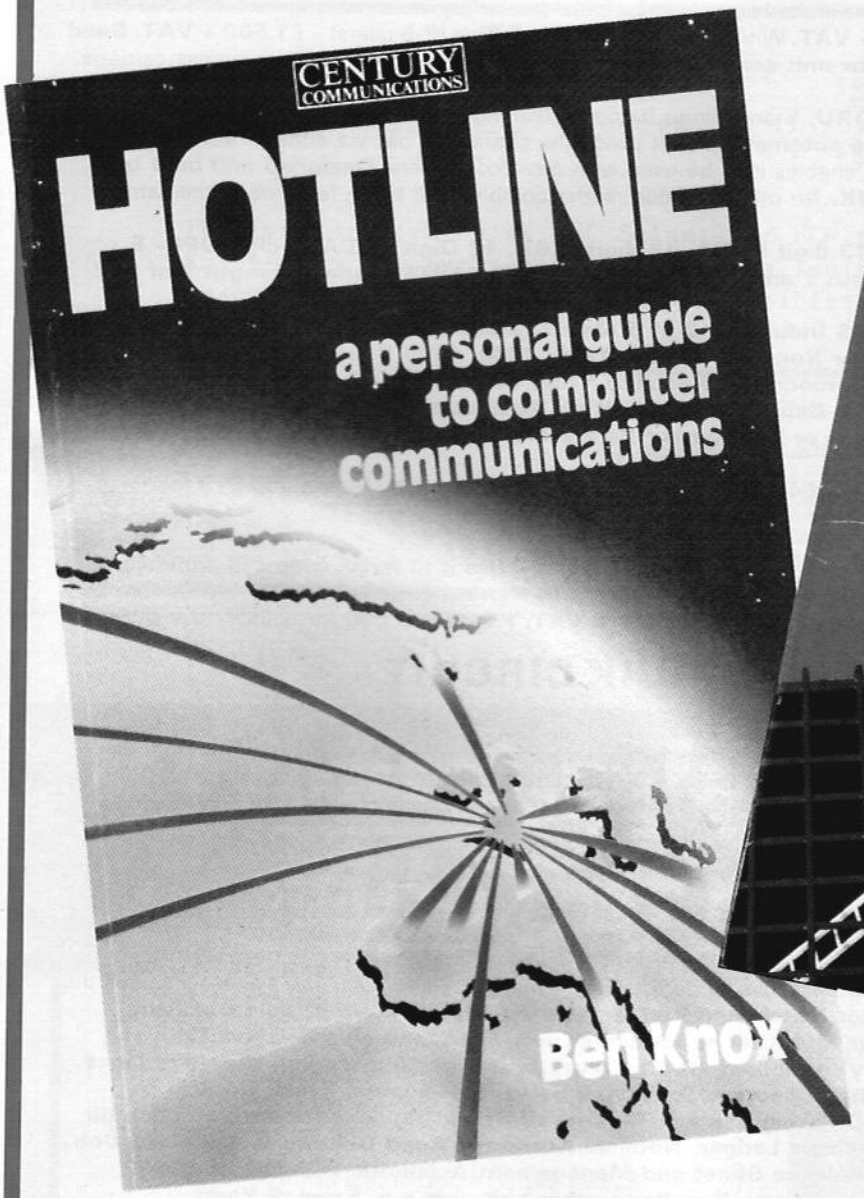
Program II: The system library and 'GrafDump' must be linked into this code; L)ink after C)ompiling. Press Return to continue when the graphics page has been displayed. The image is 'reversed' before inverse printing commences

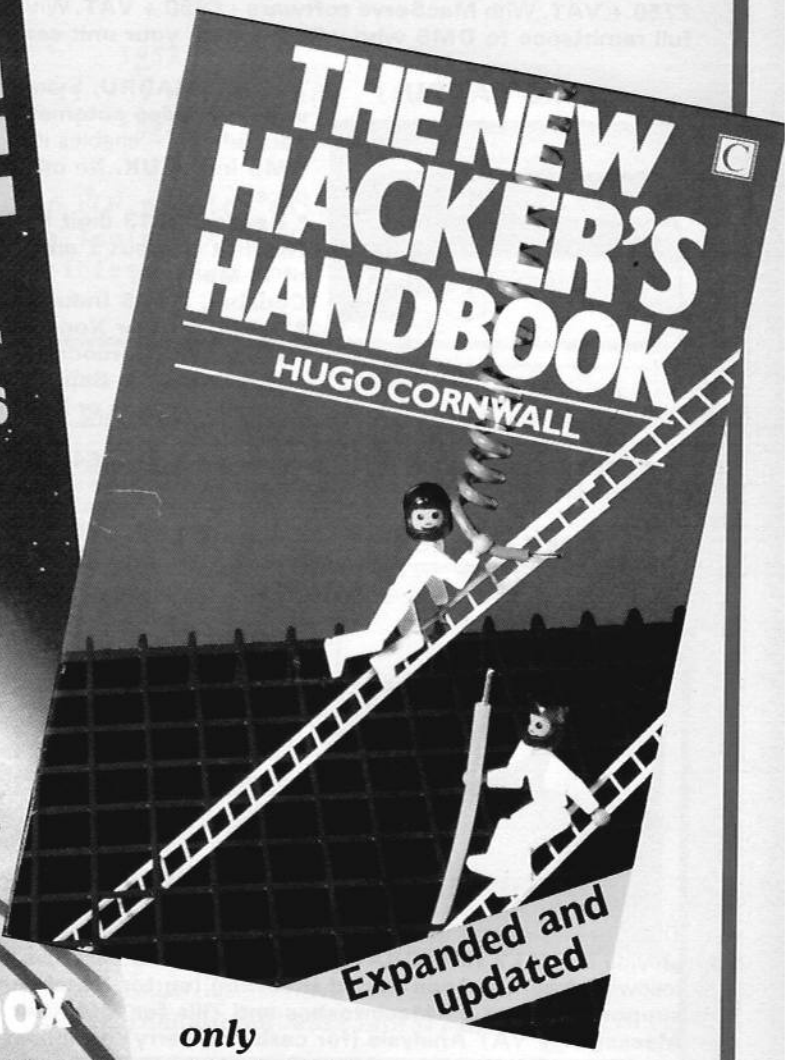
Program III

```
(*$S+*)

Unit Dump; Intrinsic code 27;

Interface

  Type mode = (normal, double, inv_normal, inv_double);

  Procedure GrafDump(format: mode);

Implementation

  Procedure GrafDump;  External;

end.
```

Program III: Shows how 'GrafDump' can be linked into a UCSD Unit. The unit must be Intrinsic. L)ink after C)ompiling

Two books that tell you all you want to know about communications . . .





only* £6.95 *each *(Post Free)*

HOTLINE is a practical guide to the fascinating world of communications, written by one of Britain's top experts, Ben Knox. Even if you've only just started using a computer it will soon have you linking into networks and databases all over the world! Full of useful names, addresses and telephone numbers – and lots of helpful hints and tips.

THE NEW HACKER'S HANDBOOK is a complete revision of one of the most talked-about books ever written about the controversial subject of hacking – including pointers on how to go where you're not really supposed to go! Subjects include sophisticated hacking techniques, new methods of computer security, a guide to trouble-shooting, pages of telephone numbers you can experiment with – and stories of classic hacking hoaxes.

PLEASE USE THE ORDER FORM ON PAGE 69

Two for the Price of One?

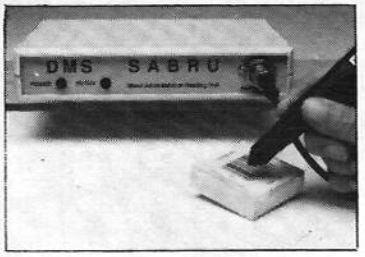
DMS 20SHD

The **DMS 20SHD** 20 MByte SCSI Hard Disk has been designed to provide an economical mass storage device for the Apple Macintosh Plus computer and is a stand alone unit.

- **Uses Latest SCSI Parallel Port and Protocols**
- **Economical low cost, designed and built by DMS in the UK**
- **Plugs into the Macintosh SCSI port**
- **No Pre Boot Disk – It boots straight in with HFS & Finder 5.2**
- **Can be used as a shared disk on the AppleTalk Network using MacServe**
- **Housed in a robust attractive case**
- **Uses its' own internal power supply operating off 240V or 110V**

Why pay nearly £1,500 for other hard disks when for a limited period, whilst initial stocks last, we are selling our **DMS 20SHD** at **£750 + VAT.** With **MacServe software - £950 + VAT.** With **MultiUser Omnis 3 Plus** (2-5 users) – **£1,600 + VAT. Send full remittance to DMS who will despatch your unit carriage free in the UK.** Please add £15 for overseas carriage.

DMS SABRU

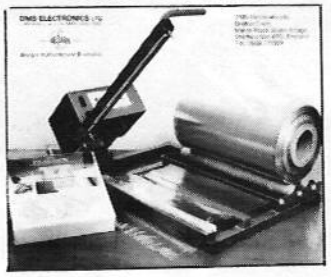


The **DMS SABRU,** Stand Alone Barcode Reading Unit **reads practically all world wide barcodes automatically.** It sends the characters out via either a **serial** or **parallel** port – enables it to be used with most computers. **Designed and built by DMS in the UK.** No other barcode reader combines all these features at the same price.

- **Reads 8 & 13 digit EANA, 13 digit ISBN, 12 Digit UPCA, 6 digit UPC- E (with or without 2 and 5 digit price addons), 14 ITF, Variable length 3 of 9, 2 of 7, Monarch, Codabar, 2 of 5 Industrial, 2 of 5 Matrix, 2 of 5 interleaved and Plessey**
- **Serial, DTR or Xon Xoff at 300, 1200, 2400, 4800 Baud Rates**
- **Diagnostic Barcode Read Facility * Self contained with its own CPU**
- **Metal Bodied, Sapphire Tipped, High Definition Industrial Barwand**
- **Scans forwards or backwards * Parallel Centronics Port * 240V or 110V operation**

The cost of the DMS SABRU including Wand is £460 + VAT carriage free in the UK. Please add £10 for overseas carriage.

DMS SEALER



The **DMS SEALER** is ideal for all businesses. Use it to shrink wrap and professionally seal your products. The cost of the **DMS Sealer** including 1 Roll of 14" Wide film is **£200 + delivery of £15 in the UK + VAT.** Please add £30 for delivery overseas.

QUIK CIRCUIT

This is professional PCB drafting software for the Macintosh computer and outputs to a plotter. Create **Libraries** of **Layouts** and produce **Multi Layer** boards. The cost of **Quik Circuit** software is **£695 + VAT,** carriage free in the UK. Please add £10 for delivery overseas. **Complete Hardware/Software System – £4,595 + VAT.** Why pay £11,000 + for PC systems?

Coming Soon The DMS Point of Sale System – DMS POS

This is based around a MacPlus with our **DMS 20SHD** and **DMS SABRU,** Tally printer, Till and ImageWriter II printer to provide a **FULLY INTEGRATED SYSTEM** using Barcodes as data input for high speed Till use. The system includes the following features: **Open Ended Invoicing (eg for Hotels and Professional Practises), Point of Sale Invoicing supporting up to 25 Macintoshes and Tills for Multiuser supermarket use. Facility to give detailed Till Messages + VAT Analysis (for cash and carry) or abbreviated till receipts (for general stores), Message Lines on the receipts for advertising, Sales Invoicing & Ledger, Telephone Sales, Statements, Stock Control & Movements, Alternative Stock Group, Back Ordering System, Reports of Stock Movements through each till (for high volume restocking procedures), Purchase Ledger, Nominal Accounts, Aged Debtors & Creditors, Job Costing, Agents Commission, VAT Returns, Balance Sheet and Management Accounts, Handles 25 Bank Accounts and 10 different Credit Cards. Cut and Paste Results to other software e.g. Excel, 2 Years Accounting on Line to ease year end procedures, supports up to 32,000 stock items and 32,000 accounts (depending on disk storage). Total ease of use.**

Complete system cost – £6,300 + VAT (2nd User System – £2,600 + VAT). Versions being prepared in French, German, Danish, Swedish, Spanish and Italian. This is to date the most powerful software system on the most powerful micro.

The above items, plus the rest of the DMS product range, including our RGB Colour Cards for the Apple IIc + Apple IIe, Data Capture Devices, Presfax® KeyPad, IO Cards etc. are available direct from us. We have been established since 1973 and are the largest Apple only dealer in the North – 5 minutes off Junction 31 on the M1. We stock the full range of Apple equipment and have full showroom, training, workshops and warehousing facilities with inhouse programmers and engineers. We would be pleased for you to visit us – telephone for directions. Send a SAE for further details. We reserve the right to alter specifications without notice.

DMS Electronics Ltd, Bretton Court, Manor Road, Wales Village, Sheffield, England, S31 8PD. Tel: Worksop (0909) 773399

Break the awful auxiliary spell and enjoy your Apple

JAROMIR SMEJC looks at UltraTerm

THE excellent UltraTerm card is more popular in America than European countries because of the terrible "auxiliary spell", of which more later.

The main reasons for its popularity are the extended display sizes in columns x lines without interface – matrix 7 x 9: 80 x 24, 96 x 24, 160 x 24 and with interface – matrix 7 x 9: 80 x 32, 128 x 32 and matrix 8 x 12: 80 x 24, 80 x 48 and 132 x 24.

Now all of these display sizes are at your disposal but not all are usable – with or without Videx preboots – for all software.

For example, you can only use sizes 80 x 24, 80 x 32, 80 x 48, 128 x 32 for Visicalc, and sizes 80 x 24, 80 x 32, and 80 x 48 for AppleWriter II, IIe and IIc. But in reality this number of selections is sufficient.

The second popular feature is the second extremely readable character set that is much better than the original in the Apple character ROM.

The UltraTerm utilises 7 x 9 and 8 x 12 dot character matrix versus the normal Apple II family 5x7 dot character matrix, with a special circuit to deliver very crisp characters in hi-res. You really have to see these characters.

And with the optional software UltraTerm Font Editor you can use your character eprom to change or create your own fonts and program with an eprom programmer. You can also buy as an option many special character eproms from Videx – for example, with English, French, German, Spanish, Italian and Swedish character sets.

The third feature involves the definable display attributes. You can always define two different sets of three attributes at a time. The attributes are Standard set, Alternate set, Normal display, Inverse display, Bright display and Dim display.

These sets can be displayed on a character-by-character basis, or line-by-line or on the whole screen.

In the past, Videx distributed a special spreadsheet UltraPlan with many advanced features and full use of these display attributes. But since so many new, very advanced spreadsheets are on the market Videx has now dropped the distribution of UltraPlan.

In the USA UltraTerm users who don't care for the complicated possibilities of the advanced spreadsheets can still buy it mail order at a sell out price of 19 dollars.

I started using UltraTerm mostly for Visicalc, but after I found the right attributes for AppleWriter IIe this is now my main use for it.

I use attributes for the Standard set with Inverse plus Bright display. Now my screen has a light orange background with black characters and I will never go back to working with a black background.

Again you have to see and work with this different display to really appreciate it – after some hours you will be addicted.

This is an excellent substitution for those very expensive monitors with black letters on white background and you have extended display capabilities as well.

This was the main reason for my efforts to break the terrible auxiliary spell – to use UltraTerm regardless of the peculiar auxiliary slot location in the EuroApple IIe.

This location renders the use of the UltraTerm in slot 3 together with the extended memory card in the Auxiliary slot impossible.

However there are some quirks with the UltraTerm display, for example, in AppleWriter IIe the display is a little lazy. After CTRLP?NP you will see the usual "Insert sheet, press Return" only in PDO mode.

After choosing the PD1 mode you will not see this prompt. Also working with CTRLQI – connect keyboard to printer – is impossible and you can't use the command .IN – after CTRLP?NP in the PD1 mode because in both cases the system will stop at these commands and hang.

With QuickFile and the UltraTerm you will find other quirks. You will not be able to scroll a screen, and only the last or first line will change to the next, or previous, line.

Nevertheless I consider these quirks insignificant when compared with all the UltraTerm merits mentioned above.

The following word processor and spreadsheet software support the UltraTerm extended display capabilities. If marked with * it is necessary to use a preboot or driver from Videx:

*Apple Writer II and IIe, Multiplan (DOS Ver.107), Multiplan (CP/M), Executive Secretary, Personal Secretary, Write Away, *Magic Calc, *Flashcalc, Spell Perfect, Letter Perfect, Word Juggler IIe, Supercalc, *Visicalc – versions 193, 202, 208 and 218, Wordstar, Simply Perfect, The Write Choice.

And these programs work in the 80-column mode with UltraTerm – *Appleworks, Quick File, Format II, Magic Window, Easy Writer, Super Text, Zardax, Pie Writer and The Word.

The original UltraTerm card needs interlace mode monitors with long – high – persistence phospor, otherwise the characters shimmer or flicker.

The most usable monitors according to Videx were Amdex 300 (amber), Apple Monitor III and Taxan 115 – green display only. Other monitors were not 100 per cent compatible – the results going from acceptable to completely unacceptable.

This and the upgrading changes of the Apple IIe that Apple introduced this year – 65C02 and new ROMs – the same as in the IIc – evoked a modification of the UltraTerm.

So the UltraTerm was reborn as the ULT-001 for use with all standard 18MHz, or more, monochrome video monitors, such as the Apple IIe monitor. The UltraTerm ULT-001 has a newly designed character set and a new lower price too – $299 – and it does not use

interlacing. If you own or acquire a monitor with long persistence phospor you can achieve a higher display quality – the same as in the original UltraTerm (ULT-000) by buying an additional kit.

The people at Videx also took care of those people who have an original UltraTerm, but don't have a monitor with long persistence phospor. For them they introduced at the same time another kit to change the original UltraTerm card (ULT-000) into the new ULT-001.

Both kits consist of firmware and character set in Eprom and both have mousetext capabilities. The recommended price for both kits is the same – $49 each. With all these changes UltraTerm has been practically reborn and I wish it many successful years.

There are some programs that exclusively use the Apple 80 column card – for example, PFS series for Apple IIe – and which will not work normally with the UltraTerm in slot #3.

In order not to have to switch the video signal connector to the monitor from the UltraTerm video output to the Apple IIe video output you can use for these programs the Videx ready-to-install optional switchplate to toggle between the UltraTerm and Apple 80 column card display.

Or you can make this switchplate yourself. All you need is one toggle switch – SPDT – mounted on a suitable plate and one Molex 2-pole connector. The Molex connector will be installed over the two upper pins of jumper J-1 instead of the normal 2-pole jumper plug.

For complete wiring schematics see Figure I. The toggle switch will be used to select either the standard I/O SEL signal from the Apple – Apple 80 column card display will be activated – or the internal UltraTerm card I/O SEL signal.

The UltraTerm card display will be activated even if the Apple I/O SEL is inhibited. For more about these signals see the UltraTerm manual, section Y.4.

Note that the connections as shown in Figure I are for the EuroApple only – before installation please read on.

The highest and middle pin of jumper J-1 are connected to the UltraTerm PCB tracks and with the Molex 2-pole connector to the toggle switch. The lowest pin of jumper J-1 is connected to the card edge connector contact – finger 1 only – without connection to the UltraTerm card tracks. The remaining toggle switch contact is connected to another card edge connector contact finger 1 – special low profile connector further designated only as LC.

Beware of one important distinction – in this case your LC will have not only one, but two contact fingers – 1 and 4 – because we need to switch between standard I/O SEL from the Apple IIe and from the UltraTerm card (internal I/O SEL).

If you wish to know more about the UltraTerm card evaluations appeared in *Apple User* May 1984 and for UltraPlan Byte in February 1984.

Do you remember, fellow European Apple IIe users, the first time you removed the cover from your new Apple IIe?

I remember this occasion very well, mainly because I was immediately confused with the Apple's Owner's Manual and 80 column card manual assertion that the auxiliary slot is located on the left side of the main board.

More confusion was added by pictures in the manuals showing this location. The reason for my confusion was simple – in my Apple the auxiliary slot was located near the keyboard in line with expansion slot 3.

I decided that this must be some new version of the main board, made for the users' benefit after the manuals were printed. How mistaken I was!

The reason why Apple went to the trouble of redesigning the main board for the European version remains for me the biggest mystery in the computer world.

Functionally the EuroApple IIe and normal Apple IIe – both versions B – are identical. So the reason for change must be a different one. But what?

Such work is never just for nothing and in the end the customer must bear the expense. As you will see, it is not for the users' benefit and I never found the explanation.

In the beginning I had no problems with the auxiliary slot location because I had no use for slot 3. Later I decided to use the UltraTerm card. After a careful study of the Videx data sheet and evaluations in various magazines I decided that the UltraTerm card would be a good addition to my Apple IIe.

Also, because it was stated that you can use the card in any expansion slot, I didn't foresee any problems. You see how a CCA (Certified Computer Addict) like me can go wrong?

After I got my UltraTerm card I found that you can use it in an arbitrary expansion slot. But there is a Catch 22 – if you want to use the card, for example with AppleWriter IIe or VisiCalc you are all at sea.

A successful marriage between the UltraTerm card and AppleWriter IIe or VisiCalc needs the blessings of preboots and the UltraTerm card has to be sitting firmly in slot 3. Also the UltraTerm card in slot 3 is a must for all programs in Pascal or CP/M.

You can use the card in other slots only with your own programs in Basic. Furthermore the people at Videx made a very clever design which allows the use of the card in slot 3 together with the extended memory card in the auxiliary slot, in spite of the Apple IIe manual's warning that this is not possible.

However the location of the

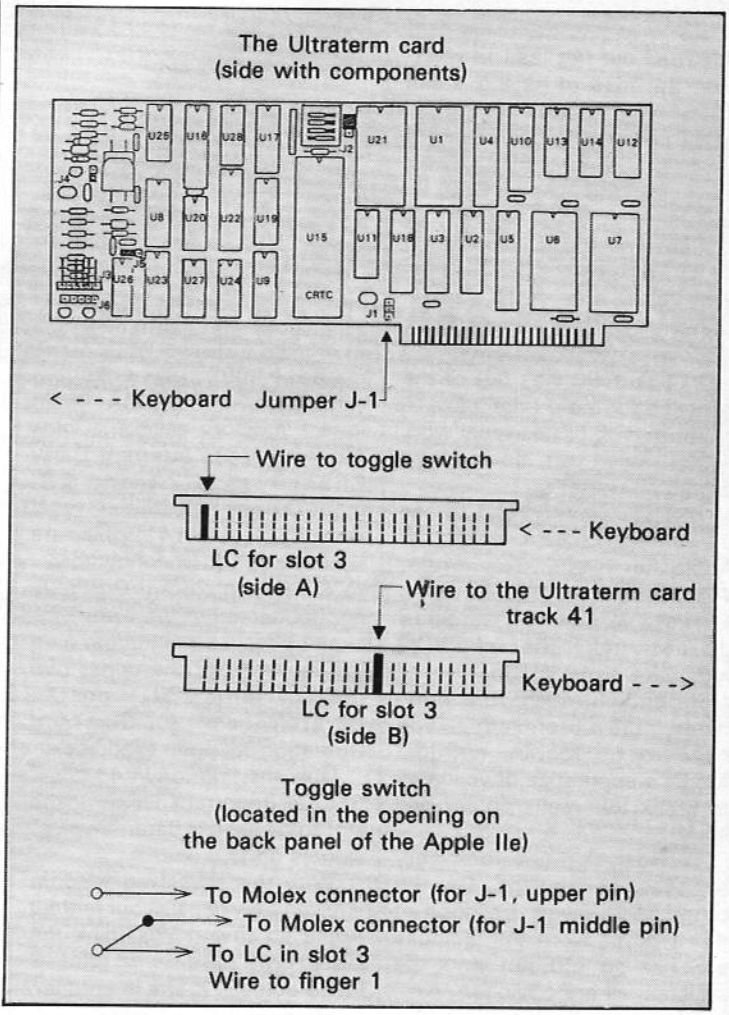


Figure I: UltraTerm reborn

auxiliary slot, a là European mode, prevents the use of the UltraTerm with the extended memory card or any other card located in the auxiliary slot.

You can put the card in slot 3 if you are willing to work without the extended memory card, but this notion makes me shiver. Imagine working with, for example, Apple Writer IIe or Quick File with 40 columns and 64k memory only, for example, and Videx has no plans to modify the preboot programs to be slot independent.

From this moment the Euro-Apple IIe was for me spellbound, and I was wondering who, and why, cast this spell and how to break it. I wanted to use the UltraTerm with Apple Writer IIe and VisiCalc for many reasons so I started looking for a solution to this terrible spell.

I made a start with the idea of using some kind of extend-a-slot to transfer the auxiliary slot or slot 3 to another place. But this road did not lead to glory. First the idea of having a slot outside the Apple made me unhappy and, besides, the edge connector together with all the wires would be too bulky to be useful.

Remember we have only about 1mm above slot 3 on the main board free – the card in auxiliary slot reaches over slot 3.

To make changes on the main board PC was out of the question for me – I don't like to interfere with professional work and besides I was looking for a portable solution.

Maybe I would need to use my UltraTerm card in another Apple IIe. Finally after further deep thought I broke the spell.

First a very earnest warning – do not make the following hardware fixes if you are not proficient with such work. And I mean really proficient – you have to be Merlin, not just Merlin's apprentice, if you wish to break this really potent bad spell.

All the changes look very simple, but beware. On the other hand if you are good at this type of work the changes are not so difficult and the advantages are obvious.

Take a close look at the schematic diagrams for the Apple IIe main board and then look at the diagrams for the old Apple II as well – the expansion slot connections are exactly the same.

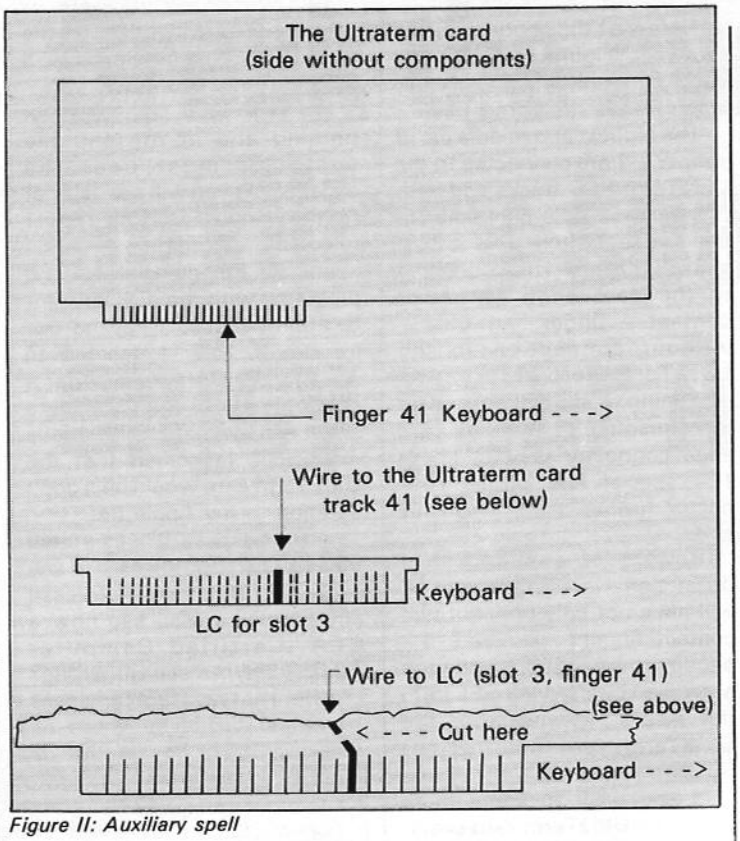


Figure II: Auxiliary spell

You will find that the 50 pin system bus goes through all expansion slots and connects the same connector pins together with the following exceptions – the DMA Chain (direct memory access) – pins 22 and 24, the Interrupt Daisy Chain – pins 23 and 28, Input/Output Select (pin 1) and Device Select (pin 41) which are separate for each connector.

The line to pin 1 (I/O SEL) is not connected to the UltraTerm circuit because the jumper plug is installed over the upper two pins of jumper J-1 on the UltraTerm card – see UltraTerm Operation Manual, section 2a.

Only the line to pin 41 (DEV SEL) is important for us – the slot to be used is determined by signals on this line.

With this perceived wisdom you can now deceive our faithful Apple so that it will think the UltraTerm card is in slot 3 while actually it sits in another, arbitrary slot.

First of all you need some PCB with a 50-pin Apple bus compatible edge connector. There are prototype cards available, for example Vero.

From this card you can make an edge connector with an extremely low profile – further designated only as LC – so that if this LC is in slot 3 it is imperative that the LC must be literally in slot 3 – that is, nothing can protrude from slot 3.

Remember the extended memory card reaches over slot 3 – this is our major problem – and no conductive parts from our special LC and the extended memory card PCB must be allowed to contact each other.

For safety reasons the optimum solution is to remove all other contact fingers from our LC with the exception of the contact finger for pin 41. The LC will now have only one live contact finger.

You will have to cut the printed circuit track on the UltraTerm card to contact finger 41. This track is located on the side of the card without components.

Once you are absolutely certain that you have identified the right track mark it with a felt tip pen at the point where you are going to cut it – see Figure II.

Now you can cut it using a sharp trimming knife, scalpel or small electric drill with an engraver's bit or reamer of about 2mm diameter. The cut should be about one millimetre wide to prevent shorting and all metal from the cut must be removed.

Be extremely careful not to cut through the board – the UltraTerm board is a triple-layer one, in other words one conductive track layer is inside the board – like beef in a hamburger – with high density layout.

After that you will wire the UltraTerm card PC track 41 – originally connected to contact finger 41 on the card – to your LC contact finger to pin 41.

Nothing is connected to UltraTerm card's edge connector's contact fingers 1 and 41 – they are now NC. Neat soldering is strongly recommended.

After you are sure that your Apple IIe is switched off and you are discharged from static electricity you are ready to put the LC in slot 3 and the UltraTerm card in an arbitrary slot. Recommended slots for the latter are 2 or 4 to keep the wire short.

Now replace the cover of the Apple IIe. From this moment on you can address the UltraTerm card as if it were sitting in slot 3.

If you cannot create a really low LC here is a way around the problem. I concede that this way is not exactly a high class one, but it's not so bad either.

If you take a close look at the extended memory card you will see that the part which protrudes over the auxiliary slot has no PC layout approximately 6mm from the bottom edge.

You can remove this part of the PCB by careful fine grinding and you will gain a bit more room for your LC. Beware of dust. You will also benefit from this modification of the UltraTerm card if you have one of the memory expand cards – Glanmire GE, MultiRAM IIe Card, Legend E'Card, RamWorks, RamWorks II and so on

– that must be in the auxiliary slot.

But these cards don't meet the new Apple standard for RAM cards and this will have a negative impact on their sales. According to Apple's claim over 50 developers are working on products that will utilise among others, the new Apple RAM standard.

Only two memory expansion cards meet the new Apple standard for RAM cards and will work neither in the auxiliary slot nor in slot 3, but will work in all other expansion slots.

These are the new Apple II RAM Expansion Card from Apple, 256k RAM standard, expandable to 1mb, price for 1mb version around $550 and the new Cirtech Flipper 1mb RAM card available now at a bargain price of £350 for the complete card with 1mb and no preboots to pay extra for.

It is very important that all the above mentioned UltraTerm hardware modifications can be done for the benefit of other cards which must be in slot 3. I know about three such cards.

The first, SwyftCard, is from Information Appliance, 530 University Ave., Palo Alto, CA 94301, USA at $90.

It is described as a multipurpose circuit board that plugs into slot 3 on an Apple IIe, "turning it into one of the most useful tools you could ever want for word processing, information retrieval, calculation, Basic programming and communication".

The second is Slot-3-Clock from Southern California Research Group, PO Box 593, Moorpark, CA 93021, USA at $79.50. This card is for time and date-stamp files under ProDOS.

The third one is the MultiView 80/160 card from Checkmate Technology Inc, 509 South Rockford Dr. Tempe, AZ 85281-3021, USA. Price: $299.95. This has very similar features to the UltraTerm card and you have to use preboots.

It's a funny thing – the manufacturers proclaim in their adverts that "you can use this card in slot 3, which usually is otherwise unusable". They are right, but for us EuroApple IIe users this nonusability has different reasons.

I wonder if all inventors and manufacturers are aware that Apple created a different animal for the rest of us Europeans. I don't think that they know about the special EuroApple main board design, which made their products designed "for slot 3 only" completely unfit for the European market.

And there lies the other mystery – why are some manufacturers placing such a restriction on the use of their card? For example, I would like to have a SwyftCard, but I am not willing to give up the use of UltraTerm.

Sure you can extend the above mentioned modification for two cards? In this case you will add one double pole double throw toggle switch which will switch over the wire from LC in slot 3 to one card PC, for example in slot 2, or another card PC, say in slot 4, but always you will only be able to use one card at a time.

So break the spell and enjoy your Apple!

APPLE USERS
USE APPLE
DEALERS USE
P & P MICRO

The Register

P P
MICRO DISTRIBUTORS LTD

AUGUST 1st 1986

SOLE DISTRIBUTOR

P & P APPOINTED AS SOLE DISTRIBUTOR FOR AST APPLE RANGE

AST is the quality name in IBM add-in cards. Take the award-winning SixPak Plus multi function card, acknowledged as the de facto industry standard with over 500,000 shipped!
Now AST products for Apple are available in the UK.

AST315	MegaRam Plus	£375 + VAT
AST300	SprintDisk (256K)	£225 + VAT
AST301	SprintDisk (1MB)	£399 + VAT
AST305	Multi I/O	£120 + VAT
AST310	Multi I/O with 2 Serial Ports	£175 + VAT
MicroStor 10Mb		£999 + VAT
MicroStor 10Mb with 10Mb back-up		£1500 + VAT
MicroStor 20Mb		£1200 + VAT
MicroStor 20Mb with 20Mb back-up		£1975 + VAT

INCREASED SPEED AND PERFORMANCE

Titan's excellent range of hardware add-on products is exactly what is needed to stoke up your Apple and give it that extra speed, memory and performance you've been looking for.

Take the Accelerator board.

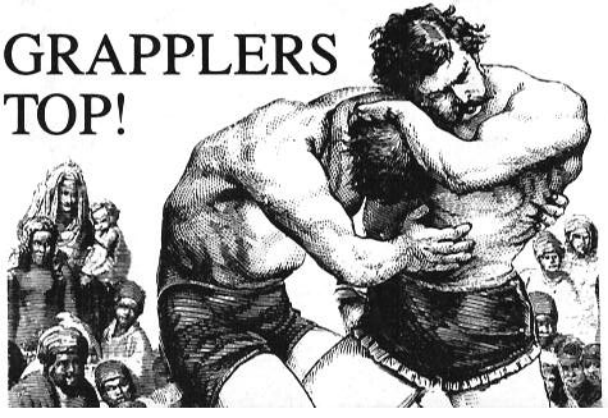
With Accelerator, practically every program will run about 3½ times faster.

And there are the TITAN memory boards.

Each Titan RAM board performs all the functions of a language card. More important, it's extra banks of RAM give you loads of memory space for BASIC, VisiCalc, Multiplan and much more. Titan boards are a super aid for advanced word processing, data base management, spreadsheet, and accounting applications.

SAT 007	Accelerator	£299 + VAT
SAT 002	Titan RAM 64K	£189 + VAT
SAT 003	Titan RAM 128K	£239 + VAT

GRAPPLERS TOP!



KEEP INFORMED WITH VICOM

Vicom ACSII/Viewdata Communications Software keeps you informed. It is an integrated package that allows users to communicate with both viewdata systems like Prestel as well as with ASCII/text systems like Easylink, Telecom Gold, and bulletin boards.

With VICOM your computer can be a database terminal; a terminal for sending and receiving telexes; sending and receiving electronic mail; and a terminal for computer-to-computer communication. Files and software can be transferred from one computer to another.

DO YOU WANT EXTRA MEMORY? Try "THE FLIPPER"

Yes, once again, Orange Micro's GRAPPLER is top of our Apple Hardware best-sellers. Hardly surprising really. P & P have sold thousands since we brought the product into the UK almost four years ago.

Orange Micro's success does not stop with the GRAPPLER+Their entire range of Apple Add-on products has proved to be extremely popular. Contact your local dealer now for details.

ORA 001	Grappler+	£109 + VAT
ORA 021	Image Buffer	£79 + VAT
ORA 010	Orange Interface	£69 + VAT
ORA 015	Bufferpak	£129.95 + VAT
ORA 009	Buffered Grappler+	£189 + VAT
ORA 014	Serial Grappler+	£109 + VAT
ORA 006	Bufferboard	£69 + VAT

COMMUNICATE WITH CALIFORNIA

Using the California Computer Systems 7710 Asynchronous Serial Interface allow the Apple to communicate with many devices; printers, modems etc. As with the synchronous interface this card complies fully with RS232 specifications A through to E, having full handshaking. 14 Baud rates can be switch selected or software controlled.
Word length can be specified.
Supplied with 6″ ribbon cable to 25 way 'D' connector.

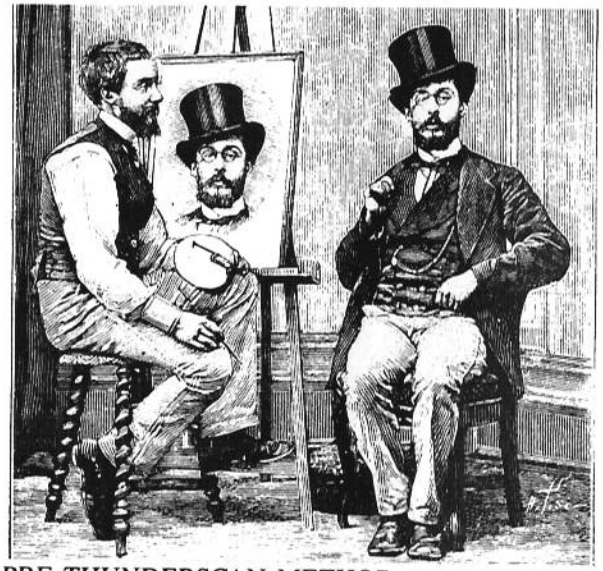
CCS 001	7710 Asynch	£124 + VAT

OTHER POPULAR PRODUCTS FROM CALIFORNIA COMPUTER SYSTEMS™

CCS008	Clock Calendar Module	£119 + VAT
CCS003	7712 Synch. Serial Interface	£180 + VAT

VICOM is the only software package that allows access to all all major information systems on such a wide range of standard and intelligent modems.

AMT 004	Vicom for Apple II family	£80 + VAT
AMT 003	Vicom for Macintosh	£150 + VAT

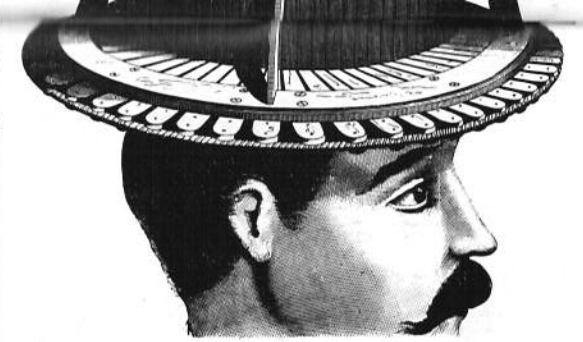


PRE THUNDERSCAN METHOD

PRODUCE DETAILED HI-RES MAC GRAPHICS

ThunderScan turns Mac's Imagewriter printer into an image reader. So you can digitize any printed image and turn it into a detailed, high-resolution MacPaint document. Anything, including forms, half-tones, photos, mechanical drawings, maps, floorplans, logos, signatures and more. From black and white and color originals. ThunderScan reproduces them at over 200 dots per inch and in 32 shades of gray.
You don't have to buy an expensive video camera. Just pop out your Imagewriter's ribbon cartridge, snap in ThunderScan and you're set.
You can turn any printed material, from postage stamps to full 8″×10″ documents into MacPaint documents.

THU004	Thunderscan	£249 + VAT



The one Megabyte Apple is here!

That's right! Full one megabyte of memory simply by plugging in the Cirtech Flipper. Call your dealer today for details.

CIR040	The Flipper	£350 + VAT

OTHER POPULAR CIRTECH BOARDS FOR APPLE COMPUTERS INCLUDE:

CIR001/2	Z80 Card II+/e	£45 + VAT
CIR006	Z80 Card IIc	£95 + VAT
CIR003	IIe CP/M Plus System	£120 + VAT
CIR007	IIc CP/M Plus System	£195 + VAT
CIR010	Standard IIe 80 Col Card	£30 + VAT
CIR011	64K IIe 80 Col Card	£60 + VAT

ADVERTISEMENT

MACDRAFT

THE MOST POWERFUL OBJECT ORIENTED DRAWING TOOL AVAILABLE FOR THE MACINTOSH TODAY. ONLY £199 + VAT.

PRODUCTS APPEARING IN THIS ADVERTISEMENT ARE AVAILABLE FROM YOUR LOCAL APPLE DEALER. GIVE HIM YOUR SUPPORT — WE DO

Todd Hall Road, Carrs Industrial Estate, Haslingden, Rossendale, Lancs. BB4 5HU. Tel: 0706 217744 Telex: 635740 PETPAM G Fax Ext: 268
1 Gleneagle Rd., London SW16 6AY. Tel: 01 677 7631 Telex: 919220 PPMICR G Fax Ext: 208
Dale St., Bilston, West Midlands WV14 7JY. Tel: 0902 43913 Fax Ext: 30

EXTENDING PASCAL

By J.P. LEWIS

ONE of the functions available to some forms of Basic is the application of Boolean tests on integers, in which such statements as A := 6 AND 13 make sense.

These evaluations are carried out by converting the values to their binary forms then comparing them bit by bit. In the example above we get:

```
00000110  = 6
00001101  =13
--------
0000010 06 AND 13 = 4
```

Although at first sight it does not seem possible to reproduce this type of work in Apple Pascal, it can be done very neatly. Listing I shows how.

The basis for this example is the Pascal set type. A set is defined as a collection from a group of objects which must be enumerated in some way at the start of your program. In the listing I have defined the variable sets to be any collection from the list of integers 0 to 15.

The method that Pascal uses to keep track of sets is to put the items in the set into order, and then reserve one bit of memory for each item.

For example, if I defined a set to be a collection from a group of eight possible items, the three binary numbers above could express the following ideas:

(6) a set containing items 2 and 3

(13) a set containing items 1, 3 and 4

(6 and 13) the intersection of these sets: item

With the ideas above in mind, Boolean arithmetic in Pascal can be implemented as follows. Define a type that is either an integer or a set of 16 items, that is, 16 bits. Manipulate the value parts for normal arithmetic, and switch to the set parts using INTERSECTION – shown in Pascal as * – when you want to AND the numbers, and UNION (shown as +) to OR the numbers.

```
program testbool;
type
    fiddle=packed record case b:boolean of
                true: (value:integer);
                false:(sets:set of 0..15)
            end;
var
    p,q,r:fiddle;
begin
    p.value:=7;
    q.value:=11;
    (* Intersection  of sets ... AND of booleans *)
    r.sets:=p.sets * q.sets;
    writeln(r.value);
    (* Union of sets ... OR of booleans *)
    r.sets:=p.sets + q.sets;
    writeln(r.value)
end.
```

Listing I

AUTOMATING TWO-DRIVE WORDSTAR

By TAN TIONG POH

WORKING Wordstar on a two drive system is a mixed bag of blessings. The small capacity of the Apple II drives makes it a necessity for anyone who seriously uses Wordstar to have a two drive system, yet one has to go through all the trouble of starting Wordstar from a boot.

If you are like most Wordstar users out there you boot the Wordstar disc, wait for the CP/M copyright message, type WS at the A> sign, type WS and wait for the Micropro copyright message to appear, log on to drive B: and finally get down to work.

This method means that you have to stay with the computer all the way. There must be an easier way – a computer is meant to make life easier anyway. Actually there are several ways to work with drive B: without logging on to it at the opening menu of Wordstar.

After booting follow any of the methods below.

- At the A> prompt, type WS B:document.txt or whatever name you want to give your text file. Wordstar will start up and sense that you want the text file to be on drive B: and thus will save your file on drive B: but you remain logged to drive A: all the time.

This means that you do not get to see the file directory of drive B: only drive A: which is probably not very interesting with the Wordstar program files occupying most of the disc space.

- At the A> prompt, type B: to log on to drive B: and then call up Wordstar by typing A:WS at the B> prompt. With this method you are logged on to drive B: from the start while Wordstar runs from the drive A:. You will thus see the file directory of drive B: all the time.

- This is the most tedious method but the most satisfying. It is actually an extension of the idea of the second method.

Imagine that you can just place the Wordstar disc in drive A: and your work disc in drive B:. Boot up and then go away to do something else as the computer automatically logs on to drive B: and then run Wordstar from drive A: When you return, voila! Wordstar will be at the opening menu, properly logged to drive B: and ready to go. This is the automated Wordstar. Interested? Then read on.

For those who are still here, what you are going to do will take some time but will save you time and inconvenience later on. First make a copy of your Wordstar disc since this method involves writing to the disc. Then store the original away and use the copy for the following procedures.

Before we can automate Wordstar, we will have to go through the inconvenience one more time. We will be using Wordstar to create the following textfile on your copy. It will serve as the command file for the SUBMIT.COM program.

You can use the D option for its creation. Simply call up Wordstar, select the editing option and calling our textfile S.SUB, type in the following two lines:

B:
A:WS

Type ^KD to save the file. Next we have to place the program SUBMIT.COM on the same disc by using the PIP.COM program.

Remember that both PIP.COM and SUBMIT.COM come on the CP/M system disc. Place your Wordstar disc with the S.SUB file in drive A: and the SUBMIT.COM in drive B: and then type:

A>PIP A:=B:SUBMIT.COM

Wait for the drives to stop and check for the SUBMIT.COM program on drive A: by using DIR. Rename it as W.COM by typing REN W.COM=SUBMIT .COM – the reasons for this will be made clear later. So the files you need on your automated Wordstar disc will include the following:

WS.COM
WSMSGS.OVR
WSOLY1.OVR
S.SUB
W.COM

To start Wordstar autologging to drive B: type W< space >S when the CP/M system copyright message comes on the screen.

A>W S

Remember the space between W and S because you are not actually running Wordstar but our renamed SUBMIT.COM to do its work on S.SUB which will log to drive B: and then call up Wordstar.

The program W.COM will then execute commands from S.SUB as if they were typed from the keyboard. One can think of the procedure as booting DOS 3.3 and after which it will run the Hello program (W.COM) which executes a text file (S.SUB).

Perhaps it is now clear to you why I renamed SUBMIT.COM as W.COM and the text file as S.SUB. It is an attempt to imitate the usual way one would start up Wordstar by typing WS at the A> prompt, only now you have to insert a space between W and S to log in drive B: and start Wordstar.

To fully automate your system I recommend that you create a turnkey system for CP/M. Readers who followed the article by Peter Wilson on "Automating CP/M using a pseudo disc drive" (*Apple User* July 1984) which also guides you on how to do a turnkey system can benefit by renaming SUBMIT.COM as SUB.COM AND S.SUB as HELLO.SUB following the file nomenclature in that article.

Simply copy the CP/M system tracks from the turnkey disc created to your copy of the Wordstar disc by using the COPY B:=A:/S command. Place your Wordstar copy in drive B: and the master copy in drive A:. From now on Wordstar will boot up logged to drive B:.

Alternatively, for those of you who possess the AUTO-RUN.COM program, thank your lucky stars. Automating Wordstar will be a cinch! You will have to create the textfile S.SUB and place it on the same disc as AUTORUN.COM, W.COM and all your Wordstar programs. Next type AUTORUN W S. Wait for the disc drive to stop – and that is all.

appletip

This subroutine sets the computer to make a tone of varying pitch with only the USR command. For example the line Z=USR(3000) gives a short, high pitched bleep.

Incorporated into your program at the start lets you easily give warning blips or melodies. I hope you find it useful.

A.B.K. Pegum

```
10  FOR I = 768 TO 786: READ
    C: POKE I,C: NEXT : POKE
    11,0: POKE 12,3: POKE
    10,76
20DATA32,12,225,172,161,0,173
    ,160,0,32,168,252,173,48,1
    92,136,208,244,96
```

Random thoughts on copycat spirals

A FEW weeks ago I wrote a program in Microsoft Basic version 2.00 that produces random spirals, but when I ran it I discovered that every time the program was restarted it produced the same spirals in exactly the same order.

To see if there was anything wrong with the program, I wrote a short program that printed a random number, and then re-executed itself. It just printed the same number over and over again.

My Macintosh is not at fault, because the Amazing program that comes on the guided tour of Macintosh produces a totally different maze every time it is executed, so it is the Basic Compiler that is at fault. Have any of your readers had the same problem? – **David Jordan, Dublin.**

● Don't panic – it's neither the Basic nor your Macintosh. I have not used Microsoft Basic on the Mac but I'm willing to bet that there is a command RANDOMIZE – or something similar. It probably needs an expression with it. Either enter a number at the keyboard or use something which changes value like time or some previous input at the keyboard.

Preboot for 80 columns

I AM currently using Applewriter II in 40 column mode. Having just bought an 80 column card I would like to use it as such, but on using or trying to use Applewriter II I could not get it to work in 80 columns.

Do I need a preboot disc? – **A.J. Howlett, Gateshead.**

● Yes, there are different preboots for different cards. Any dealer should be able to help.

Davong difficulty

WE have a Mac 512k in combination with a Davong 10mb hard disc. Our problem is that Davong has gone out of business and we never received the software update which was to have included Volume Management, so our disc is seen as a single 10mb volume.

Also, our version of Finder limits – by means of the directory – the total number of files we can have to 120+ per volume, and the new versions of Finder which count the folders not their contents will not work on the Davong.

We are left therefore without access to about half our hard disc capacity. Can anyone help us with either a folder version of Finder that works with a Davong HM014-010 V 1.02, or the Davong volume management software? – **B.J. Tweats, Manchester.**

8in drive controller

In Apple User, *May 1986 you give information regarding the Lawtant drive controller which it appears enables one to use an 8in drive with the Apple II and II+.*

I have a Schugart DD DS drive model No. SA850 and I would appreciate having your opinion as to whether this can be used with the above unit.

Should you have no experience with this unit and the Apple, could you please supply the address of the firm concerned. – **C.W. Cousins, Hornchurch, Essex.**

● We have no direct experience with your drive but believe that Lawtant's controller will work for you. The firm is at 6 Greenway, Campton, Shefford, Beds. SG17 5BN. Tel: 0462 814086.

We hope to review the controller soon but meanwhile I'm sure they will help you.

Picking a W/P program

I HAVE an Apple II and I would like to ask if the graphics library and games disc number 1 can be used with it.

Secondly, is there any software which can be used as a word processor and also is there any software to enable the language Fortran on my micro. – **S.M.A. Diab, Liverpool.**

● Both the graphics and games discs will run on your Apple II without any problems.

There are many advertised word processors and really it is impossible to recommend one as the way you work and your system will influence the choice.

Many require an 80 column screen but some do not, such as Applewriter II and Word Handler.

If you have 80 columns – and LC keyboard – then consider Homepak which is an integrated package available for £29.95 from us – see Page 61.

Make sure that the old style keyboard is suited by the package.

Saving pictures

I MUST say I enjoyed reading Stuart Bell's Pascal Tutorials in Apple User *and look forward to the Pascal Building Blocks series – let's hope they are available on disc to save the fingers!*

Turning to one or two Apple Pascal problems I have at the moment, could you tell me how I can store on disc the Hi-res graphics screen image which was created as part of a program?

I would then like to call up by filename the image stored on disc and use this as part of an independent program.

I would be grateful if you could give me the precise procedure for storing the graphics page and then recalling it from disc for display at some other time.

Looking through the Apple Pascal reference manual it seems to me that the second page of Hi-res graphics is available providing not too much memory is used when writing a program.

Is this true, and if so how can I gain access to it? It would be a useful facility since my Grappler+ card allows side by side printing of page 1 and 2 for hi-res graphics. – **J.J. Pointer, Gillingham, Kent.**

● A nice way of saving pictures was given by J.P. Lewis in *Windfall,* June 1983, using variant records. He showed how to use page 2 in *Apple User,* February 1984. You also need *Apple User,* January 1984, to see how to poke.

RAM disc emulator

DO you know of any software that will emulate a RAM disc under MS-CP/M version 2.23, 60k?

My present computer configuration is an Apple II+, two disc drives, two Saturn RAM cards – 128k each.

The problem is that the RAM disc emulator provided only supports 56k MS-CP/M 2.20 which means a 4k TPA loss.

Secondly, in the June 1986 issue the review of Resolution 64 by Dave Russell mentioned a Ramdrive II package by Coastal Computing.

Do you have the address? – **S.K. Cheng, Oswestry, Shropshire.**

● We don't know of any software – there may well be bank switching problems with the 60k version.

Coastal Computing live at 16 Malt Kiln Road, Newbiggin, Ulverston, Cumbria, LA12 0RJ, but we think Ramdrive II supports only the extended 80-column cards for the IIe.

Lecture link-up

I RUN courses lecturing to four students at a time using five Apple IIes – one for me and four

for them. I also have a Zenith 150.

I'm looking for some way to connect the students' Apple monitors to my master Apple so that they see on their screens what I'm doing on mine. Then, on disconnecting, they can do their own work at their own machines.

I would also like to be able to use the 150 in the same way, switching it on to their monitors in place of my IIe.

Do you have any suggestions? They would be most appreciated. – **John Roberts-James, Darlington.**

● Two years ago we saw demonstrated at a business-to-business exhibition exactly what you want.

However, two years is a long time in the world of micros and we can neither remember nor track down the company's name. If anyone writes in we'll let you know.

Setting up printer paper

IN reference to B. Marselis' comment in the April 1986 issue of Apple User *concerning the difficulty in using 11.7in form-feed paper with Appleworks and an Imagewriter printer, the following solution works well.*

Set the page length option in Appleworks to 11.6 – not 11.7 – and configure the Imagewriter to ignore top-of-form commands. The latter is achieved from option 5 of the Appleworks main menu by selecting sub-option 7 – specify information about your printer (see page 265 of Appleworks manual).

This configuration can be saved to disc and will thereafter be the default Imagewriter setting on booting Appleworks. I always use standard A4 format paper with the above configuration and have experienced no problems.

The following Appleworks format options seem to be suitable for most printing:

PW=8, LM=0.8, RM=0.8, TM=0.0, BM=1.0, LI=6.

When not using Appleworks, correct top-of-form controls for A4 paper can be set by sending the appropriate control sequences to the Imagewriter – see the manual – or, more readily, by using a commercially available font-downloader. I use the excellent DMP utilities by Viberg Brothers for this purpose and set the page length option to 70 lines which is standard for A4 paper. – **T. Brown, Beaumont, S. Australia.**

Flippies are in

ACCORDING to a senior technical manager of one of the major floppy disc manufacturers, there is absolutely no reason why a single sided floppy should not have a second notch cut in it and the second side be used – assuming, of course, that the second surface is free of flaws.

Indeed, his company – 3M – market an 8in flippy and have done for many years.

He told me quite definitely that reversing the direction of rotation of the disc with respect to its cover will not result in any harm to the disc itself. In fact, he implied that if there were any debris caught in the liner it would probably damage the disc surface anyway – regardless of the direction of rotation!

So there you are. Flippies are legitimate. – **R.A. Mould, Wokingham, Berks.**

Computing contacts

I AM writing on behalf of the Brighton, Hove and District Computer Club. We are an established club which tries to provide a helpful and stimulating atmosphere for computer users.

We always have a talk or demonstration on some aspect of computing at our fortnightly meetings, and our current membership includes novices and experts, amateurs and professionals. We are interested in both software and hardware of all types.

Prospective members are welcome to come along for a couple of meetings to test the water, and should write for more information to: George Seears, Brighton, Hove and District Computer Club, 19 Beach Green, Shoreham-by-Sea, Sussex BN4 5YG. Tel: 0273 463111, – **George Seears, Sussex.**

Keeping up with the IIes

I PRESUME that we will have in the future difficulties over the exact specification of which version of the Apple IIe we have in mind.

I don't think that version A of the main board is important – that is a thing of the past. But we do have the original Apple IIe version. Remember – the "e" stood for enhanced. We now have "Enhanced Apple II e(nhanced)" that is, the Apple IIe with CPU 65C02 and new ROMs as in the Apple IIc. I don't think that enhanced Apple IIe or Apple IIe2 is really very good, nor the terms "Upgraded Apple IIe" or "Apple EIIe".

But we will have to differentiate between these two versions – Enhanced Apple IIe seems to be illogical and besides it is too long. May I propose the denomination for this version is Apple IIec or Apple IIe/c.

Here "c" stands for both the CPU 65C02 and for the ROM as in IIc. Roll on the next enhancement. – **J. Smejc.**

From Applewriter to Appleworks

COULD you please help me with these problems?

1. How do I make an Ascii file from Applewriter to convert a file to Appleworks? I have read and reread the Applewriter manual and still can't find how to do this. I am currently working on my PhD and need to convert files, so a solution is urgent.

2. What is a pathname on Appleworks? I have again studied the manual but the comments make no sense. I tried making an Ascii Appleworks file by printing to disc, converting DOS to ProDOS and then trying to load from the Appleworks manual. But I can't get past the pathname interrogator.

3. How do I embed print commands in Appleworks? I am using Appleworks version 1.3 on a IIe with a modified Epson parallel card – Darkstar EPC1 chip – and an RX80 printer. Many happy hours have failed to solve this problem.

The manual makes no reference to it and the 0A-0 does not seem to permit it. Neither does there seem to be a facility such as Applewriter's CNT V function.

4. Finally, I am thinking of buying the IIe enhancement kit to enable me to add Pinpoint to Appleworks. But would such an enhancement prevent the running of my existing DOS programs? – **Andrew G. McGrady, Dublin.**

● 1. From your third query I assume that you have a version of Applewriter II which saves its files as TEXT files on disc. These are marked with a T in the CATALOG.

If so then rest assured – these are Ascii files. If you have the old Applewriter which saved its files in binary – marked with a B – files you will need a program to convert them. Please write in again.

2. A pathname is not a function of Appleworks but of ProDOS Suppose you have formatted a ProDOS disc and called it ANDY. When you convert a file from DOS to ProDOS let the program list the DOS files on one drive and give it the pathname /ANDY/ for the ProDOS destination. The program will do the rest.

3. You do not embed control characters in Appleworks. Select the function you want and let Appleworks mark the point. The appropriate printer control codes are then sent provided you have chosen the right printer from the menu.

4. The enhancement kit may interfere with some DOS programs. The trouble revolves round the character sets used. Your own programs will probably be all right, it's some commercial ones which give problems. I'm sorry but we cannot tell you which at the moment as we don't have the enhancement.

Max Parrott

BINDERS

Keep your collection of *Apple User* in mint condition – use an official binder. Strongly bound in green PVC with the logo picked out in gold, it only costs **£3.95.**

BACK ISSUES

Catch up on articles you may have missed. Back issues from January 1985 are still available at **£1.25.**

Order using the form opposite

SAVE up to 50% on insuring your Apple, monitor, disc drives and printers

The Apple User has negotiated special terms with one of Britain's biggest insurance companies to cover your Apple system (including all peripherals) against theft, breakdown or accidental damage. For details tick the box on the order form opposite.

Your system is covered while it is in your own home, while it is temporarily elsewhere, and even when it is in transit – but only within the UK.

No insurance package has ever before offered you breakdown cover.

Examples of our special prices:

System worth	*Premium*
£500	**From £16**
£1,000	**From £35**

Different rates apply to rural, urban and metropolitan areas.

A similar scheme is also available for businessmen which provides additional cover. Details on application.

January 1985

John Sculley's View of 1985 – Games (Gelfling Adventure, Story Maker, Stellar 7) – Application: Apples down on the Farm – Cloze Technique (Plus review of Clozemaster) – World of the 6809 Part II: Flex Operating System – Apple II v ITT 2020 – Reviews (Ormbeta Compact Accounting System, CGL Half-Height Drive) – Apple IIe and IIc compatibility – Handling Interrupts and large arrays in Pascal – Reporter's view of Macintosh – PLUS News, New Products, Appletips and Letters.

February 1985

Steve Wozniak talks about Apple II developments – Quicksort algorithm in Forth and Basic – Games (Deadline, Witness, Planetfall, Enchanter, Scorcerer, Expedition Amazon) – Graphics DIY part XI – Targeting with a spreadsheet – Apple to Apple file transfer – Miners' strike resolved by computer? – Chemical formulae on Lisa – two Macintosh books reviewed – World of the 6809 Part III – Software reviews (Sales Edge and Management Edge) – Application: book publishing – Split screen techniques – PLUS News, new products and letters.

March 1985

Circle drawing algorithms – Super Pilot System Log – Summarising data with VisiCalc – Competitive estimating with Multiplan – Graphics DIY part XII – Ampersand editing – Macintosh (MacTerminal, Mouse Stampede, optical mouse, plus Mac book) – Reviews (Merl modem, Intec hard drive, Vision 128/256 card, the Editor, plus three educational packages) – Fun and Games (Xyphus, Fighter Command, Picture Writer) – PLUS News, New products, letters and Appletips.

April 1985

Apples in the dental surgery – Adding graphics commands to Applesoft – Using the VBLANK signal – Getting to grips with software – Reviews (Spee-Demon card, PFS File/Report for Macintosh, W-P-LAB) – Weather forecasting with Mac – Pascal Filer's D command – Fun and Games (La Triviata, Design Your Own Home: Architecture, Interiors, Landscape) – Books (Appleworks, VisiCalc, Machine level programming) – Index to Windfall Vols. 1 and 2. PLUS News, New products, Letters and Appletips.

May 1985

Sports Day runs smoothly with Apples – Graphics DIY Part XIII (pie charts) – Reviews (The Workbench, Macputer IIc, Copytext, Omnis 2 on Macintosh, seven Logo books) – The RWTS explained and demonstrated with a disc verify routine – protecting programs from Copya – Pascal (directory access from within programs) – Binsearch in Forth and Basic – Reaction Timer – Apples in Hungary – Fun & Games (Smart Shopper, Plantin' Pal, Micro Cookbook) – PLUS News, New products, Letters and Appletips.

June 1985

Apples keep track of music companies and Macintosh designs record sleeves – Fun and Games (Music Construction Set, Song Writer, Music Readiness) – Pascal Tutorial: start of a new series looks at records – Reviews (Tick-Tack translation package for Apple II+/IIe, Musicworks for Macintosh) – Graphics (three books reviewed) – Mugraph: light dependent resistors making sounds – Ampersound: routines for making music and sounds from Basic – PLUS all the latest News, New Products and Readers' Letters.

July 1985

Apples at the heart of Papworth Hospital – Fun & Games (Secret of Arendarvon Castle, Antagonists, Fahrenheit 451, Rendezvous with Rama, Amazon, Shadowkeep, Adventure Writer) – Pascal Tutorial: using files of records – Binary file load utility – Using extended 80 column card memory – Macintosh (Flowcharting, Preview of Guide) – Book reviews (Business Basic, Epson printers) – Reviews (FingerPrint and Printerrupt) – Graphics DIY Part XIV – DOS patches – PLUS News, New Products, Letters and Appletips.

August 1985

Spreadsheet secrets shared – Apple IIIs provide power behind computer bureau – Graphics DIY Part XV – Wordstar scrolling problems solved – Descartes data processing program generator – Fun & Games (Winnie the Pooh, Mickey's Space Adventure, Print Shop, Hitchhiker's Guide to the Galaxy) – Mac at the centre of a publishing revolution – Pascal Tutorial: random access files – Review of Micro Planner for Macintosh – Restore to any Data line – PLUS News, New Products, Letters and Appletips.

September 1985

Appleworks spreadsheet eases house purchase calculations – Pascal Tutorial: Units – Macintosh: Review of Lotus Jazz – Applesoft line by line comparator – Graphics dumps via a Super Serial card – Mac Publishing: Review of three page layout packages – Kitchen design based on Apple IIe – Choosing educational software – Bomb-proof input routines – Fun & Games (Skyfox, Wishbringer, Rescue Raiders) – Book reviews (Visicalc, Accounting software) – PLUS News, New products, letters and Appletips.

October 1985

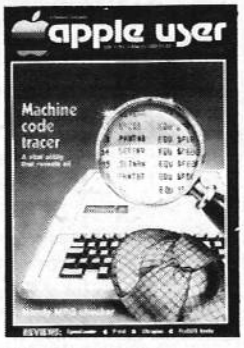
&DOSFile: start of a new series – spreadsheet for home budgets – Apples in a Hertfordshire college – using Page 3 routines with a language card – Graphics DIY Part XVI – Reviews (Ramworks extended 80-column card, Computereyes and Magic digitisers) – add a factorial function to Basic – Pascal tutorial: assembly language programming – lower case Pascal – Fun & Games (Mix and Match, Spotlight, Instant Zoo, Ernie's Quiz) – free sectors on disk – PLUS News, New Products, Letters and Appletips.

January 1986

Spreadsheet model for sales forecasting – Pascal tutorial : speed-up techniques – Fun & Games (Colossus Chess 4.0, One Man Band) – Application: how a shopkeeper uses an Apple IIc – Reviews (Lawtant disk controller card, Lemi Midi interface) – Heapsort in Forth and Basic – Macintosh reviews (Crunch, Mac +II) – Duodisk write protect switch hardware project – &DOSFile: expansion and compression – Index to Volume 5 – PLUS News, New Products, Appletips and Letters.

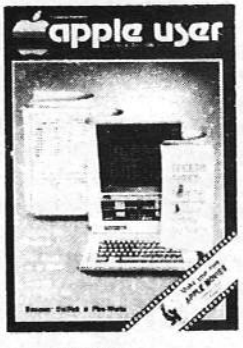
February 1986

Hi-res overlay utility – Pascal tutorial: first look at dynamic memory usage – Hardware: build an interface for Snap EV1 video RAM camera – Application: Apples at home in 14th century house – &DOSFile: database and form generator – Reviews (Cirtech and Tymac printer cards) – Macintosh (reviews of Microsoft File and Ensemble) – Fun & Games (Seven Cities of Gold, Adventure Construction Set, The Pay-Off) – Using Text Page 2 – PLUS News, New Products, Letters and Appletips.



March 1986

Pascal tutorial: dynamic memory usage Part 2 – Fun & Games (Transylvania, Ring Quest, Crimson Crown) – CP/M: PIP patch to enable repeated commands – &DOSFile: RAMdisk function – ProDOS: four books reviewed – Spreadsheet: useful miles-per-gallon calculator – Comms: budget equipment interfaced to Apple Part 1 – Reviews (Speed-Loader, P-tral) – Macintosh (review of Ultraplan) – Machine code step-by-step tracer utility – Applesoft lower case input routine PLUS News, New Products and Letters.



April 1986

Pascal tutorial: Tips and books – Fun & Games (Mac Wizardry, Brataccas, Enchanted Scepters and Airborne) – Comms: budget equipment interfaced Part 2, software to simulate a simple teletype terminal – Spreadsheet: annual salary budgets – Graphics: machine code routine to rotate 3D wire frame images – Apples applied to slide production – Reviews (Apple's 3.5in Unidisk, Plus-Works, and BBC Basic running under CP/M) – Organisation of a ProDOS disc Part I – PLUS all the Apple news, new products and your letters.

May 1986

Making of a monster Macintos – Fun & Games (Ultima IV Spellbreaker, Captain Good night) – Scrolling hi-res pages Making the most of Wordstar Spreadsheet; presenting ba ance sheets in visual form ProDOS Part 2 – Review (Supercharged Apple II wit Snapshot Shuttle and Cirtec Flipper, Jeeves for deskto facilities) – DOS amendment t display free sectors – Appl cation! Apples in use in technical college – PLUS all th latest Apple news and you letters.

BINDERS

Keep your collection of *Apple User* in mint condition – use an official binder. Strongly bound in green PVC with the logo picked out in gold, it only costs **£3.95.**

BACK ISSUES

Catch up on articles you may have missed. Back issues from January 1985 are still available at **£1.25.**

Order using the form opposite

SAVE up to 50%

Apple, monitor,

The Apple User has negotiated sp
with one of Britain's biggest in
companies to cover your Apple
(including all peripherals) again
breakdown or accidental damag
tick the box on the order form

Your system is covered while it is in your own home, while it is temporarily elsewhere, and even when it is in transit – but only within the UK.

ADVERTISERS INDEX

COMPUTER REPAIRS

COMPUTERS (Business & Personal)
DISC DRIVES (5¼", 8", 3", 3½")
WINCHESTERS
MONITORS
VDU's
PRINTERS
POWER SUPPLIES
IBM PC AND APPLE BOARDS
XEBEC CONTROLLERS
Fixed repair charges.
3 months warranty on repaired part.

REPAIR CENTRE APPOINTMENT WELCOMED

AN ELECTRONIC & COMPUTER SERVICES LTD

130B North Lane, Aldershot, Hants.
Tel: Aldershot (0252) 25608

January 1985

John Sculley's View of 1985 – Games (Gelfling Adventure, Story Maker, Stellar 7) – Application: Apples down on the Farm – Cloze Technique (Plus review of Clozemaster) – World of the 6809 Part II: Flex Operating System – Apple II v ITT 2020 – Reviews (Ormbeta Compact Accounting System, CGL Half-Height Drive) – Apple IIe and IIc compatibility – Handling Interrupts and large arrays in Pascal – Reporter's view of Macintosh – PLUS News, New Products, Appletips and Letters.

February 1985

Steve Wozniak talks about Apple II developments – Quicksort algorithm in Forth and Basic – Games (Deadline, Witness, Planetfall, Enchanter, Scorcerer, Expedition Amazon) – Graphics DIY part XI – Targeting with a spreadsheet – Apple to Apple file transfer – Miners' strike resolved by computer? – Chemical formulae on Lisa – two Macintosh books reviewed – World of the 6809 Part III – Software reviews (Sales Edge and Management Edge) – Application: book publishing – Split screen techniques – PLUS News, new products and letters.

March 1985

Circle drawing algorithms – Super Pilot System Log – Summarising data with VisiCalc – Competitive estimating with Multiplan – Graphics DIY part XII – Ampersand editing – Macintosh (MacTerminal, Mouse Stampede, optical mouse, plus Mac book) – Reviews (Merl modem, Intec hard drive, Vision 128/256 card, the Editor, plus three educational packages) – Fun and Games (Xyphus, Fighter Command, Picture Writer) – PLUS News, New products, letters and Appletips.

April 1985

Apples in the dental surgery – Adding graphics commands to Applesoft – Using the VBLANK signal – Getting to grips with software – Reviews (Spee-Demon card, PFS File/Report for Macintosh, W-P-LAB) – Weather forecasting with Mac – Pascal Filer's D command – Fun and Games (La Triviata, Design Your Own Home: Architecture, Interiors, Landscape) – Books (Appleworks, VisiCalc, Machine level programming) – Index to Windfall Vols. 1 and 2. PLUS News, New products, Letters and Appletips.

May 1985

Sports Day runs sm
Apples – Graphics D
(pie charts) – Rev
Workbench, Mac
Copytext, Omnis 2
tosh, seven Logo bo
RWTS explained a
strated with a disc v
– protecting progr
Copya – Pascal (direc
from within prograi
search in Forth ar
Reaction Timer –
Hungary – Fun & Ga
Shopper, Plantin'
Cookbook) – PLUS
products, Letters an

June 1985

Apples keep track
companies and Mac
igns record sleeves
Games (Music Const
Song Writer, Music F
Pascal Tutorial: star
series looks at record
(Tick-Tack translatio
for Apple II+/IIe, Mu
Macintosh) – Grap
books reviewed) –
light dependent resis
sounds – Ampersou
for making music
from Basic – PLUS a
News, New Proc
Readers' Letters.

January 1986

Spreadsheet model for sales forecasting – Pascal tutorial : speed-up techniques – Fun & Games (Colossus Chess 4.0, One Man Band) – Application: how a shopkeeper uses an Apple IIc – Reviews (Lawtant disk controller card, Lemi Midi interface) – Heapsort in Forth and Basic – Macintosh reviews (Crunch, Mac +II) – Duodisk write protect switch hardware project – &DOSFile: expansion and compression – Index to Volume 5 – PLUS News, New Products, Appletips and Letters.

February 1986

Hi-res overlay utility – Pascal tutorial: first look at dynamic memory usage – Hardware: build an interface for Snap EV1 video RAM camera – Application: Apples at home in 14th century house – &DOSFile: database and form generator – Reviews (Cirtech and Tymac printer cards) – Macintosh (reviews of Microsoft File and Ensemble) – Fun & Games (Seven Cities of Gold, Adventure Construction Set, The Pay-Off) – Using Text Page 2 – PLUS News, New Products, Letters and Appletips.

March 1986

Pascal tutorial: dynar
usage Part 2 – Fur
(Transylvania, Ring C
son Crown) – CP/M:
enable repeated co
&DOSFile: RAMdisk
ProDOS: four books
Spreadsheet: useful
gallon calculator
budget equipment ir
Apple Part 1 – Revie
Loader, P-tral) –
(review of Ultraplan)
code step-by-step tr
Applesoft lower
routine PLUS N
Products and Letter

COMTEC COMPUTER REPAIRS

for ALL your APPLE Repairs

For example Apple II Power Supply Repair –
£32 Inclusive of VAT & P&P

Apple II Logic Board –
£32 Inclusive of VAT & P&P

Disc Drives aligned, printers repaired – competitive prices on all Apple cables

ALSO
ALL MACINTOSH UPGRADES

128k to 512k

MACINTOSH TO NEW MAC PLUS
(e Disc upgrade to 800k Logic Board to 1Meg on NEW KEYBOARD)

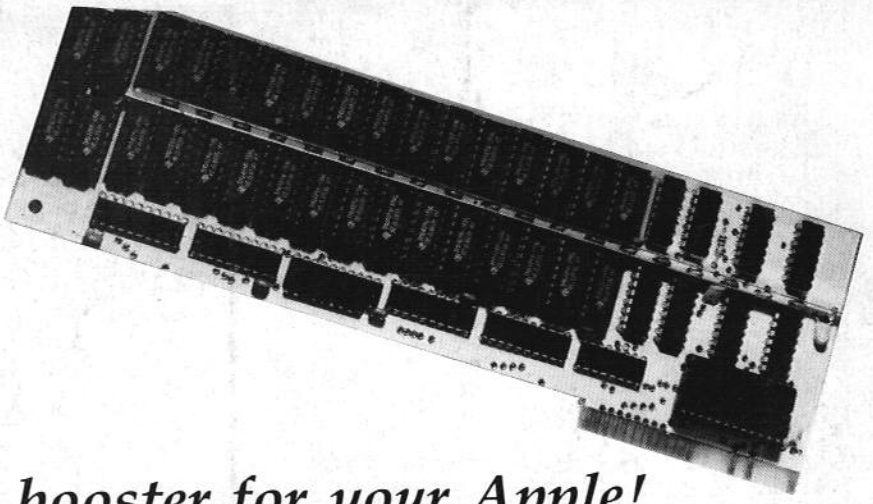
Phone for latest information and most competitive prices

Normally 2/3 days turnaround

COMTEC

St. Georges Mill, 3 St. Georges Street, Macclesfield, Cheshire SK11 6TG.

0625 34691



flipper

the performance booster for your Apple!

The one megabyte FLIPPER is the most powerful RAMCARD available for your Apple //e or][+ – its enormous memory capacity will boost your machine's performance to new heights.

FLIPPER is fully compatible with all modern programs (e.g. AppleWorks, Pinpoint, Mouse Series, and many more) and is used directly by them. With AppleWorks, you get a massive desktop of 1012K.

It comes complete with Program Manager software which lets you switch between different programs or operating systems WITHOUT rebooting from disk. The Program Manager can even back up your valuable programs or data files to disk (including UniDisk 3.5) – no need for slow file copy programs!

FLIPPER is automatically recognised by ALL ProDOS, PASCAL 1.3 or CP/M Plus* based programs AND comes complete with RAMDISK software for PASCAL 1.1 & 1.2 and Softcard CP/M 2.20 & 2.23.

FLIPPER is the clear choice:

★ The most reliable RAMCARD available – FLIPPER uses *less than half* the power of Ramfactor or Sprintdisk.

★ The only RAMCARD to fully support UniDisk 3.5.

★ The only RAMCARD complete with program switching and fast backup/restore.

★ The only RAMCARD fully compatible with ProDOS, PASCAL, DOS 3.3 and CP/M.

And that's not just our opinion:

Apple User – June 1986:
". . . . FLIPPER is a magnificent addition to an Apple II . . . indispensable . . . well worth the money . . . the best buy."

In Cider – June 1986:
"Cirtech products are distinguished by excellent hardware and competent support software and the Flipper is no exception."

FLIPPER has been designed to the Apple standard for large memory cards and is fully compatible with Apple products of today and tomorrow.

FLIPPER comes complete with 1 megabyte of RAM (no messy, unreliable add-ons). Don't be fooled by other manufacturer's promises of 16 Meg expansion (which can't be manufactured!), 16 bit co-processor add-ons (that don't work with any of today's software, or tomorrow's!), or 10 year battery backup (that can only save your RAMCARD's contents for up to 5 hours), or disk caching software (that only works with ProDOS).

FLIPPER is designed and manufactured by the leading British Apple peripheral producer, guaranteeing you the service and support you deserve.

FLIPPER – the first choice for today and tomorrow

£350.00 (excluding VAT)

CIRTECH

CIRTECH (UK) LTD., Currie Road Industrial Estate, Galashiels, Selkirkshire, Scotland, TD1 2BP
Tel: 0896 57790 Telex: 265871 (MONREF G) ATTN 84:CPD001 Source Mailbox AAH555