

The International
apple computer
users' magazine

Windfall

Volume 2, No. 9 March 1983 £1

25¢

**Play
Darts
on your
Apple**

— Full listing
inside

**Help for the
first-time user**

**Apple-aid down
on the pig farm**

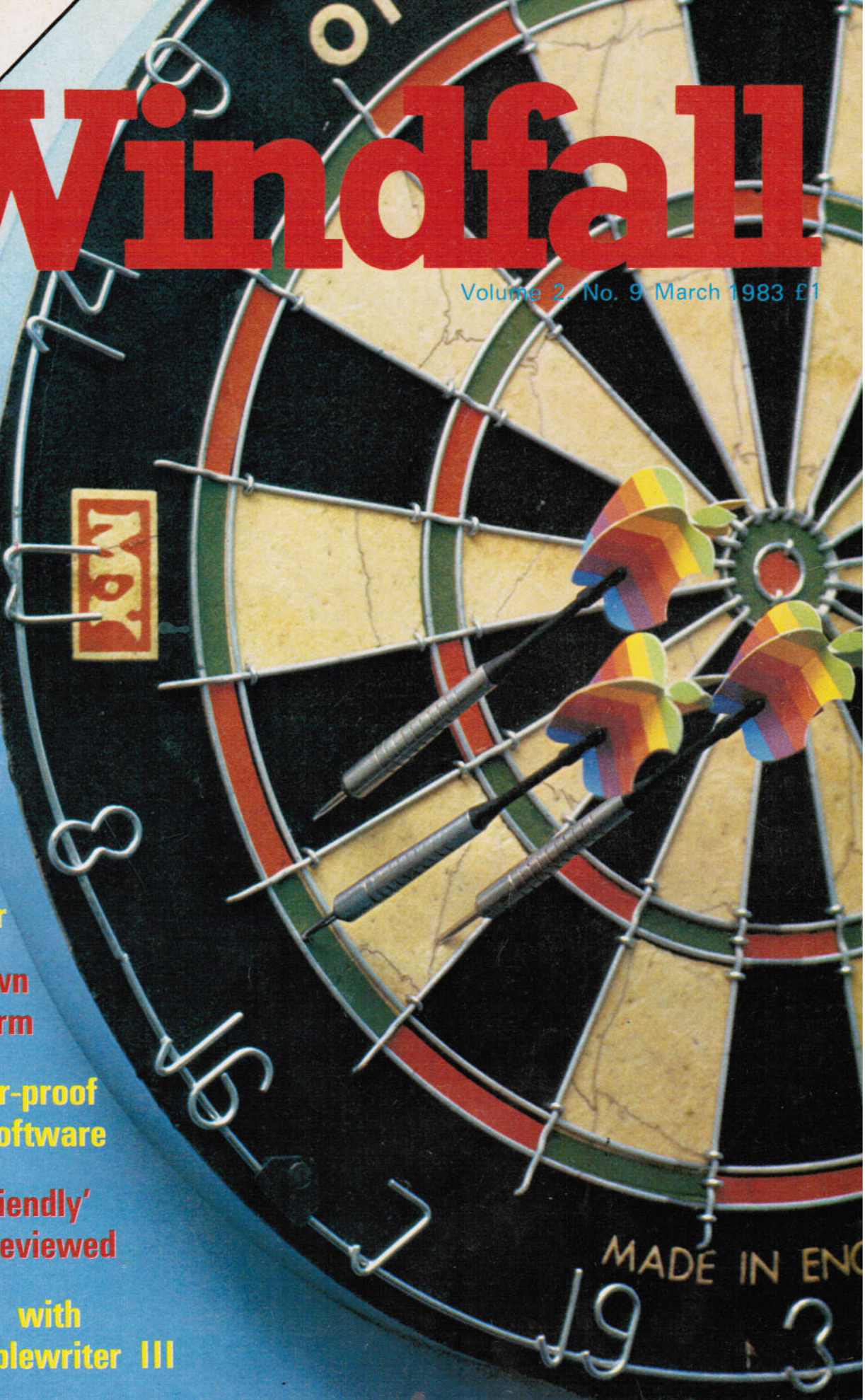
**How to finger-proof
educational software**

**Multiplan: 'friendly'
spreadsheet reviewed**

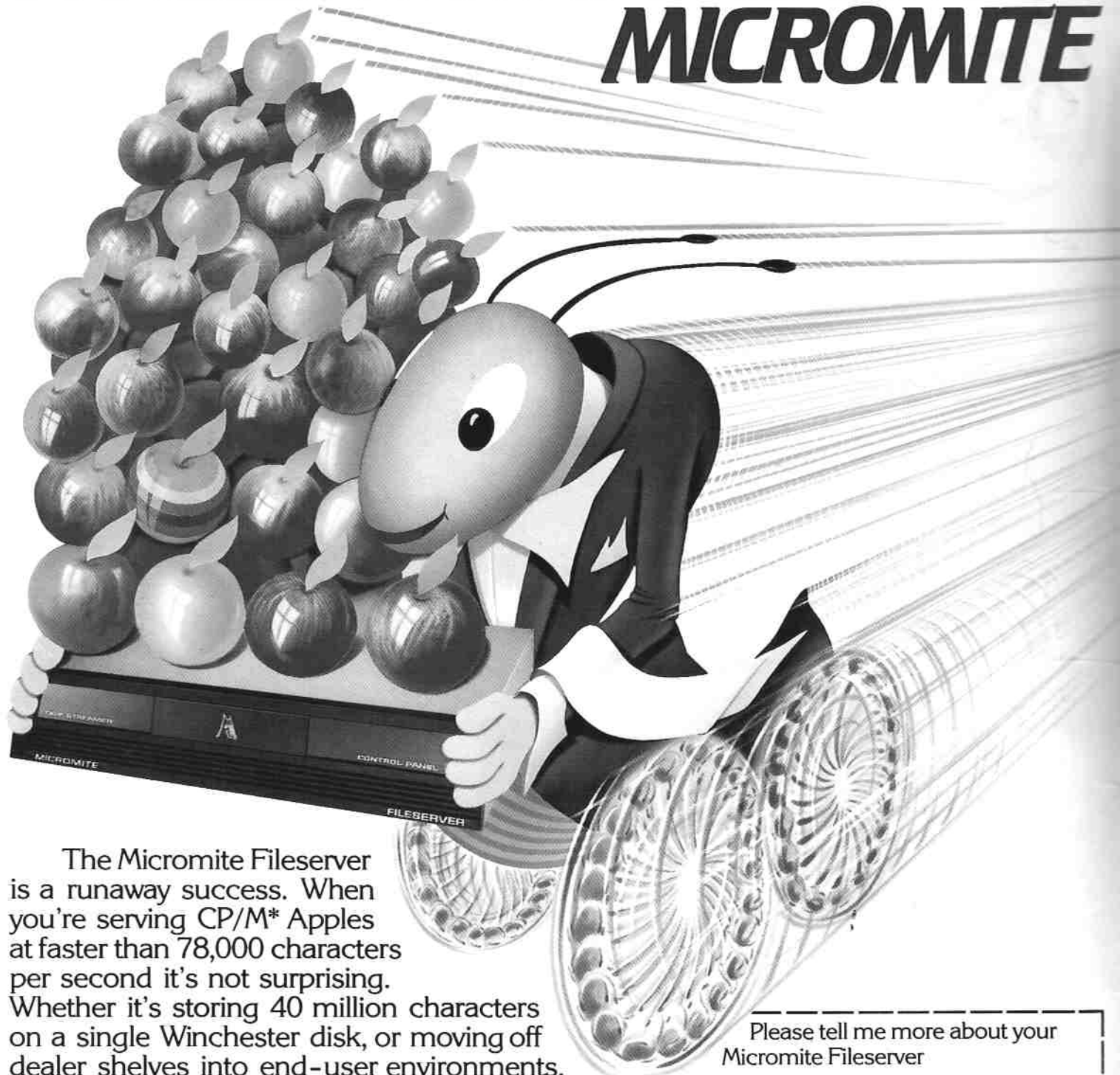
**Text handling with
enhanced Applewriter III**

SPECIAL READER OFFER

Apple II lower case generator — see Page 37



FASTMOVIN PROFITMAKIN FILESHARIN NICERLOOKIN SPACESAVIN APPLESERVIN MICROMITE



The Micromite Fileserver is a runaway success. When you're serving CP/M* Apples at faster than 78,000 characters per second it's not surprising. Whether it's storing 40 million characters on a single Winchester disk, or moving off dealer shelves into end-user environments, Micromite is the fastest Fileserver offering full File Lock security. And all in an attractive desktop unit.

Fill in the coupon, and we'll rush further information to you.

*Trademark of Digital Research Inc.

Micromite Computers, Regency House,
2 Rockstone Place, Southampton SO1 2EP. Tel (0703) 334144

Please tell me more about your
Micromite Fileserver

Name _____

Position _____

Company _____

Address _____

Tel _____

W





Vol. 2 No. 9 March 1983

Managing Editor
Derek Meakin

Features Editor
David Creasey

Art Editor
Peter Glover

Technical Editors
Peter Brameld
Cliff McKnight
Max Parrott

Advertisement Manager
John Riding

Advertising Sales
John Snowden
Mike Hayes

Tel: 061-456 8383 (Editorial)
061-456 8500 (Advertising)
Telex: 667664 SHARET G

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

Subscription rates for
12 issues, post free:

£12 - UK
£13 - Eire
£18 - Europe
£15 - USA (surface)
£25 - USA (airmail)
£15 - Rest of world
(surface)
£30 - Rest of world
(airmail)

Trade distribution in UK and Ireland by
Wells, Gardner, Darton & Co Ltd, Fay-
gate, Horsham, West Sussex RH12 4SU.
Tel: Faygate 444.

Writing for Windfall: Articles and pro-
grams relating to the Apple are welcome.
Articles should preferably be typed or
computer-printed, using double spacing.
Unsolicited manuscripts, discs, etc.
should be accompanied by a self
addressed stamped envelope, otherwise
their return cannot be guaranteed. Unless
otherwise agreed, material is accepted on
an all rights basis.

© 1983 Database Publications Ltd. No
material may be reproduced in whole or
in part without written permission. While
every care is taken, the publishers cannot
be held legally responsible for any errors
in articles or listings.

Apple and the Apple symbol are the registered
trade marks of Apple Computer Inc. Windfall is
an independent publication and Apple Com-
puter is not responsible for any of the articles in
this magazine, nor for any of the opinions
expressed.

LISTING

14	APPLE DARTS Use our listing, and fire away
17	WHAT'S NEWS ... A quick look at the Apple world
23	THINK TANK Our forum for programmers
26	BEGINNERS, PLEASE Using the System Master disc
28	APPLETIPS They make programming easier
33	GAMESMANSHIP Our monthly look on the light side
36	LOWER CASE DISPLAY How to use it in Basic strings
37	OFFER OF THE MONTH Windfall's lower case generator
39	VISICALC Magnificent obsession called Multiplan
44	LISA AND THE IIe They live up to expectations
48	APPLEWRITER III Best of the bunch?
53	APPLESOFT Beat the bugs in error handling
56	ASSEMBLER Putting it to work
58	APPLICATION Apple on the pig farm
60	FEEDBACK Where to find help
63	APPLECART Geometry drill examined
67	COMPUCOPIA The latest in software/hardware
72	CP/M CLIP the cost of a good memory

I.C.E.

Welcome to the ICE Age



5 1/4 in. Winchester Sub Systems with a tape streamer back up
From 3 to 42 Megabyte configurations

Compatible with

Apple II • Apple III • Superbrain • Sirius/Victor • I.B.M.P.C. • S100 • Z80 based Systems

Tape streamer backup now available for Profile, Apple III hard disc.

For further information or a demonstration contact: - ICE 16/18 Littleton Road, Ashford, Middlesex TW15 1UQ. Telephone Ashford (07842) 47271/47171 Telex 8952042 (DP CUST G)

Retail from £1350

SNAPSHOT

NOT just another Apple bit copier

SNAPSHOT removes copy protection, and copies most programs that no bit copier can touch – including the bit copiers themselves!

Got the back-up blues? Is Locksmith letting you down? You need SNAPSHOT! SNAPSHOT will copy any memory-resident program that runs on a 48K Apple II. **For example, SNAPSHOT will copy any bit copier now sold, in less time than it takes you to read this paragraph.** SNAPSHOT is a peripheral card that uses your language card* to interrupt a running program and dump the entire contents of 48K and registers to an unprotected, copyable backup disc.

Unlike bit copiers, SNAPSHOT requires no complex parameter changes or trial-and-error tedium. SNAPSHOT is also ideal for debugging your own programs or analysing others' programs. And SNAPSHOT can be used to suspend your work with one program while you use another program. For example, you could interrupt word-processing a letter to look up an address in a database, then resume processing the letter exactly where you left off. Shooting down space invaders and the phone rings? Interrupt your game until later, or tomorrow! Save your high scores! Freeze-frame your game, print the graphics on your Epson, and resume play!

- Repeatedly interrupt and resume any program
- Faster and far easier to use than any bit copier
- Full monitor capabilities to examine, modify, trace, single-step or disassemble any interrupted program, or print graphics on Epson printer
- Copies protected programs from 13-sector to 16-sector discs
- List "unlistable" Basic programs; Make custom modifications
- Suspend work with any program; resume where you left off
- Move protected programs to hard disc or 8" disc as normal files
- Full normal use of your other hardware and software; never open the Apple's lid
- Backups run without SNAPSHOT present; most run without 16K card

And there's more! Write or ring for complete technical information.

PRICE: £95.00

from your local dealer or Dark Star Systems

Terms: Payment with order. Add 15% VAT. P&P included. VISA/Barclaycard and Am Ex accepted. Dealer enquiries invited. Foreign: No VAT. Add £2 postage to Europe, £7 elsewhere.

* One drive and Language Card/16K card required. Works with most popular cards, including Apple, Microsoft, Ramex, Digitek, MPC, RH Electronics, Orange, Franklin, etc. Other brands: specify when ordering.



**54 Robin Hood Way, Greenford, Middlesex. UB6 7QNP
Telephone: 01-900 0104**

COMPUTECH for apple

Authorised dealer, service centre and system consultancy

SPECIALISTS IN SELECTING THE RIGHT SYSTEM AND THE RIGHT SOFTWARE FOR YOUR APPLICATION

DON'T DELAY

CONTACT COMPUTECH

FOR APPLE II AND APPLE /// SYSTEMS

AND

COMPUTECH FINANCIAL ACCOUNTING PACKAGES

Payroll	£375
Invoicing and Stock Recording	£295
Sales, Purchases and General Ledgers	each £295

PLUS

COMPUTECH UTILITIES DISK for reliable error checking copying, diskette scan, interpret and patch, etc.	£20
COMPUTECH CHAIN MAIL a mailing merging document processor which may be used with text files, including random files and Applewriter 1.1 binary files.	£45
COMPUTECH GRAPHICS DISK for printing Apple pictures and graphs on Epson and Microline (free with printers purchased from Computech).	£30
COMPUTECH TERMINAL UTILITIES Apple to Apple or Apple to Mainframe.	from £130

ALSO

Visicalc, Applewriter and other Apple Software (Prices on request)

COMPUTECH HARDWARE

DIPLOMAT Video Digitiser - store a frame from a video camera in a fiftieth of a second, process and print images.	£195
DIPLOMAT Parallel Interface	£80
DIPLOMAT High Speed Serial Communications Interface	£85
DIPLOMAT RAM 16 Memory Expansion	£95
DIPLOMAT Clock/Calendar	£80
Lower Case Character Generators including Applewriter enhancements	£50
MICROMUX Data Exchange (Max 16 Ports)	from £850
MAXTRIX Printers, Microline and Epson with graphics and up to 200 cps	from £230
Microline Optional Character Generators	£15
DAISY WHEEL Printers, Olympia, Qume, Ricoh, etc.	from under £1000

Prices exclude VAT, Carriage and Packing. Trade enquiries welcome.

FOR FULL DETAILS PHONE FOR COMPUTECH'S PRODUCTS AND PRICES PACK AND A FREE DEMONSTRATION

Apple National Accounts Dealer

We provide quality service and support to small businesses and to major national and international organizations and government departments.

COMPUTECH SYSTEMS

168, Finchley Road, London NW3 6HP. Tel: 01-794 0202

AGENTS THROUGHOUT THE UK AND OVERSEAS

pact **PLUG-IN VERSATILITY FOR APPLE USERS**



VERSATILITY FOR YOUR MONITOR

RGB COLOUR INTERFACE

THE HIGHEST QUALITY COLOUR AVAILABLE

- * Fully saturated Apple colour set
- * Alternative hi-intensity colour set
- * Software selectable full flood background colour
- * Software selectable text (foreground) colour
- * Duochrome mode * Anomaly filter
- * 80 column compatible

£120

MULTI-COLOUR TEXT ADAPTOR

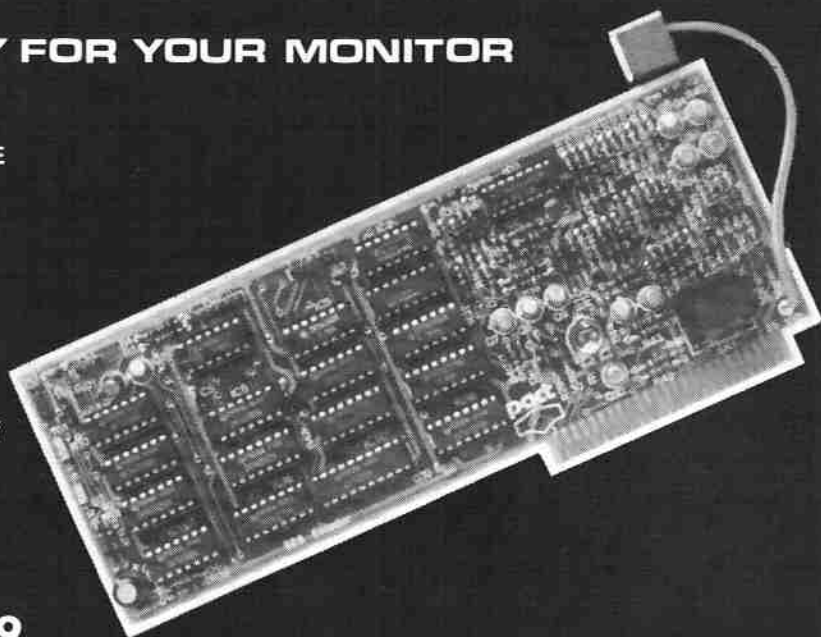
- * A hardware add-on
- * Allows individual words to be produced in any of 16 different colours

£50

80 COLUMN DISPLAY INTERFACE

- * Normal and inverse character sets standard
- * Compatible with Pact RGB colour card
- * Compatible with wide range of software
- * Supports Basic • Pascal • C/PM etc.

£149



VERSATILITY FOR YOUR PRINTER

SERIAL/COMMUNICATIONS INTERFACE

- * The one card for all RS232 applications
- * On board serial and communications protocol
- * Options for specialised firmware
- * Full handshaking features
- * Generates all standard Baud rates

£99

SERIAL PRINTER DRIVER

- * Low cost serial card for dedicated serial printer use
- * Baud rates from 75-19200

£68

PARA-GRAPH

The card to choose for parallel dot matrix printers. Features many word processing type text commands and hi-res graphics dump commands

£75

PARA-GRAPH +

The one card for all parallel printers

Load the on-board alterable ROM to suit your particular printer from the disc supplied. Under normal usage the firmware will remain indefinitely. However, should you wish to use your Para-graph + with another printer, simply reload with the appropriate firmware.

£95



CLIP-ON FAN MODULE **£50**

(THE PREVENTATIVE MEDICINE)

Avoid costly and time consuming system malfunction due to overheating

Apple and fan powered up simultaneously by illuminated switch on front of module

- * Silent running
- * Robust case
- * Simple clip-on module

pact



- * Installed in seconds
- * Integral mains lead
- * Impedance protected

Further details from: Pact Electronics Ltd.,
224 Edgware Road, London W2 1DN.

Telephone: 01-402 8842/6103
Telex: 22861



American Express



Access

sbd

Software

Now you can make your own Computer Games!

The Artist

THE ARTIST is a complete graphics and animation system for the development of game and business software. The routines in this package have been in use in the development of Sierra Online's arcade Hi-Res adventure games since the beginning. Over those many months, they have gone through extensive revisions so they can truly be called "tested" and "state of the art". If you know Sierra Online's products that use Hi-Res graphics, you have seen the work of THE ARTIST. If your interest is in colour graphics, THE ARTIST offers utilities so that you may easily sketch on the Hi-Res screen. Twenty-one beautiful colours are available to "paint" your screen in seconds. The true forte of the system is its animation abilities. THE ARTIST offers six different forms of animation (the fastest animation available on any graphics system) to help your screen come to life. Collision detection (the ability to know when a missile strikes a space ship) is also included so that you may easily create arcade games of professional quality. A large assortment of programming routines are also available for the creation and editing of machine language shape tables, customization of fonts, and the addition of text to the Hi-Res screen. Many of the features in this package can be used in everyday programming. Hi-Res Graphics aren't difficult anymore. Even a beginning Applesoft programmer can do fantastic graphics and animation with THE ARTIST. It's more than a product, it's your personal graphics tutor.

£59.95

The Arcade Machine

You can use THE ARCADE MACHINE to generate copy-protected disks containing arcade games of your own design! Develop your own original games with exciting features like these:

- Draw your own colourful shapes . . . man or monster, geometric or free form. You can create them all!
- Animate your shapes . . . bring your creations to detailed, and exciting life.
- Make them move . . . you create the paths along which your shapes will manoeuvre.
- Create your own dramatic explosions and sound effects, or choose from those available with the program.
- You can design a colourful title page with your game title and name in large graphic letters.
- You can program the game for one or two players, and select from automatic and high scoring features.

What's more, you get 5 sample games that have been created with THE ARCADE MACHINE (on the back of the program disk) which you can play with and modify in order to learn all the tricks without having to start from scratch.

£45.00

GraFORTH

GraFORTH combines sophisticated graphics features with a powerful programming language. Much more than a utility program GraFORTH's superior graphics make it the ultimate language for entertainments and educational software creation. Included are plotting and line graphics, text display and character image graphics, and high speed 3-D graphics, all with a variety of colours and drawing options. GraFORTH is a graphics language similar in structure to FORTH, but entirely rewritten for ease of use and maximum speed. The first level of graphics consists of plotting points, drawing lines, and filling areas with any of the Apple's high resolution colours. Turtlegraphics are included to draw line shapes rapidly at any angle. GraFORTH displays both upper and lower case characters. You can use any of the five character sets provided, or create your own with the character editor. GraFORTH can also draw three-dimensional colour images at speeds that make animation possible! Up to sixteen 3D objects can be manipulated simultaneously. GraFORTH includes a sophisticated software based music synthesizer for adding music or sound effects to your programs. Programs written in GraFORTH can be saved to disk as complete stand-alone systems that do not require any additional software to run.

£55.00

ALL PRICES PLUS VAT @ 15%

FOR ACCESS/BARCLAYCARD ORDERS,
PHONE OUR GAMELINE ON
01-870 9275
(24 hour service)



BOMB ALLEY

Bomb Alley is a realistic and complete simulation of the Summer 1942 Mediterranean Campaign. With the computer administering the game you are responsible for all strategy planning. Either as commander of the German or Allied Forces, or as the British Commander (2 player). You can also play solitaire against the computer. The average game lasts between 20 and 50 hours and a game in progress can be saved on a disk. There are infinite options available, so Bomb Alley will provide years of entertainment.

£45.00

To SBD Software, FREEPOST, OSIERS ROAD, LONDON SW18 1BR.
Telephone: 01-870 9275 (24 hours)/01-870 9386

Please send me the following items:

Description	Price	VAT	Total
Add 75p for Postage and Packing			0.75
Grand Total			£

I enclose cheque/postal order for made payable to SBD Software

Please debit my Access/Barclaycard (delete as app.) Number

Exp Date

Name

Address

..... L10

PROJECT LEADER

TIME SHEET ANALYSIS PACKAGE AND DEBTORS CONTROL PROBABLY THE BEST TIME SHEET ANALYSIS PROGRAM FOR USE WITH ANY MICROCOMPUTER ON THE MARKET TODAY.

Datacode's latest Software Package designed to solve all time, cost and Billing problems both large and small. Project Leader provides full time sheet analysis and is invaluable for Accountants, Solicitors, Architects and other professional practices.

APPLE II 5 $\frac{1}{4}$ " FLOPPY VERSION £385 (300 CLIENTS) HARD DISC (SYMBFILE) VERSION £500 (OVER 300 CLIENTS). DEMONSTRATION PACK £40.

Project leader provides the following reports at two levels:

- | | |
|-------------------------------|------------------------------|
| 1. Secretarial Reports | 2. Management Reports |
| A. Daybook | A. Client Summary/Statement |
| B. Project/Client Table | B. Complete Work in Progress |
| C. Employee Table | C. Debtor's Balances |
| D. Project/Client Weekly Cost | |

SAMPLE DATA CODE INTERNATIONAL LTD REPORT - WORK IN PROGRESS SUMMARY

CLIENTS NAME	(---CHARGE OUT COSTS---)			CURRENT	CURRENT
	TO DATE	THIS WEEK	TOTAL	DEBTORS BALANCE	WORK IN PROGRESS
ABC CO LTD	397.00	0.00	397.00	300.00	97.00
HARWICH LTD	1682.00	154.00	1836.00	0.00	636.00
SCHMIDT IND LTD	1631.00	149.00	1780.00	1200.00	449.00
WORK IN PROGRESS/BALANCE				1500.00	1182.00

DATACODE SYSTEMS (INT) LTD. 2 Leeson Close, Dublin 2. Tel: 761242

SSP

If you are an employer
STATUTORY SICK PAY
is a **PROBLEM** - and
we have the **SOLUTION**

SSP is applicable from 6 April 1983. Failure to keep records can lead to a fine of £200 plus £20 per day. All the information required to operate SSP is in DHSS publication NI.227: sixty pages of red tape.

- ★ Hilderbay SSP will tell you what to do before starting to operate SSP.
- ★ Hilderbay SSP will work out whether an employee is eligible for SSP.
- ★ Hilderbay SSP will compute an employee's SSP and all necessary information for your records.
- ★ Hilderbay SSP is compatible with your existing manual or computer payroll system (so long as your system allows you to enter the SSP just calculated).

Hilderbay SSP is available NOW on Apple II & IIe (£70 + V.A.T.) Also available: 48K Spectrum version (P.O.A.). Coming soon: CP/M version.

Other Hilderbay software: Apple Payroll (£60). Apple Bookkeeper (£30.44). For 48K Spectrum: Payroll, Stock Control, Critical Path Analysis, etc.

Further information is available on request.

HILDERBAY LTD. 8/10 Parkway, Regents Park,
London NW1 7AA.
Professional Software Telephone: 01-485 1059. Telex: 22870

ENGLAND

AVON

Datalink Micro Computer Systems
Tel: 0272 213427
Decimal Business Machines
Tel: 0272 214093
Delco Information Systems
Tel: 0272 23352 & 299422
Guestel Ltd.
Tel: 0272 277461

BEDFORDSHIRE

Computopia Ltd.
Tel: 0525 376600

BERKSHIRE

Cascade Computers
Tel: 0635 201591
Data Supplies Ltd.
Tel: 02814 2359
Decision Support Systems Ltd.
Tel: 0628 76887/8
Floodream Ltd.
Tel: 0734 583886
Lynx Computers Ltd.
Tel: 07535 56322
ME Electronics
Tel: Reading Berks. 0734 669480
Personal Computer Palace
Tel: 0734 589249
Thames Valley Systems
Tel: Reading Berks. 0734 581829

BUCKINGHAMSHIRE

Actiondata Ltd.
Tel: 0494 716171
Bits & Bytes Ltd.
Tel: 06285 26535
Chiltern Micro Computers Ltd.
Tel: 02813 88832
Computer Modelling Ltd.
Tel: 049481 6181
Milton Keynes Computer Centre Ltd.
Tel: 0908 668811
Neath Hill Professional Workshop
Tel: 0908 660364

CAMBRIDGESHIRE

Eicon Research Ltd.
Tel: 0954 81825
QIS Computer Services Ltd.
Tel: 0733 47191

CHESHIRE

Fairhurst Instruments Ltd.
Tel: 0625 525694
Mid-Shires Computer Centre
Tel: 0270 211086
Northern Computers
Tel: 0928 35110
SSL System Support Services
Tel: 09367 3842
U-Microcomputers Ltd.
Tel: 0925 54117/8

CLEVELAND

Micro-Technic Computer Systems
Tel: 0642 221501

DERBYSHIRE

Datron Micro Centre
Tel: 0332 380085
Donnington Computers
Tel: 0332 49672
Impact Micro Computer Services
Tel: 0773 831547

DEVON

Devon Computers
Tel: 0803 526303
JAD Integrated Services Ltd.
Tel: 0752 662616
Southern Computer Systems & Services Ltd.
Tel: 0803 212957

DORSET

Computacenter
Tel: Christchurch Dorset 0202 476951
Deverill Computer Services Ltd.
Tel: 0202 684441

ESSEX

Clacton Computer Centre
Tel: 0255 23160
Colin Grace Associates Ltd.
Tel: 0799 22532
Compuskil
Tel: 0708 751906
Essex Computer Centre Ltd.
Tel: 0245 358702
Microcore Ltd.
Tel: 0245 64230
Strident Computer Services Ltd.
Tel: 0787 476938 & 476940

GREATER MANCHESTER

Advanced Business Computers
Tel: 061-835 1477
Eclipse Computer Services Ltd.
Tel: 061-793 5622
Professional Data Systems
Tel: 0204 493816
Quodport Ltd.
Tel: 061-969 8729

HAMPSHIRE

A J Hales Computers
Tel: 04215 62366/7
G & M Management Services Ltd.
Tel: 0703 30664
Grist Business Services Ltd.
Tel: 0703 39061/332145
Mitron (Electronics) Ltd.
Tel: 0962 55612

HEREFORDSHIRE

Farmplan
Tel: 0989 64321

HERTFORDSHIRE

HG Services Ltd.
Tel: 0727 30129
Jarman Services Ltd.
Tel: 0442 826841
Local Business Technology Ltd.
Tel: 09924 66157
Lombardy Computers
Tel: 04427 4247

HUMBERSIDE

Saville Data Systems
Tel: 0904 37700

ISLE OF WIGHT

Island Computer Systems Ltd.
Tel: 0983 529744

KENT

M D Wright Data Services Ltd.
Tel: 0227 69090
Microspot
Tel: 0622 858753
Protocol Computer Products
Tel: 01-464 0541

LANCASHIRE

Pete & Pam Computers
Tel: 0706 227011/2/3
Style Systems Ltd.
Tel: 0254 51051

LEICESTERSHIRE

Leicester Computer Centre Ltd.
Tel: 0533 556268

LONDON EAST

The City Computer Centre
Tel: 01-588 5537
Computacenter
Tel: 01-628 3040
CSS (Systems) Ltd.
Tel: 01-254 9293 & 1674
Guestel Ltd.
Tel: 01-583 2255
Keen Computers Ltd.
Tel: 01-248 7307
Personal Computers Ltd.
Tel: 01-377 1200
System Logic Ltd.
Tel: 01-981 7311
Time & People
Tel: 01-242 4706

LONDON NORTH

Computech Systems
Tel: 01-794 0202
Microcomputer Space Dome
Tel: 01-368 9002
Pear Computing Systems Ltd.
Tel: 01-267 0940
Stirling Microsystems
Tel: 01-486 7671
Liaison Microchip Ltd.
Tel: 01-807 1558

LONDON SOUTH

Advanced Micro Products Ltd.
Tel: 01-850 8280
CWP Computers
Tel: 01-828 3127
Logic Computer Systems
Tel: 01-222 1122/5492
Mister Calculator (CSS) Ltd.
Tel: 01-686 9616
Planning Consultancy Ltd.
Tel: 01-839 3143

LONDON WEST

Albion Computer Co.
Tel: 01-580 6787
Applitek
Tel: 01-995 5446

SPEAK TO US AND WE'LL SOON HAVE YOU TALKING TO A NEW APPLE

The above are just a selection of the many helpful Apple dealers around the country.

Most offer training courses as well as a complete back-up service, and many will lease you an Apple for as little as £70 a month.

Remember, whatever you do you'll do it better with Apple. And with a dealer network like ours it's easy and convenient to get started.

Everybody should have a friend like Apple.

Apple is a trademark of Apple Computer Inc., USA.



Deans of Kensington
Tel: 01-937 7896
Fletcher Dennys Systems Ltd.
Tel: 01-286 7374
General Microcomputer Systems Ltd.
Tel: 01-995 4998
Office Installations Ltd.
Tel: 01-579 6771
Rank Xerox Ltd.
Tel: 01-387 1244
The West London Micro Centre
Tel: 01-743 9000

MIDDLESEX
Fletcher Dennys Systems Ltd.
Tel: 01-570 8999
Hexagon Services
Tel: 0895 36832
Microsolve Computer Services Ltd.
Tel: 01-951 0218/9
Ozwise Computers
Tel: 01-429 1060
Rank Xerox Ltd.
Tel: 0895 51133
Simmons Magee Computers Ltd.
Tel: 01-891 4477
Twickenham Computer Centre Ltd.
Tel: 01-891 1612

NORFOLK
Jorfold Office Equipment
Tel: 0603 60661

NORTHAMPTONSHIRE
Co-Compute Ltd.
Tel: 0604 33767

NOTTINGHAMSHIRE
Keen Computers Ltd.
Tel: 0602 412777

OXFORDSHIRE
Micro Mark
Tel: 04912 77926
Oxford Computer Centre
Tel: 0865 49349

Rocon Ltd.
Tel: 0235 24206

SOMERSET
Taunton Electronics Ltd.
Tel: 0823 433142

STAFFORDSHIRE
Gardner Brown (Computers) Ltd.
Tel: 0283 36181/2
Micro Applications Ltd.
Tel: 0785 43415

SUFFOLK
Blyth Computers Ltd.
Tel: 050 270 371
Database
Tel: 0638 730625
Harram Computers
Tel: 028488 534
Micro Management
Tel: 0473 57871

SURREY
Fergusson Computers Ltd.
Tel: 093 23 45330
JD Financial Advisors
Tel: 09322 47888/9
Micro Facilities Ltd.
Tel: 0784 31333

Microlines Computers Ltd.
Tel: 01-546 9944
Rothwell Data Systems Ltd.
Tel: 0252 519441
Symbiotic Computer Systems
Tel: 01-683 1137
Vega Computers
Tel: 01-680 4484

SUSSEX
Computer Centre (BMS) Ltd.
Tel: 0424 439190
Crowborough Computing
Tel: 08926 63070
Datatech Ltd.
Tel: 0323 36268
Guestel Ltd.
Tel: 0273 695264

Hobbyist Ltd.
Tel: 0273 593345

TYNE & WEAR
Office Equipment Selection Ltd.
Tel: 0632 683333

WARWICKSHIRE
Impulse Micro Systems Ltd.
Tel: 0789 295819/297263
Templeman Software Ltd.
Tel: 0789 66237

WEST MIDLANDS
ABM Computers
Tel: 021-459 7481
Micro Applications Ltd.
Tel: 0922 644234
Micro-Business Centre
Tel: 0902 725687
Second City Software
Tel: 021-707 8739
Stewart Computer Services Ltd.
Tel: 021-632 4822
Westwood Computers
Tel: 021-632 5824

YORKSHIRE
Datron Micro Centre
Tel: 0742 755105
DMS Electronics
Tel: 0909 563918
Natcom Computer Systems Ltd.
Tel: 0532 452928
RAM Computer Services Ltd.
Tel: 0274 391166
Superior Systems Ltd.
Tel: 0742 755005
Taunton Electronics Ltd.
Tel: 0532 458815
Wharcliffe Business Systems
Tel: 0226 298501

SCOTLAND
BORDERS
McQueen Systems Ltd.
Tel: 0896 4866/7/8

DUMFRIES
Criffel Micro Business Systems
Tel: 0387 69151/2
GRAMPIAN
Abtex Computer Systems Ltd.
Tel: 0224 550074/5/6
HIGHLANDS
Black Isle Systems Ltd.
Tel: 0381 20276
LOTHIAN
McQueen Systems Ltd.
Tel: 0731 2252774
Scotbyte Computers Ltd.
Tel: 031-343 1005
STRATHCLYDE
Masons Computer & Business Equipment Centre Ltd.
Tel: 0563 20985
Scotbyte Computers Ltd.
Tel: 0698 823 486
Strathand
Tel: 041-552 6731

WALES
GLAMORGAN
Cardiff Micro Computer
Tel: 0222 373072
Croeso Computer Services
Tel: 0792 61555/6
South Wales Computers Ltd.
Tel: 0222 490572
GWENT
Acorn Business Systems
Tel: 06333 72429
GWYNEDD
IDC Computer Services
Tel: 0248 724282

NORTHERN IRELAND
CEM Micro Computer Systems Ltd.
Tel: 0232 43564/44111
Imex Digital Ltd.
Tel: 0846 611551
Medical & Scientific Computer Services Ltd.
Tel: 08462 77533

The Dealer list above is not a list of all authorised Apple Dealers.
For a complete list write to Apple Computer (UK) Limited, Eastman Way,
Hemel Hempstead, Herts. HP2 4BR, FREEPOST.



UNSHACKLE YOUR APPLE



Intelligent Printer Buffer for the Apple II

DESCRIPTION

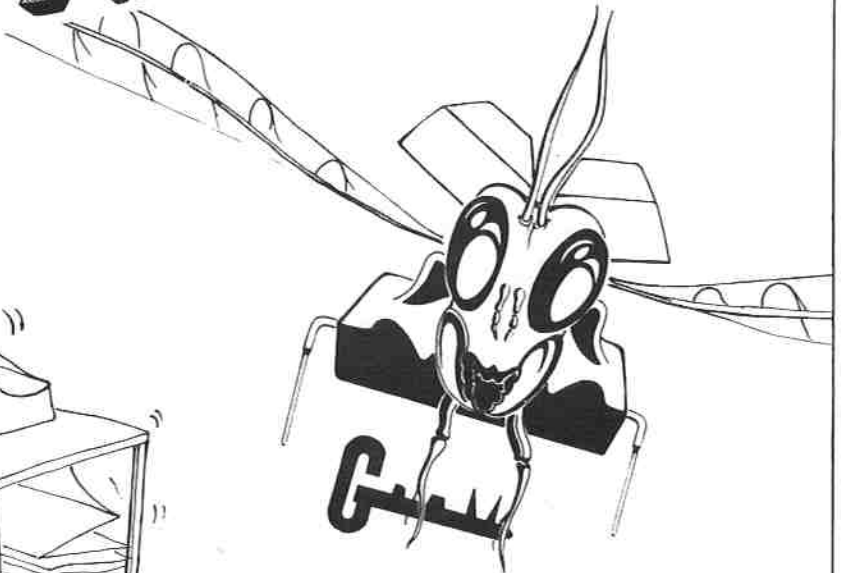
Printing documents, a major computer task and a key part of any business activity, wastes time by tying up your Apple until printing is complete.

The IPB-16K is designed to receive data to be printed from the Apple at high speed, save it on the card then send it to the printer at the lower speed required by the printer.

The Apple is now available to continue other processing typically saving 1-20 minutes of otherwise wasted time.

GRAM
BUSINESS SYSTEMS LTD.

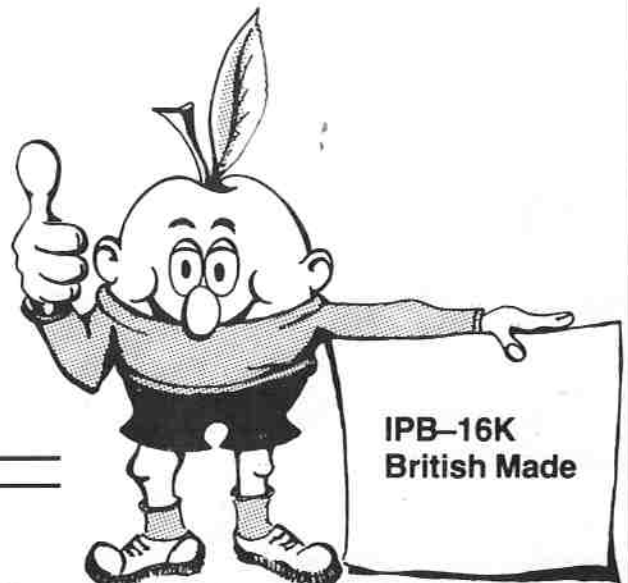
48 Hedley St., Maidstone, Kent, ME14 5AD.
Tel: Medway (0634) 666496
or Maidstone 679595.



FEATURES

- Compatible with Apple II & II PLUS.
- Two interfaces in one - same card drives serial (RS232) and parallel (Centronics) printers.
- Full 16,383 character capacity.
- Own on board low power microprocessor
- Serial baud rates 110-9600 Baud, XON/XOFF feature also.
- Software switching between serial and parallel outputs.
- Full paper formatting features make an ordinary printer look like a top of the range model.

*** R.R.P. £129.95***
Ex.VAT

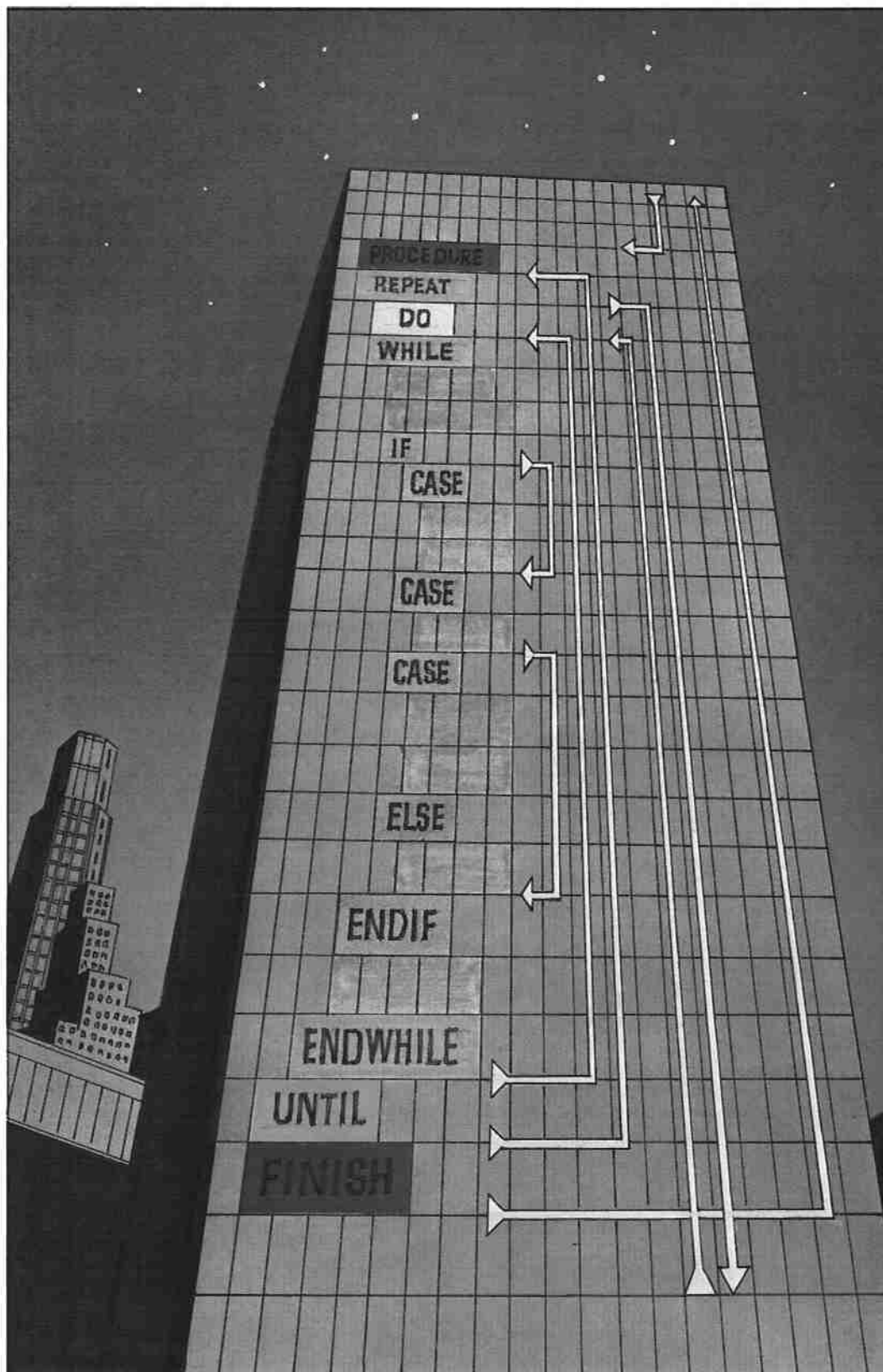


DEALER ENQUIRIES ARE INVITED

U-MICROCOMPUTERS PRESENTS STRUCTURED BASIC for Apple II + & Iie

At last you can buy a true Structured Basic interpreter (this is not a pre-compiler) which has all the benefits of Pascal plus many other features, runs all existing Applesoft programs and uses DOS 3.3 as its operating system.

The Perfect Language for Novices and Professionals alike!



'make it easy on yourself'

Take a look at these features, unique to Structured Basic:

Procedure Names Subroutines called by name as with Pascal. No line references needed.

Structured Commands REPEAT .. UNTIL, WHILE .. ENDWHILE, FOR .. NEXT, IF .. THEN .. ELSE .. ENDIF

Advanced CASE Statement IF (expl), (expn) .. Case 1 .. Case n .. Else .. End if

Disk Procedure Libraries Procedures not resident in the program are automatically read from disk and added to the program without interruption.

Procedure Overlaying Memory occupied by procedure called from disk can automatically be released for other uses when procedure is finished.

Local Variables Lists of variables may be declared for local use by each procedure making recursive programming possible and avoiding bugs caused by re-using variable names.

Disposal of Variables Unique 'RELEASE' command allows memory occupied by unwanted arrays to be reclaimed for use.

Additional Graphics Commands Graphmode, Page, Hires, Lores, Superimpose, Textmode, Mixed, Full, Fillwith, Screen.

Passed Parameters Variables may be passed to procedures as arguments.

Compatibility Virtually all Applesoft/ DOS 3.3 programs will execute without modification.

Interpretive in nature All 32 new commands may be used in immediate mode, entered, listed and executed in programs just like other Basic Commands.

Improved Error Handling ONERR, ERRSTART, ERREND.

Available from all
U-M dealers at **£90.00**
exc. VAT

Structured Basic was written by Patrick Buckland of Island Computers Ltd I.O.W. and is distributed by U-Microcomputers Ltd.

Apple, trademark of Apple Computers Inc.

Software publishing - we market outstanding Apple software world-wide, including if necessary writing the manuals. Contact Roy Stringer if you have something that will meet our stringent criteria.

U-MICROCOMPUTERS

U-Microcomputers Ltd.,
Winstanley Industrial Estate,
Long Lane, Warrington,
Cheshire WA2 8PR, England.
Telephone 0925 54117
Telex 629279 UMICRO G

U-Microcomputers Inc.,
300 Broad Street, Stamford,
Connecticut 06092, USA.
Telephone 203 359 4236
& Toll Free (800) 243 2475
Telex 965999 O&S STD





The Apple's tops for a bull'seye

IF you are tempted to nip down to the pub for a quick game of darts but can't bear to be away from your Apple for all that time, here's a quick solution - Apple Darts, by **Max Parrott**.

A player "throws" his dart at the board by first aiming with a cross-hair sight and then pressing RETURN. A random element gives the cross-hairs a jittery motion and makes throwing not quite as simple as it first appears.

The game, for two players (or with an option for one player to compete against the Apple) is the traditional 501.

The dartboard is drawn on the first hires page. The program does so in subroutine 120 which in turn uses subroutine 20 for drawing two circles for the bull and the outer edge.

Subroutine 90 is also used for filling in

the board's sectors. The circle drawing routine is very fast and versatile but the sector filling much slower, and the whole board drawing routine takes 53 seconds.

The user does not feel at a loose end while this is taking place as he is left to look at the instructions, but in the top left hand corner of the screen the letters A to T will flash and count upwards, indicating that the program is working.

(A fast method of drawing a circle is given in this month's Appletips section - (see Page 29.)

It is easy to remove most of subroutine 120 from the main program if required and use it just once to create the board. The routine can then be saved as a file on disc to be BLOADED in future. The last part of this initial subroutine sets up a shape table of the numbers and an x and


draws the numbers around the board. (Credits to Peter Gorry for this shape table.)

After the initial set up is completed the user indicates the number of players. The first named person will always be player number 1. The Apple will always be player number 2.

The cross-hair sights are drawn in line 310 and immediately removed in line 320. This is deliberate to make their motion apparently more jittery and so more difficult to aim. After the player's three throws the Apple will take its throws quite quickly.

All of its decisions about where to aim are taken in subroutine 590. After a decision has been made a random variation is put on the selected coordinates. From then on the same routines are used by

Full listings start on Page 77



both the human player and the Apple.

The score of each dart is shown on the screen at the bottom and after three darts the score is updated at the top. In the closing stages when a player needs a double to win, the relevant double required, followed by a cross, is displayed on screen, rather than the remaining score.

If any dart causes the current score to be "bust" the bell will sound and play transfers to the other player.

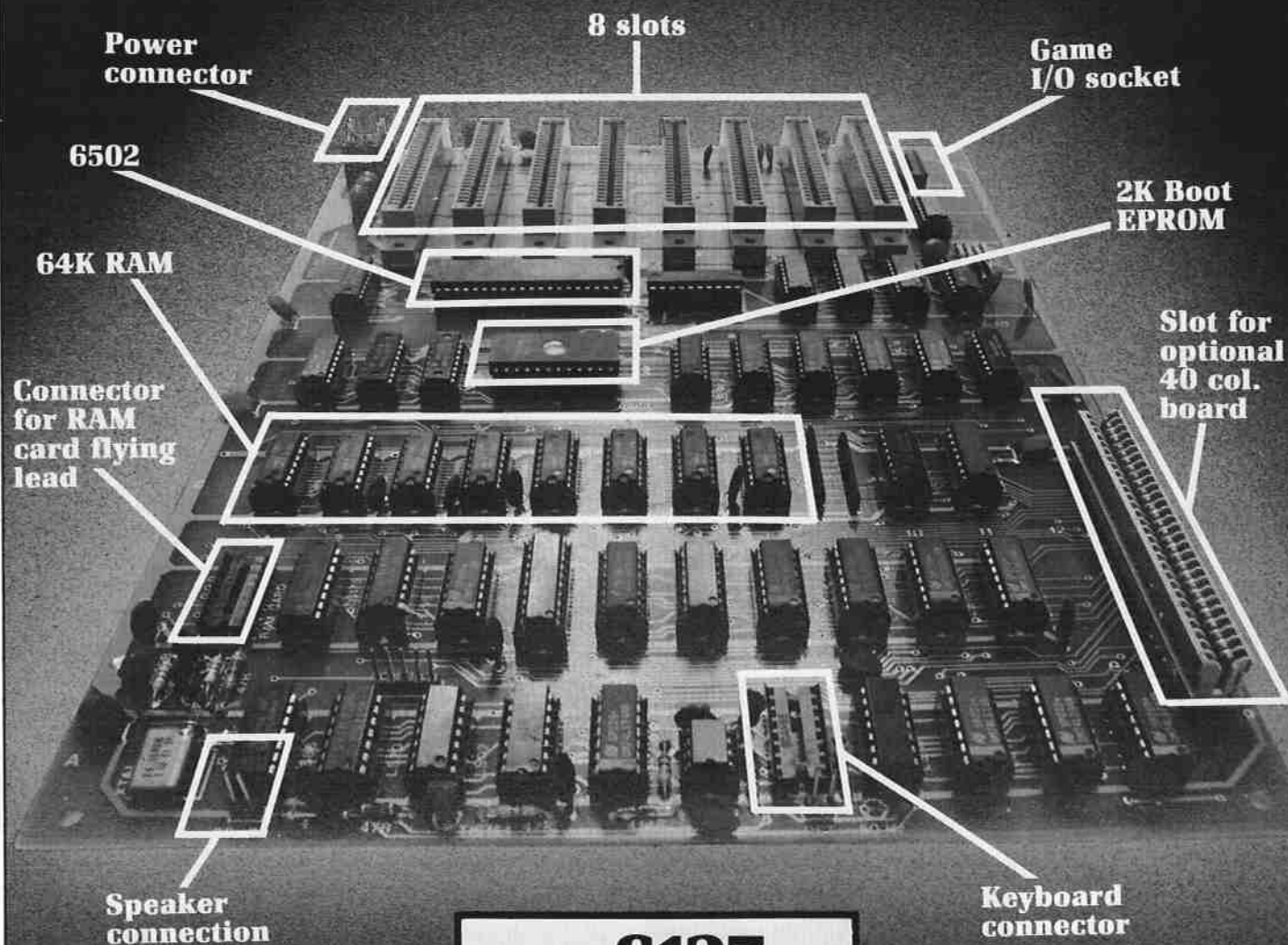
After one game the winner is announced and you will be invited to have another round.

Anyone with a voice box or the right software could probably quite easily incorporate the magic words "one hundred and eighty scored" as might be appropriate.

U-COM 2

a new compatible mother board

OEM's • System builders • Enthusiasts • Entrepreneurs



An Applebus compatible board for OEM's, system builders, enthusiasts and..... entrepreneurs.

Runs all Apple II+ software and supports all Apple II+ boards including RAM and 80 col. display boards.

The display is optional via a 40 col. display board or by 80 col. boards. The only thing we've omitted is the cassette interface.

1000 off **£127** each

100 off **£159** each

10 off **£199** each

1 off **£249** each

Prices are for complete and tested boards and exclude VAT and

delivery. Documentation included with each order.

The 40 col. display board is priced at £20, £25, £31 and £39 and power supply at £37, £46, £57 and £71 respectively.

U - Microcomputers Ltd.,
Winstanley Industrial Estate,
Long Lane, Warrington,
Cheshire WA2 8PR, England.
Telephone 0925 54117
Telex 629279 UMICRO G

U - Microcomputers Inc.,
300 Broad Street, Stamford,
Connecticut 06092, USA.
Telephone 203 359 4236
& Toll Free (800) 243 2475
Telex 965999 O&S STD

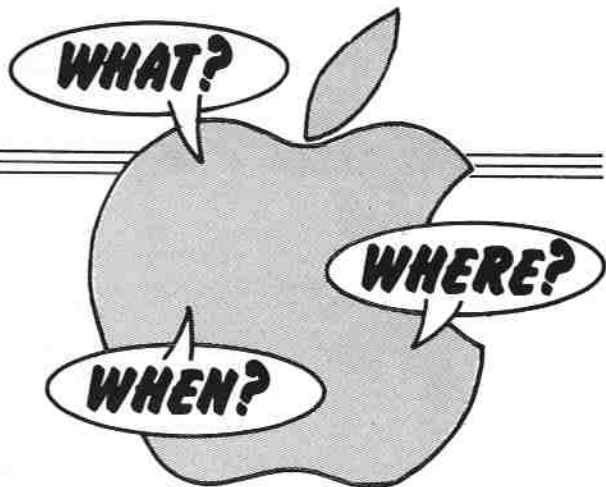
U-MICROCOMPUTERS

'make it easy on yourself'



WHAT'S NEWS...

By David Creasey



BBC Micro programme gives the Apple a boost

THE BBC have paid Apple a most generous compliment. They launched their current TV series, "Making the most of the micro" – which has been so obviously designed to boost sales of the BBC Micro – with a remarkable Apple success story.

The series opened with a very moving sequence in which Richard Gomm, a 30-year-old spastic from Dyfed in West Wales, described how his Apple has changed his life.

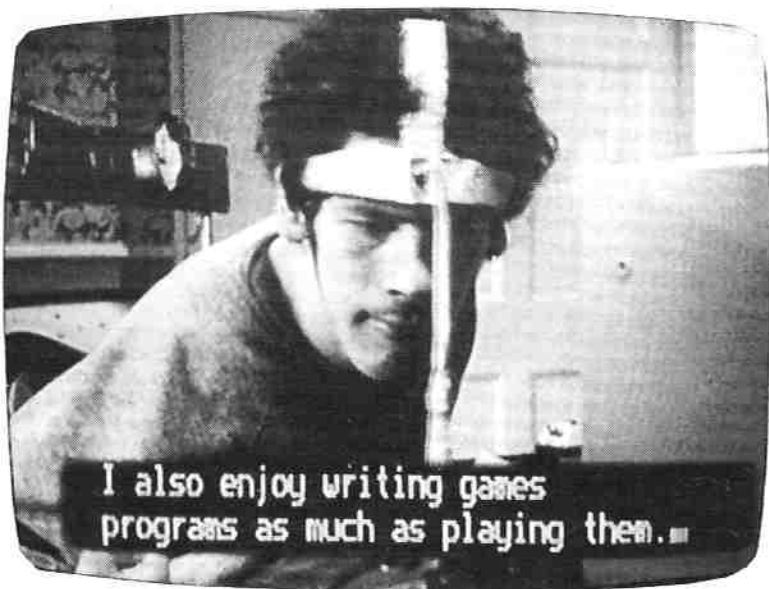
Richard, who cannot speak or walk and whose erratic limb movements are completely uncontrollable, told his story by keying it on his Apple with a stick attached to a headband.

He wrote: "The idea of using computers to help me write was suggested by friends at York University just as cheap micros were becoming available. The freedom this gave me was marvellous."

Now studying for a PhD degree at Swansea, Richard's first big task was to write his own word processing program, one that he could use with the minimum number of keystrokes. He went on to devise ways of using his Apple to switch on lights and radio – and generally making his life easier.

Said presenter Ian McNaught-Davis: "The micro has opened up a whole new world for Richard Gomm. He's now writing software to help other disabled people extend their activities through computers."

The second program in the TV series also featured an Apple II, which international photographer Patrick Eagar uses to write his own programs to run all his business paperwork.



Down Under dealings

AUSTRALIANS are "different" when it comes to selling Apples, but their methods are in no way topsy-turvy.

That's the claim of Nick Morley, of Ranmor Computing, who predicts that in a few months Apples will be sold in the UK and Europe à la Australian – and that within a year there won't be a new machine launched that is sold differently.

"In Australia Apples are sold in

bundles," says Morley. "A person buys a basic system including disc drives and printer for about \$3,000 and gets with it free software packages – usually word processing, financial management, graphics and information management.

"He has everything he needs to be able to take his Apple home or to work, set it up, and start using it productively."

As the price of micro hardware continues to fall in real terms more and more software is going to be supplied free of charge with the initial bundle – much like Apple has already done with Lisa.

The end result – and a spin off for Ranmor – is that the dealer doesn't have the profits, or the time to give adequate training to the customer.

Morley says micro training is relatively new in Australia and the concept of disc based training completely new. A recent business visit there resulted in hundreds of orders for the company's disc-based word processing workshop for Wordstar.

The company also sells its training packages in South Africa, the Far East and America and such is the demand it is now

Swedes flipped over Lisa

TWENTY Swedish Apple dealers were flown to the UK to visit the Which Computer? Show – courtesy of Systematics International's Swedish subsidiary.

The dealers – all of whom market Systematics' software – came specifically to see the unveiling of Lisa.

"They really flipped over Lisa," said Britt-Marie Young, of Systematics, "They had great hopes for the machine in the Swedish market and can't wait to get hold of it and to start selling."

She added: "It was the same for the Iie – all they could ask was when could they start selling it!"

developing workshop packages for Supercalc, Data Star, Visicalc and DBase II.

Morley says that Apple networking is popular in Australia, with most systems using Corvus drives.

He adds that although a very high proportion of Apple's are sold with hard discs the country is out of date in terms of new, low cost hard disc units.

Apples sold in Australia (which are manufactured in Ireland) are a third more expensive than their UK equivalents and there is a 35 per cent duty levied on software imports. It is because of this that the bundling concept evolved – and franchising and discounting became prevalent.

Mary Rose evaluation

APPLES are playing a vital part in Britain's most intensive investigation of its naval past – the study of the medieval warship, the Mary Rose, raised from the sea bed near Portsmouth Harbour last year.

The Mary Rose Trust at Portsmouth is responsible for investigating conservation processes for all the organic finds and its head of Research and Development, Dr John Harvey, says: "Using our Apple has assisted greatly in the development of experimental techniques for processing the material.

"The Applewriter programs, both 1 and 2, are of immense help in the handling of text information such as letters and reports. In addition, we use the computer to provide statistical evaluation of data and for plotting results".

John Harvey's department carries out experimental work on the organic materials, such as wood and leather. He says:

"The conservation processes involve the removal and replacement of water in the materials, mainly by using freeze-drying. The evaluation of the results is carried out by the Apple. Our aim is to quantify the conservation techniques – and having the Apple on hand speeds up the work."

Other jobs the computer is used for are "fairly routine" calculations, as an electronic memory system for files of references, as a word processor and also to plan experiments.

The Mary Rose Development Trust is also creating software to use the Apple to store information and records.

John Harvey's department is carrying out studies in collaboration with several



Dr John Harvey, head of R & D, Mary Rose Trust, Portsmouth, with his Apple II

outside bodies, in particular with the University of Nottingham.

The university also has an Apple which is used to collect data from a spectrometer. John Harvey enthuses: "We interchange software and can use their printer facilities for graphics – posting off discs and getting back graphics print-out."

How long will it take before all the work on Mary Rose finds is complete? John Harvey concedes:

"I expect it will take several years, and is bound to go on for ever in some form or another. As time goes on we will write more software as we explore different areas of interest in the recovered material."

Arcade game competition

PRIZES worth up to \$1,500 are up for grabs in a competition organised by Broderbund Software of San Rafael, California.

The competition is for owners of the company's do-it-yourself arcade design package. The Arcade Machine, which takes users step by step through the process of designing and producing their own computer arcade games.

Each month until the end of June the company will select a finalist who will receive \$200 worth of software or hardware. These monthly winners will be eligible for the grand prize of \$1,500 software or hardware, and the runner up prize of \$500 software or hardware.

All they have to do is to buy the package – and then develop a "winning" game with it.

Enter the Arapple

PERHAPS all the riches of Arabia could be yours – if you are a software designer whose products would suit the lucrative Middle East market.

Middle East distributor Multi-Media Video say the Arab market is rapidly expanding – and its Saudi dealers alone placed more than \$5 million of orders for English Apple systems and software last year.

It is now looking for software products suitable for the Arab market, as well as software that can be translated into Arabic on a licence, royalty or percentage basis.

The company has converted both the Apple II and III to function in the Arabic language.

"These were hardware changes which make the Apple II and III the only fully Arabic micros – although the systems function in either Arabic or English," said a spokesman.

Slipped discs

"GO to your friendly dealer" is a suggestion often made by *Windfall* because, in the main, dealers find that if they give good support and advice the long term benefits come back to them in sales.

However even experienced dealers occasionally have their problems. The

monthly newsletter put out by Datalink of Bristol didn't appear in December as scheduled. There should have been one, says the company, and in fact one was prepared. But when it came to posting it to subscribers it was discovered that the newsletter mailing list discs had disappeared.

In fact the discs had been sold in error at the company's recent bargain sale!

Rather sheepishly the company conceded: "We do keep back-up copies, but for certain technical reasons it was not possible to use them there and then."

It is nice to know that the people at Datalink read *Windfall*. Their latest newsletter carried a list of Apple IIe features which was identical (the list, not the features) to the one we had edited and carried in last month's issue.

Sneaky answer sought

USER groups in France and the USA are racing each other to see who will be the first to crack a problem that has so far defied all the experts - how to write a program that will treat records on a database spread over several discs as though they were all on the same disc.

Many business users of the Apple face this problem. Suppose you have more than 1,000 client records, but can only fit 500 records on one disc. So you have to use two or three discs, perhaps putting clients' names beginning with A to H on Disc 1, J to P on Disc 2 and Q to Z on Disc 3.

All well and good until you need to do a sort, when you have to search through three different discs. And if you need to do a multiple sort it becomes even more complicated.

Of course, one solution would be to invest in a hard disc system, plus backup. But not every small businessman wants to go to this expense.

The perfect answer, of course, would be for someone to write a program that makes the computer think that all the discs that make up the database are on line at the same time, and can be accessed in sequence.

In the States several user groups say they are close to cracking the problem. And now groups in France are determined to be first past the post.

In last month's issue of a French user magazine appeared a stirring call that seem to echo the strains of the Marseillaise, with Frenchmen being

exhorted: "Users - to your machines! Let's show we're just as good as those Yankees!"

Wouldn't it be nice to hear that, without any fanfare of trumpets, some dedicated British user has already found out how it can be done?

Seal of approval

ADVENTURE games are a well-established part of the Apple leisure scene. So much so that Sir-Tech of New York state have started issuing Certificates of Achievement for players of their Wizardry games. A nice touch, and one which adds to the game's enjoyment.

The certificate gives a commendation "for devotion to Wizardry above and beyond the call of duty," "for battling monsters and mapping mazes far into the night" and "for climbing out of pits which the rest of the party walked over, with a smile on your face."

It also cites an individual for "not calling Sir-Tech at 3am for a hint" and for being able to stop playing Wizardry for a few minutes to spend time with your wife,

husband, girlfriend, boyfriend, mother or pet dragon!

The third Wizardry scenario, Legacy of Lylgamyn, is due for release in the US this month.

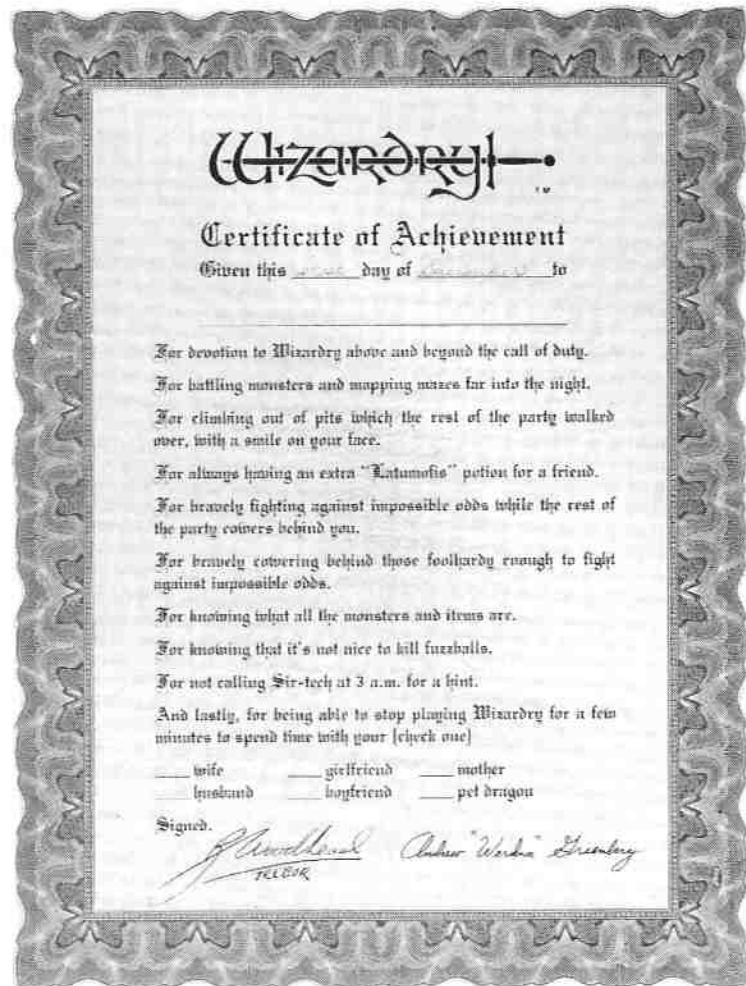
A printout utility for Wizardry has also been developed. It is called Wiziprint, can operate on any printer, and is used to generate printouts of a character's experience, gold, attributes, spells and other information that players of the game might need for reference.

Apple gets the bird

FIRST it was dolphin researchers who used Apples to study the creatures' linguistic abilities. Now scientists in Japan have recruited an Apple to measure the learning capacity of doves.

Experts at an animal research laboratory there are excitedly predicting they are on the verge of a breakthrough into creating a primitive inter-species language that will allow them to communicate with their feathered friends.

We can't wait to get our hands on the first Apple-generated bird-human dictionary to review in *Windfall*.



LOOK! ... FOR ALL YOUR



apple ACCESSORIES



PA

All items fully guaranteed for one year
 Free postage and packing within UK

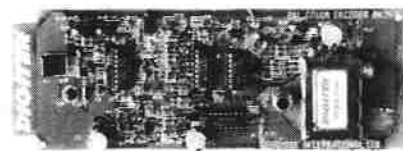
Immediate delivery
 Many more items available



BUSINESS SOFTWARE	NET	INC. VAT
Access	162.00	186.30
Business Forecasting Model (Reqs. Visicalc)	63.00	72.45
Calstar (CP/M) (80 column spreadsheet)	59.00	67.85
dBase II (CP/M)	325.00	373.75
Data Star (CP/M) (powerful data entry)	122.00	140.30
Data Perfect	67.00	77.05
D.B. Master (version 3.02)	102.95	118.39
D.B. Master statistics	47.95	55.14
D.B. Master utilities (links with visi's)	47.95	47.95
Desk Top Plan II	110.00	126.50
Dutil (for dBase II)	61.00	71.15
Graphmag (bar graphs, pie charts, etc)	52.00	59.80
Mathemagic	52.00	59.80
Msort-80 (stand alone CP/M sort)	125.00	143.75
Multiplan (Microsofts superior spreadsheet)	155.00	178.25
PFS Filing system	59.00	67.85
PFS Graph	59.00	67.85
PFS Report	47.00	54.05
Quick Code (for dBase II)	189.00	217.35
Supersort (CP/M)	85.00	97.75
Supercalc (CP/M Spreadsheet)	115.00	132.25
The General manager	68.00	78.20
The Last One (programme generator)	260.00	299.00
Versaform (form generator in Pascal)	192.00	220.80
Visicalc	122.00	140.30
Visi + (visicalc consolidation)	19.45	22.37
Visicalc utilities	34.00	39.10
Visid	135.00	155.25
Visifile	135.00	155.25
Visiplot	135.00	155.25
Visitrend/plot	155.00	178.25
WORD PROCESSING		
Applewriter II	72.00	82.80
Executive Secretary	145.00	166.75
Executive Speller	45.00	51.75
Format 80	195.00	224.25
List Handler (Mailer & Form Letter)	83.00	94.75
Magic Mailer	45.00	51.75
Pie Writer (40/80 columns)	85.00	97.75
Sensible Speller (new fast proof reader)	69.00	79.35
Sensible Speller (CP/M)	69.00	79.35
Screenwriter II (70 col w/out 80 col card)	75.00	86.26
Super Text 40/80	109.00	125.35
Wordstar 3.01 (CP/M) (enhanced features)	135.00	155.25
Word Handler (does not req. 80 col. card)	99.00	113.85
Zardax (40/80 & inc form letter)	125.00	143.75

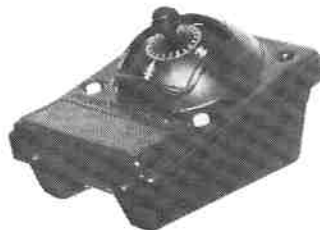
PRINTERS	NET	INC. VAT
Epson MX80T-3 (up to 132 col & hi-res drive)	305.00	350.75
Epson MX80FT-3 (as above & friction drive)	339.00	389.85
Epson MX82FT (Very hi-res graphics)	359.00	412.85
Epson MX100FT-3 (100 cps & wide carriage)	429.00	493.35
Mannesmann Tally MT120 I (160 cps)	365.00	419.75
Nec 8023 (100 cps & prop. spacing)	339.00	389.85
Smith Corona TP-1 (daisy wheel printer)	449.00	516.35
Tec 1500-25 (25 cps daisy wheel)	525.00	603.75
PRINTER INTERFACE CARDS		
Aristocard Parallel	69.00	79.35
Aristocard Serial	75.00	86.25
CPS Multifunction Card (inc real time clock)	119.00	136.85
Digitek Printmaster (BASIC/CPM/PASCAL)	69.00	79.35
Digitek Printmaster III with memory mang	159.00	182.85
Grappler + (Epson/Anadex/Cent/Nec)	95.00	109.25
IPB-16K (serial/parallel card & buffer)	125.00	143.75
MBP-16K (Epson 16K buffer)	96.00	110.40
Wizard 16K Buffer & graphics interface	143.00	164.45
80 COLUMN CARDS & ACCESSORIES		
Softswitch (for Videx Videoterm)	21.95	25.24
U-Term (inc shift mod. & font editor)	127.00	146.05
Videx Enhancer II	83.00	95.45
Videx Inverse Eprom	18.45	21.22
Videx Utility Disc (inc font editor etc)	24.45	28.12
Videx Videoterm	169.00	194.35
Visicalc preboot disc (80 col with videx)	32.00	36.80
Vision-80 (incs softswitch & inverse)	185.00	212.75
MONITORS/COLOUR CARDS		
Digitek Colour Card (excellent colour on TV)	95.00	109.25
Microvitec colour monitor	275.00	316.25
Microvitec colour card (use with above)	35.00	40.25
Prince 12" Green screen	105.00	120.75
Zenith 12" Green screen (very good value)	79.00	90.85
GRAPHIC UTILITIES & MUSIC		
Arcade Machine (game designer)	23.50	27.03
Bit Stik (Robocom)	245.00	281.75
Complete Graphics System (Penguin)	65.00	74.75
E-Z Draw 3.3 (excellent graphic utility)	25.95	29.84
Graforth (fast 3D utility plus music)	43.00	49.45
Graphics Magician (Penguin)	39.00	44.85
Graphic package Sublogic (detailed 3D pack)	74.75	85.96
Higher Text II (many diff fonts, sizes, cols)	25.45	29.27

Pascal Animation	41.00	47.15
Pilot Animation tools	41.00	47.15
Special Effects (Penguin)	27.00	31.05
The Artist	55.00	63.25
Versawriter (graphic digitizer)	165.00	189.75
Versawriter expansion pac 1	24.00	27.60
Zoom Grafix (similar to zoom on Bit Stick)	23.95	27.54
All Music System (9 voice)	85.00	97.75
Audex	14.95	17.19
Electric Duet (creates 2 part music)	18.95	21.79
Forté (4 voices & 9 octaves)	15.95	18.34
Music Machine 9 Voice (Vista)	69.00	79.35
Music System (Mountain Computer 16 Voice)	211.00	242.65
S.A.M. (software automatic mouth)	69.00	79.35
Zapple Sound Effects & Music Board	49.00	56.35
UTILITIES		
Aplus (Applesoft structured Basic)	18.95	21.79
Appleguard (provides software protection)	175.00	201.25
Apple Mechanic (Beagle Brothers)	25.00	28.75
Assembly lang. Dev. (6502, 280 or 8080)	75.00	86.25
Bag of Tricks	24.95	28.69
B.E.S.T. (Enhanced Software Tool)	23.95	27.54
Build Using (Provides 'print using' command)	23.95	27.54
Copy II Plus	35.00	40.25
Disc Doctor (CP/M disc recovery)	68.00	78.20
Disc Library (incl CP/M & Pascal)	35.00	40.25
DOS 3.3 Tool Kit	41.00	47.15
Dos Boss (modifys Dos Commands)	15.00	17.25
Edit Soft (powerful macro line editor)	19.95	22.02
Fast DOS	19.45	22.37
Global Program Line Editor (supports 80 col.)	34.50	39.68
Image Printer-Epson (flexible hi-res dump)	32.00	36.80
Lisa (Assembly lang. dev. system)	57.00	65.55
Lisa (Educational system)	75.00	86.25
List Master (inc. smart renumbering)	23.95	27.54
Locksmith 4.1 (bit copier for most discs)	61.00	70.15
Merlin Macro Assembler (editor & utilities)	45.00	51.75
Munch A Bug	24.00	27.60
Printographer (supports almost any printer)	27.95	32.14
Speed Star (compiles 1200 lines per min.)	75.00	86.25
Tasc Compiler (handles v. large programs)	95.00	109.25
The Bug (Assembly Language debugger)	38.00	43.70
The Inspector (disc snooper, needs 16K cd)	35.00	40.25



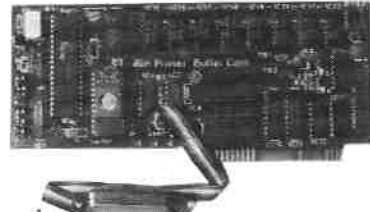
DIGITEK COLOURCARD

This amazing card gives high quality colour and includes a wide band modulator, simply plug in your TV or Pal monitor. £95.00 + VAT.



THE BIT STIK GRAPHICS SYSTEM

A large smooth tracking hemisphere with adjustable back pressure, and probably the most powerful Microcomputer graphics software available. £245 + VAT.



IPB-16K SERIAL/PARALLEL INTERFACE & BUFFER

Now you need only one interface card to support both your daisywheel and dot matrix printers plus the benefits of a 16K buffer to speed things along. £129 + VAT

SMITH CORONA TP-1 DAISYWHEEL PRINTER



A microprocessor controlled high quality printer which delivers fully formed executive print at a speed of 120 words/min. Price £449 + VAT.

MICROVITEC 14" COLOUR MONITOR



Besides offering a crystal clear display in either text, hi-res or low-res modes. It also includes the following features, 16 text colours, b/grd colours, 80 column card compatibility. A superb colour monitor for £275.00 + VAT.



12" PRINCE MONITOR

Features 24 M/Hz bandwidth, giving a ver clear display, and contained in a neat Apple compatible case, available with either Green or Amber Screen. £105 + VAT.

CE

0274 575973

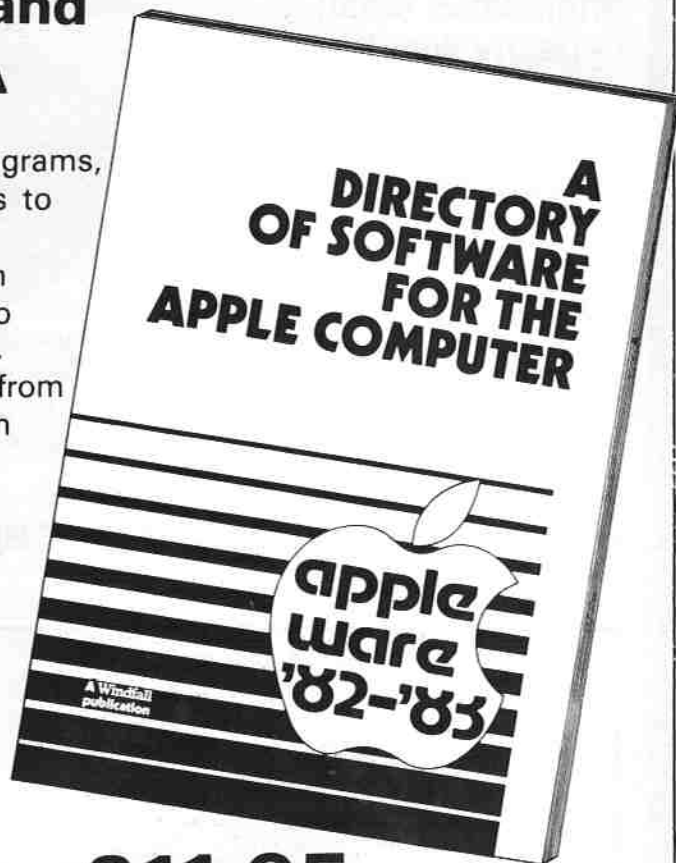
The Routine Machine (mach. lang. routines)	38.45	41.92
SYSTEM EXPANSION		
16K Ramcard Digitek	75.00	86.25
16K Ramcard Ramex	65.00	74.75
16K Ramcard Samram	55.00	63.25
32K Ramcard Saturn	135.00	155.25
128K Ramcard Saturn	299.00	343.85
128K Ramex card	275.00	316.25
Cool stack (holds 2 drives & monitor + fan)	65.00	74.75
DOS upgrade kit (3.2 to 3.3)	36.00	41.40
E-Z Port (game socket extender)	11.45	13.17
E-Z Port II (2 game socket extenders)	19.00	21.85
Eprom Card (holds 6)	52.00	59.80
Keyplus Numeric Keypad	83.00	95.45
Lower case adapter W/shift (rev 7+)	34.00	39.10
Pact clip on fan	46.00	52.90
The Mill 6809 with Pascal speed up	189.00	217.35
Time Kit	55.00	63.25
VC-Expand/80 (up to 145K Visicalc & 80 col)	65.00	74.75
VC-Expand Ramex (loads 138K visal in 20 sec)	40.00	46.00
Videx Function Strip (req Enhancer II)	49.00	56.35
Z80 card U-micro (card only)	73.00	83.95
Z80 card Microsoft (CP/M & Mbasic)	185.00	212.75
LANGUAGES		
Apple Logo	115.00	132.25
Apple Pascal	145.00	166.75
Apple Pilot	79.00	90.85
Cobol 80 (CP/M)	345.00	396.75
Forth II (Interger only)	39.00	44.85
Fortran 80 (CP/M)	103.00	118.45
Transforth (full floating point Forth)	68.00	78.20
MISCELLANEOUS ITEMS		
Disc Drive (Fully Apple Compatible)	199.00	228.85
Disc Drive Controller Card	54.00	62.10
Disc Head Cleaning Kit (50 discs & fluid)	19.95	22.94
Disc tray (40 discs & lockable)	17.45	20.07
Joystick (Self Centering)	38.00	43.70
Master Diagnostic Disc	48.00	55.20
Plastic Disc Box	2.50	2.88
Ram Card utility (permits s/ware backup)	59.00	67.85
Trak Ball (the ultimate game controller)	45.00	51.75
Typing Tutor II	14.95	17.19
Wabash 5.25 Discs Pack of 10	17.95	20.64
Wildcard (permits software backup)	93.00	106.95

NEW!

More than 1,000  **apple** programs described in detail

The only complete, up-to-date directory of all the latest Apple software from the UK and the USA

- ★ Business programs, from invoices to tax records.
- ★ Utilities, from assemblers to 3-D graphics.
- ★ Educational, from administration to science simulations.
- ★ Games, from astro adventures to strategy games.



PLUS!

£11.95

A unique guide to hardware add-ons – data storage, graphics tablets, interface cards, input devices, monitors, printers, music and speech synthesisers



Orders from Colleges and Government Depts. etc welcome

Please make your order by completing the coupon and returning to us – or you can phone **DAVE or SHERIDAN** on 0274 575973 and your enquiry will receive a friendly and speedy response.

PACE-SOFTWARE-SUPPLIES

Rose Bank, 130 Clayton Road, Bradford BD7 2LY, West Yorks.

Please rush me the following items.

£ p

1			
2			
3			
4			
5			
TOTAL			

I enclose my cheque made payable to PACE SOFTWARE (Export licence arranged)

Name _____

Address _____

Town _____

County _____

Postcode _____ Tel. No. _____

WF/21

Please send me copy/copies of Applearware '83 at £11.95

Postage 90p **TOTAL**

Payment: please indicate method (✓) Cheque/PO made payable to Database Publications Ltd

Name _____ Access/Mastercharge/Eurocard

Address _____ Barclaycard/Visa

_____ American Express

Signed _____ Card No. _____ Expiry Date _____



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

WINCHESTER KILLER - £750

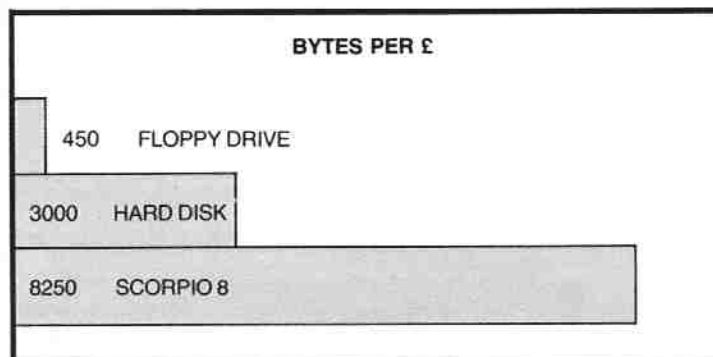
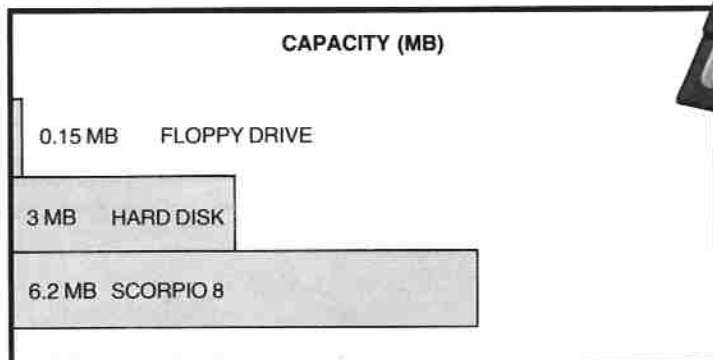
The incredible Scorpio 6.2 Mbyte hard disk alternative from HAL Computers annihilates small capacity Winchester.

DISTINGUISHING CHARACTERISTICS

Hard disk capacity and speed with the capability of interchangeable media. Scorpio 8 eliminates the worries of head crashes, drive alignments, lost data or backup, with a new application of field proven floppy technology.

Fully Apple II compatible - DOS 3.3, Pascal 1.1 and CP/M. Uses all standard Apple DOS commands - appears to Apple as a massive 8 inch floppy.

HOW SCORPIO 8 IS KILLING THE SMALL WINCHESTER

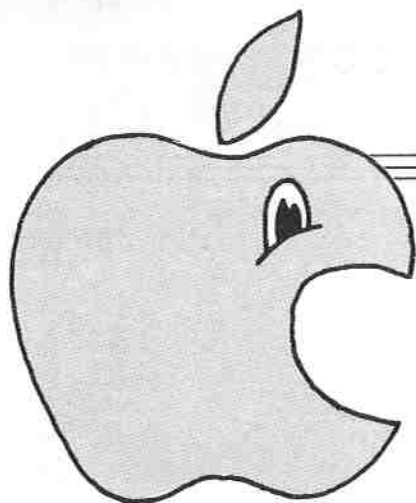


REWARDS

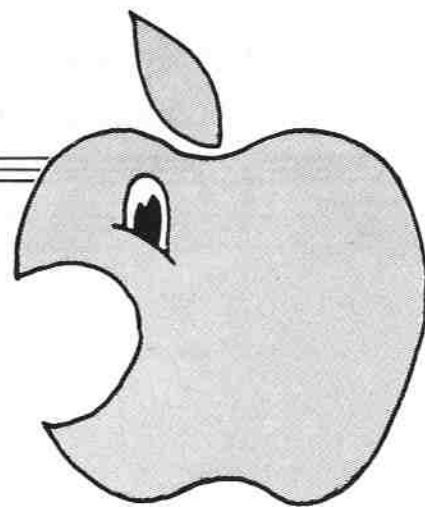
- Winchester capacities on floppy disks.
- Removeable media - a cartridge pack of five 5.25 inch diskettes each of 1.2 Mb capacity.
- High speed DMA data transfer.
- Cost effective and software compatible disk memory expansion.
- Removeable media means separate packs can be kept for different applications.
- All this for £750, complete with power supply, interface, cables and software.

To claim your rewards contact us at the address shown below.

HAL Computers Limited
Invincible Road, Farnborough
Hants. GU14 7QU
Telephone (0252) 517175
Telesales (0252) 517171



THINK TANK



... the *Windfall* platform for anyone wishing to agree with, improve, disprove or generally discuss specific articles in *Windfall*. Write to: Think Tank, *Windfall*, Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY.

Disabling the autostart reset

THERE have recently been many questions about modifying the reset vectors in Applesoft so that a possible press of the Reset key does not result in a system reboot but allows control to be passed on to the active Basic program without any major damage to the program and its variables.

This discussion tries to outline a method of making the Reset call the Applesoft ONERR routine.

The Autostart ROM reset vector occupies three locations at the end of page three:

- \$3F2 (1010) - low byte of reset handling routine
- \$3F3 (1011) - high byte of reset handling routine
- \$3F4 (1012) - reset 'funny complement' byte

The address of the reset handling routine is placed into the low/high bytes \$3F2 and \$3F3 as per normal (1010/1011 in decimal). But this is not enough. The contents of \$3F3 (NOT location \$3F2 as stated in Don Worth and Pieter Lechner's book *Beneath Apple DOS*) should be exclusive-ored with the number \$A5 (165 in decimal) and the result should be placed in the "funny complement" byte \$3F4 (1012 in decimal). This will prevent an attempted boot up. The reason why this system is used is now outlined.

When the Apple is powered on, all locations in pages \$0 to \$1F (zero page to page 31) are initialised by hardware and contain \$FF (255). This can sometimes be seen on the text screen as question marks for just a second before the APPLE II message is printed.

The ROM must decide whether the address in the reset vector is valid (which it will not be if the machine has just been powered up). So the ROM gets the contents of location \$3F3 (this is \$FF) and EORs that with the number \$A5. \$A5 EOR \$FF is \$5A. This is compared with the funny complement byte at \$3F4 (which contains \$FF).

Since \$5A does not equal \$FF then the ROM assumes that a power up has just occurred as opposed to a press of the Reset key, and so a boot up occurs. So if the contents of the reset vector were changed then the contents of the funny

complement byte must also be changed.

To use a common example of calling Applesoft RUN can be patched in as follows:

The Applesoft RUN entry point is at \$D566.

So from Basic:

```
JPOKE 1010,102: POKE 1011,213:  
POKE 1012,112
```

From the Monitor:

```
*3F2:66 D5 70
```

Note that the Autostart ROM provides a routine which does all the exclusive-oring with \$A5 etc... at -1169 (decimal), \$FB6F (hex). So the above patches could be rewritten as follows:

From Applesoft:

```
JPOKE 1010,102: POKE 1011,213:  
CALL-1169
```

From the Monitor:

```
*3F2:66 D5 N FB6F
```

But the following short routine, called *Resetfix*, might give a better solution. It is called on a reset and, providing Applesoft is in deferred execution mode and that the ONERR GOTO function is in effect, a press of the Reset key will cause control to be passed on to the Basic error handler.

The error code placed in location 222 (decimal) will be 255 (the same as an attempted CTRL-C break).

The routine should be BRUN by the program, but since HIMEM is altered any strings will be lost, so it is advisable that the program be BRUN as soon as the Basic program is RUN.

For those who have not a full assembler then just enter the Monitor and type in the hex dump. To save the program on disc type 'BSAVE RESETFIX.OBJO, A\$95C1,L\$3F. To save the program on tape type '95C1.95FFW' from the Monitor.

Note that the normal rules about ONERR still apply (c.f. Applesoft reference manual pp 81, 136, 141, 157).

For non-Autostart Applesoft, Palsoft and Integer machines no protection can be made against reset short of buying a RAM card and using an Applesoft with the Autostart ROM. But for Palsoft and Applesoft machines, the following idea makes any unauthorised listing and modification of the program harder.

All that need be done is to insert the line POKE 214,128 into your code (\$D6:80 from the Monitor). This makes any Basic program run as soon as any non-DOS command is entered (after a warm start).

Even a carriage return will cause Basic to attempt to run the current program. The only way to stop this is either to press reset and to issue a cold start, thus erasing your program or to type from the Monitor \$D6:0.

```

95C1- AD F2 03 8D E5 95 AD F3 03 8D E6 95 A9 E7 8D
95D0- F2 03 A9 95 8D F3 03 49 A5 8D F4 03 A9 E5 85 73
95E0- A9 95 85 74 60 00 00 A6 76 E8 F0 11 A6 33 E0 DD
95F0- F0 0B A6 DB 10 07 A2 FF 86 DE 4C 12 D4 6C E5 95

```

Hexadecimal memory dump

THINK TANK

```

SOURCE FILE: RESETFIX
----- NEXT OBJECT FILE NAME IS: RESETFIX.OBJ0
95C1: 1          ORG $95C1
95C1: 2          *****
95C1: 3          *
95C1: 4          *
95C1: 5          *          RESETFIX
95C1: 6          *
95C1: 7          *  APPLESOFT PROGRAM PROTECTOR
95C1: 8          *
95C1: 9          *  BY D.M.MILLER 1:8:1982
95C1: 10         *
95C1: 11         *****
95C1: 12         *
95C1: 13         *
95C1: 14         ***NOTE: THIS PROGRAM ONLY WORKS WITH APPLESOFT BASIC!
95C1: 15         *
95C1: 16         *
95C1: 17         *  EQUATES: PROGRAM CONSTANTS
95C1: 18         *
95C1: 19         *
95C1: 20 PROMPT EQU $33      MONITOR PROMPT CHARACTER
95C1: 21 HIMEM EQU $75      APPLESOFT HIMEM POINTER
95C1: 22 LINNUM EQU $76     APPLESOFT LINE NUMBER
95C1: 23 ERRFLAG EQU $D8    APPLESOFT 'ONERR' STATUS FLAG
95C1: 24 ERRCODE EQU $DE   APPLESOFT 'ONERR' CODE
95C1: 25 RSETVTR EQU $3F2   AUTOSTART RESET VECTOR
95C1: 26 RSETCHP EQU $3F4   AUTOSTART RESET COMPLIMENT BYTE
95C1: 27 ONERR EQU $D412   APPLESOFT 'ONERR' ROUTINE
95C1: 28 ;
95C1: 29 ;
95C1: 30 ; INITIALISING CODE:
95C1: 31 ;
95C1: 32 ; THIS SETS UP THE RESET VECTOR
95C1: 33 ; TO POINT TO THE START OF THE RESET CODE. IT ALSO
95C1: 34 ; RESETS APPLESOFT HIMEM BELOW THE PROGRAM
95C1: 35 ; FOR PROTECTION & IT SAVES THE OLD
95C1: 36 ; RESET VECTOR IN 'EXIT'.
95C1: 37 ;
95C1: 38 ;
95C1:40 F2 03          LDA RSETVTR  MOVE CURRENT RESET..
95C1:40 E5 95 40      STA EXIT   POINTER.
95C1:40 F3 03 41      LDA RSETVTR+1
95C1:40 E6 95 42      STA EXIT+1
95C1:40 E7 43 43      LDA #START  REPLACE RESET VECTOR WITH POINTER..
95C1:40 F2 03 44      STA RSETVTR  TO PROGRAM START.
95C1:40 95 45 45      LDA #START
95C1:40 F1 03 46      STA RSETVTR+1
95C1:40 49 45 47      EOR #A5    SET FOR RESET COMPLIMENT..
95C1:40 48 48 48      STA RSETCHP  TO PREVENT SYSTEM BOOT.
95C1:40 49 45 49      LDA #EXIT   SET APPLESOFT HIMEM POINTER..
95C1:40 73 50 50      STA HIMEM   TO PROTECT PROGRAM.
95C1:40 95 51 51      LDA #EXIT
95C1:40 74 52 52      STA HIMEM+1
95C1:40 60 53 53      RTS

95E5: 54 ;
95E5: 55 ;
95E5:00 00 56 EXIT DW $0000  ACTUAL RESET POINTER
95E7: 57 ;
95E7: 58 ;
95E7: 59 ;
95E7: 60 ; ACTUAL CODE:
95E7: 61 ;
95E7: 62 ;
95E7: 63 ; THIS WILL INTERCEPT THE RESET
95E7: 64 ; WHEN PRESSED AND PROVIDING THAT APPLESOFT
95E7: 65 ; IS IN DEFERRED EXECUTION MODE AND
95E7: 66 ; THE ONERR FUNCTION HAS BEEN INITIALISED,
95E7: 67 ; (BY AN 'ONERR GOTO...' STATEMENT),
95E7: 68 ; CONTROL WILL BE HANDLED TO THE USER'S
95E7: 69 ; BASIC ERROR ROUTINE. IF, THOUGH,
95E7: 70 ; ONERR GOTO... IS NOT IN EFFECT OR APPLESOFT
95E7: 71 ; IS IN IMMEDIATE EXECUTION MODE, THEN
95E7: 72 ; THE RESET WILL BE HANDLED BY THE NORMAL
95E7: 73 ; ROUTINES (THE ADDRESS IN THE RESET VECTOR
95E7: 74 ; AS FOUND BY THIS PROGRAM WHEN FIRST
95E7: 75 ; RUN).
95E7: 76 ; A DOS COLD START WILL DISABLE THIS PROGRAM
95E7: 77 ; AND ANY USAGE OF STRINGS AFTER THAT TIME
95E7: 78 ; WILL RESULT IN THIS PROGRAM BEING ERRASED.
95E7: 79 ;
95E7: 80 ; START OF CODE
95E7: 81 ;
95E7: 82 ;
95E7:A6 76 83 START LDX LINNUM  GET LINE NUMBER..
95E7:EB 84 84 INX          AND ADD ONE.
95E7:F0 11 85 BEQ NOEXEC  PROGRAM NOT EXECUTING.
95E7:A6 33 86 LDX PROMPT  GET PROMPT CHARACTER.
95E7:E0 DD 87 CFX #1    APPLESOFT PROMPT?
95E7:F0 0B 88 BEQ NOEXEC  YES, THEN EXIT.
95E7:A6 08 89 LDX ERRFLAG  IS 'ONERR' IN FORCE?
95E7:10 07 90 BPL NOEXEC  NO, THEN EXIT.
95E7:A2 FF 91 LDX #FF    SET TO ATTEMPTED BREAK..
95E7:86 DE 92 STX ERRCODE AND SET 'ONERR' CODE.
95E7:A0 12 D4 93 JMF ONERR  DO THE ERROR.
95E7:6C E5 95 94 NOEXEC JMP (EXIT) ELSE DO NORMAL RESET.

*** SUCCESSFUL ASSEMBLY: NO ERRORS
DE ERRCODE          D8 ERRFLAG          95E5 EXIT          73 HIMEM
76 LINNUM           95FD NOEXEC          D412 ONERR         33 PROMPT
03F4 RSETCHP        03F2 RSETVTR          95E7 START
33 PROMPT           76 LINNUM            D8 ERRFLAG
73 HIMEM            03F2 RSETVTR         03F4 RSETCHP      95E5 EXIT
95E7 START          95FD NOEXEC          D412 ONERR

```

The Resetfix routine (see previous page)

HOW do you make a text file that makes text files? asks **Colin J. Davies**.

Apple DOS treats each field of a sequential text file as though it had been entered at the keyboard.

If a field is a valid Applesoft command then it will be acted on unless it is preceded by a number, in which case it will be treated as a program line.

One use for this is to store programs or subroutines as text files. The program stored can then be added to the program in memory simply by executing the text file.

A disadvantage is that the program will occupy more disc space than a saved program, as a saved program is tokenised.

The DOS Manual contains a simple example of a few lines of code which can be added to a program so that when run the program will be stored as a text file.

The program presented here, written in Applesoft, is slightly more sophisticated in that it makes a text file of itself called Store which, when executed by typing EXEC STORE, will append itself to the program in memory. It will then run itself, prompt the user for a file name, destination slot and drive, and save the program in memory as a text file (not including itself) using the given file name and specified drive.

Finally, it switches back to the drive that was in use when it was executed and deletes itself from the program in memory.

The program assumes that it will be run on a 48k Apple II Plus, that you want the

```

63986 N# = "STORE":N = 1: GOTO 63
988
63987 HOME : INPUT "ENTER FILENA
ME ":N#
63988 PRINT : INPUT "DESTINATION
SLOT ":D#
63989 PRINT : INPUT "
DRIVE ":D#
63990 S# = PEEK (-18953) / 16
63991 S# = PEEK (-18952):D# =
CHR# (4)
63992 PRINT D#"OPEN"N#,S#"D#
D# : PRINT D#"DELETE"N#
63993 PRINT D#"OPEN"N# : PRINT D#
"WRITE"N#
63994 POKE 33,30: IF NOT N THEN
63996
63995 LIST 63987,: PRINT "RUN 63
987": GOTO 63997
63996 LIST 0,63986: PRINT "HOME"
63997 PRINT D#"CLOSE"N# : IF N THEN
PRINT D#"LOCK"N#
63998 PRINT D#"VERIFY HELLO,S#"S#
",D#"S#
63999 TEXT : HOME : DEL 63987,63
999

```

Text File program

initial text file to be called STORE (if not, alter line 63986) and that you have a program called HELLO on your work discs.

If you call your "hello" programs something else, then alter line 63998 accordingly. The program when executed occupies the 13 highest available line numbers (63987 to 63999).

It will, of course, clobber any lines of your program which use these numbers.

To use this program clear the memory of any existing programs by typing NEW, enter the program, then SAVE it as a precaution (it deletes itself when run). Next

RUN the program.

You will be prompted for a destination slot and drive (these must be valid) and after a slight delay the screen will clear. If you now CATALOG the appropriate drive you will find a locked text file called STORE.

Try it out now by loading an Applesoft program into memory, then type EXEC STORE and when prompted enter a filename and drive number. The program does the rest.

When the screen clears, CATALOG the appropriate drive. You will find an unlocked text file with the given name which will be about one third longer than the original Applesoft file. Now DELETE the original program from memory, EXEC the new text file and try running it.

Peter Brameld replies: This is a good example of the power of EXEC files. I particularly like the way that the program remembers which slot and drive were in use before the program was run, and returns to them after use.

PEEK (-18953)/16 gives the slot currently in use and PEEK (-18952) gives the drive. The purpose of line 63998 is to return you to the drive in use at the outset. It assumes that you have a file on that disc called Hello. If you have not, you will get an error message but no damage will have been done.

EXEC files are covered in chapter 7, page 73 of the DOS manual. If you have a word processing package which works on text files you can use it to good effect as a program editor. 🍏

'Yes, this program's great - but oh! that manual!'

How often have you read comments like this in a review of a new program:

So much printed matter accompanying programs - whether a detailed manual for a financial package or simple directions for a game - is badly designed or, even worse, difficult to understand.

Whether intended for a computer professional or a first-time user, the manual should be simply written, the instructions clearly set out and presented in such a way that the user is given a helping hand at every stage.

Inexperienced computer users depend very heavily on the manual which comes with their system, and if this is not well written and organised they soon become confused and unenthusiastic.

The program is simplicity itself, but you wouldn't think so by the painfully obscure instructions that come with it.

The whole package is let down by a very cheap looking manual.

data type
has the answer.

Let us enhance your program documentation by giving it the professional touch. We have sub-editors, designers and typographers who understand computing and are happy to produce anything from a simple leaflet to a fully-comprehensive illustrated manual.

And if you think such expertise will cost the earth, you're in for a pleasant surprise!

data type

- a division of
Database Publications,
the publishers of
Windfall - your
guarantee of quality

Contact
Derek Meakin on
061-456 8383

Purchase

THE NEW APPLE IIe

**TWO DISC DRIVE SYSTEM
AT £1599.00 WITH **FREE**
OLIVETTI PRAXIS 35 ELECTRONIC
DAISY WHEEL
TYPEWRITER/PRINTER
WORTH £545.00**



FREE

olivetti Praxis 35

Portable electronic typewriter. Three spacings, interchangeable daisy wheel, printing element and ribbon cartridge, correction device.

Introducing the Apple IIe personal computer, the successor to our worldwide success, the Apple II. The 'e' stands for 'enhanced', and everything which the Apple II has always stood for. Flexibility. Reliability. Quality.

Apple IIe offers you more features and greater capabilities. Like a 64K user memory, which can be expanded to 128K - so you can create larger files and handle larger numbers of numbers.

It also has a responsive, full-function keyboard. Four arrow keys to speed cursor movement. Upper and lower case text. Eight internal slots, which let you expand your system, including a multi-purpose video and memory expansion slot for inserting an 80-column display card.

But don't just believe what you read. Make sure you see the Apple IIe for yourself.

**Call Tony Leckenby on
01-790 9991**

Olivetti, Etizi/221 Interfaced Typewriter/Printers,
Olympia & Silver Reed Typewriter/Printers,
Software, Supplies & Training Support.

East Central

(COMPUTER SYSTEMS) LTD.

**East Central House, 139/147 Mile End
Road, London E1 4LN.
Telephone: 01-790 9991 (10 lines)**

All prices exclude VAT

IT'S great fun having an Apple — everyone knows that. It is one of the few machines where you can really combine business and pleasure, and make business a pleasure at the same time.

However just knowing that isn't much help if you have only just acquired one. Games, using it as a super typewriter, business uses, writing your own programs — all that is now open to you, but where to start? How to open up the treasure chest?

Some people won't ever be more than just "beginners",

they don't want to become programmers, they don't want to unravel the whys of the Apple, or delve into machine code, assemblers or languages such as Pascal.

If that description fits you there are still some things that are worth finding out that won't cause you too much trouble. Simple things that most people forget about after a very short time because they ARE so simple, but which are foreign territory until you've been told about them.

This series of articles isn't intended as a formal (or even informal) course with a fixed content or direction. It will cover a lot of the material contained in the excellent Applesoft and DOS manuals — and hopefully encourage you to read and to use them, once you discover that the Apple isn't such a strange beast inhabiting an even weirder world.

We welcome your views — and if you are confused or have a problem, let us know and we will try to help.

MANY people buy an Apple for a specific need. The basic system comprises the computer itself with a built-in keyboard, a monitor (or screen) and one or two disc drives. We'll be referring to non-disc based systems in later articles.

The drives are used to store information, either the controlling program or the information that you want to work with, on 5¼in floppy discs in much the same way that you would record speech or music on a tape recorder.

They are connected to the Apple by an interface card which fits into one of the seven slots inside the machine. The complete system is often bought together with a program or software package that performs a specific task, whether it be one of Apple's own products or that selected from the vast library of software produced by independent suppliers.

While buying ready-made software means that the machine is immediately available as a fully working and useful unit it also means that the inner workings of the Apple as a microcomputer are not revealed to the user.

If you've bought a system in this way you have probably never investigated a method of retrieving information from a disc without the aid of commercial software, using the operating system called DOS (Disc Operating System). It is very easy to do.

The first step in this exercise is to boot, or load the System Master disc that you received with your new Apple. Merely remove the disc that normally occupies

Beginners, please...

By DAVID CREASEY
and
PETER BRAMELD

pride of place in your machine from Drive 1 and replace it with the System Master disc. Close the disc drive door to engage the reading mechanism and switch on the machine.

If you have a language card (which provides extra memory and is usually fitted in slot one inside your Apple) you'll see the message:

"Loading integer into language card."

If you don't get this, or subsequent messages, it is probable that you have

used the wrong disc, or that your system is operating under CP/M or Pascal (not Applesoft, which have their own peculiarities. If you are not familiar with the system it is best to stop at this point and get advice rather than risk damaging an important disc.

The Apple has its own Applesoft Basic language built-in, and Integer Basic is a second Basic language that you might want to use.

A language card can be likened to an extra drawer in your filing cabinet in which you can store information.

Don't worry if you don't have a language card — you won't notice its absence for most applications. However it is essential if you are using programs written in a language called Pascal.

Would you like to see the instructions your Apple was using to load the Master disc? The first portion of the hidden world we are about to reveal to you will probably frighten you to death — but don't worry. You don't have to understand it — but you might like to know that there is something logical actually doing all the work.

Once you've booted the System Master, type LIST and press RETURN. The program listing, or instructions, will flash past you on the screen until the end of the program is reached, and you will be able to read the latter portion of the program. Again, don't worry about trying to understand it at this stage.

If you want to stop the listing before it reaches the end try holding down the CTRL key and pressing C at any stage.

The System Master contains a wealth of useful information. To give you an idea, once you have booted the Master (as above), type CATALOG and then press the RETURN key.

A CATALOG on the Apple is the same as an index of chapters in a book. You should now see on your screen the index

```
DOS VERSION 3 3          08/25/80
APPLE II PLUS OR ROMCARD  SYSTEM MASTER
```

```
(LOADING INTEGER INTO LANGUAGE CARD)
```

```
■
```

Apples fitted with a language card will display this message when booting the System Master.

```

CATALOG
DISK VOLUME 254
*A 006 HELLO
*I 018 ANIMALS
*T 003 APPLE PROMS
*I 006 APPLESOFT
*I 026 APPLEVISION
*I 017 BIORHYTHM
*B 010 BOOTIS
*B 006 BRIAN'S THEME
*B 003 CHAIN
*I 009 COLOR DEMO
*A 003 COLOR DEMOSOFT
*I 003 COPY OBJ0
*B 003 COPY A
*A 018 EXEC DEMO
*B 003 EXEC
*B 058 FPEBASIC
*B 058 INTBASIC

```

Figure I. The System Master catalog

```

APPLE DISKETTE DUPLICATION PROGRAM

ORIGINAL  SLOT: 6
          DRIVE: 1
DUPLICATE SLOT: 6
          DRIVE: 1

-- PRESS 'RETURN' KEY TO BEGIN COPY -- ■

```

Figure II. Using the COPY program

list shown in Figure I. It is quite long, so press any key to get to the end.

If there is a star in the first column this indicates that the file is LOCKed, and so cannot be erased accidentally. The letters refer to the type of file or to the language it is written in (A = Applesoft Basic; I = Integer; B = binary; T = text file). The numbers in the next column show how many sectors (or storage areas) on the disc that particular program takes up, and thus give an indication of its size. The final column gives the name of the file.

You may already have within your commercial software package the facility to copy discs and examine catalogs. However these facilities also exist at a grass

roots level that any user can access without ready-made software. You've already paid for this facility with the system, so let's use it.

Mastering it can open up a far more flexible world than being bound by the constraints that the author of the software you have been using has laid down. Let's make a copy of the System Master. Here is how you do it.

We are going to run a program. You'll need a spare, or blank disc, which costs between £2 and £3. RUNNING a program means we are going to transfer information stored on the disc into the Apple's memory so that we can work with it.

You should now have your System

Master already loaded (or resident) in the Apple. If not, boot the Master disc as we have described.

To run a program it is not surprising that the first thing we do is type the command RUN followed by the program name. Type in the command exactly as shown below:

RUN COPY A

The run is self-explanatory. COPY A is the name of the program we are after - it is listed on the System Master catalog already referred to.

A screen message will ask which disc drive and, after pressing RETURN, which slot the original disc (the one we are making a copy of) is in. The COPY A program will automatically select (or default) drive 1 and slot 6 unless you key in different instructions.

The program then wants to know where you have placed the blank disc which will be used to store the copied program. If you have a two disc drive system, the program will default to drive 2, slot 6 when you have pushed RETURN. If you have a single disc drive you will need to type in D1 (Drive 1) when asked which slot the duplicate disc is in. At the end of the procedure your screen should look like Figure II.

Once you have set up the parameters you press RETURN to start the copy. If you have a two disc drive system the procedure will take place uninterrupted. If you have a single disc system you'll have to swop the Master and duplicate discs when prompted by the screen.

At the end of the operation you will be asked if you want to make another copy (i.e. use the COPY A program again).

At this stage, type NO and press RETURN.

The reason we have carried out this duplication procedure at the outset is that we will be using the System Master a lot in future articles and in order to avoid the possibility of damaging the original Master disc, it is important to copy it.

Label your copy "DOS 3.3 System Master" and store the original in a safe place. Writing on the disc cover itself can damage the magnetic storage material, so use a soft felt tip pen, or better still, fill in details on a sticky label before placing it on the disc.

If you have found this copy procedure easy be warned . . . the authors of commercial software protect the investment they have made in terms of time and money by rendering their discs copy-protected. If you attempt to copy one containing such a program you will in most instances fail and the system will inform you that it has encountered an I/O ERROR (an input/output error). This is no fault of yours . . . merely a success for the copy protection technique used by the software house! ■

Play it again, paddles

i If you need to find the perfect sound effect from your Apple, here is a little machine code routine which may help you. All it does is look at the paddles, scale down their readings (you can affect how much by changing NOPs to LSRs etc), then start clicking the speaker at a rate dictated by PDL(1), for a number of clicks given by PDL(0).

By fiddling about with the paddles, it is quite easy to produce good, revolting, noises. When you've found a noise you like, press any key to stop the program.

The "pitch" is stored at \$352, and the "duration" at \$353, so the values left here can be slotted into your own routine. Since the noise produced is affected by the length of the paddle-reading code, the subroutine TEST (starting at \$335) has a dummy wait in it which gives you an idea of what sound a pair of values will give without interference from the paddles. (The pitch may change, but the tone will be almost the same.)

If you don't have an assembler, the Hex dump can be copied straight in to \$300 from the monitor, and the resulting code BSAVED with AS\$300,LS\$2.

CALL 768 for the paddles,
CALL 821 for the TEST.

J.P. Lewis

A9 10 20
*300.351

```
0300- A2 01 20 1E FB 98 EA EA
0308- 4A 4A 4A 8D 52 03 EE 52
0310- 03 CA 20 1E FB 98 EA EA
0318- 4A 4A 4A A8 CB BC 53 03
0320- AD 52 03 20 A8 FC AD 30
0328- C0 8B D0 F4 2C 00 C0 10
0330- CF 2C 10 D0 60 A9 10 20
0338- A8 FC AC 53 03 AD 52 03
0340- 20 A8 FC AD 30 C0 8B D0
0348- F4 2C 00 C0 10 E7 2C 10
0350- C0 60
```

```
; Paddle tones.
; J.P.Lewis 2/12/82
;
.OPT NOS

KEYHIT   = $C000           ;Keyboard data location.
KEYOFF   = $C010           ;Strobe to clear keyboard.
SPEAKR   = $C030           ;Speaker toggle.
PADDLE   = $FB1E           ;Monitor routine to read a paddle.
WAIT     = $FCAB           ;Monitor routine to waste time.

*        = $300


START    LDX £$1           ;Use PDL(1) for pitch setting.
          JSR PADDLE        ;The value is returned in the Y reg.
          TYA               ;Scale this value to a smaller
          NOP               ;number for pitch. The spare
          NOP               ;NOPs are for room to experiment.
          LSR A             ;The 'Pitch' is fixed by the amount
          LSR A             ;of time between each flick of
          LSR A             ;the speaker switch.
          STA PITCH         ;Avoid a zero (=256) pitch, which
          INC PITCH         ;would give a series of clicks.
          DEX               ;Use PDL(0) for duration of tone,
          JSR PADDLE        ;which is set by the number of times
          TYA               ;the speaker switch is flicked.
          NOP               ;Scaling is as above, but the routine
          NOP               ;keeps the 'Duration' in the Y reg.
          LSR A
          LSR A
          LSR A
          TAY
          INY               ;To avoid zero length.
          STY LENGTH        ;To save it for later reference.
BUZZ     LDA PITCH          ;The delay is roughly proportional
          JSR WAIT           ;to the square of the Acc value.
          LDA SPEAKR
          DEY
          BNE BUZZ
          BIT KEYHIT        ;The 'tune' is ended by a keypress.
          BPL START         ;Clear the keyboard strobe..
          BIT KEYOFF
          RTS

TEST     LDA £$10          ;Since the code to do the reading
          JSR WAIT           ;of the paddles takes time, which
          LDY LENGTH        ;affects the noises produced,
BUZZ1    LDA PITCH          ;this routine gives you a chance
          JSR WAIT           ;to test the noises without the
          LDA SPEAKR        ;paddles, by inserting a dummy
          DEY               ;wait into the loop.
          BNE BUZZ1
          BIT KEYHIT
          BPL TEST
          BIT KEYOFF
          RTS

PITCH    = *                ;In-line storage.
LENGTH  = PITCH+1

.END
```



SPEEDY CIRCLES

 A versatile, fast way to draw a circle of radius R at screen co-ordinates X, Y is illustrated right. Note that circles which only partly lie within the screen can be safely drawn. The program is adapted from one in Microcomputer Graphics, by Roy E. Myers (Addison-Wesley).

```

10 TEXT : INPUT "ENTER X,Y,R ";X,Y,R
20 X1 = R:Y1 = 0:FLAG = 0
30 C = COS (.1):S = SIN (.1)
40 HGR2 : HCOLOR= 3
50 FOR I = 1 TO 64
60 T = X1 * C - Y1 * S:Y1 = Y1 * C + X1 * S:X1 = T
70 SX = X1 + X:SY = Y1 + Y
80 IF SX < 0 OR SX > 279 OR SY < 0 OR SY > 191 THEN FLAG = 0: GOTO 120
90 IF FLAG THEN 110
100 HPLOT SX,SY:FLAG = 1
110 HPLOT TO SX,SY
120 NEXT
    
```

Get your colour right

 One problem with the Applesoft command HPLLOT TO X,Y is that it uses the colour of the last dot plotted, even if the value of HCOLOR has been changed since the previous plotting. (See pages 26/89 of the Applesoft reference manual.)

One way of getting around this problem is to insert the statement HCOLOR=P:POKE 28,PEEK(228) before using the command HPLLOT TO X,Y. This resets the colour byte of the last plotted point (which is stored in location \$1C-28) to P, where P is the colour of your choice.

Thus the one line program:

```

10 HGR:HCOLOR=3:HPLLOT 10,0 TO
10,10:HCOLOR=5:POKE 28,PEEK
(228):HPLLOT TO 20,10
    
```

will plot a white (HCOLOR=3) line from 10,0 to 10,10 and then a red (HCOLOR=5) line from 10,10 to 20,10.

This same trick can be used in clearing the screen to the colour of your choice, without even plotting a point - contrary to the Applesoft reference manual, page 134.

A statement of the form:


```

HGR:HCOLOR=5:POKE 28,PEEK(228):
CALL 62454
    
```

will clear the hi-res screen to red.

Ajay Kumar Agrawal

QUICK ON THE DRAW

 Below are a couple of programs that demonstrate Quickdraw. The first creates an EXEC file that should be EXECed (see DOS manual for more on EXEC). It sets the program to load above hi-res and will also run the second program.

```

10 D$ = CHR$ (4)
20 PRINT D$"OPEN START.TEST"
30 PRINT D$"WRITE START.TEST"
40 PRINT "POKE103,1"
50 PRINT "POKE104,64"
60 PRINT "POKE16384,0"
70 PRINT "RUN QUICK-DRAW"
80 PRINT "RUN TEST.QUICK.DRAW"
90 PRINT D$"CLOSE"

]LOAD TEST.QUICK.DRAW
]LIST

5 DIM X%(500),Y%(500)
10 D$ = CHR$ (4)
20 PRINT D$"PR$5"
30 PRINT "H1,S16,R"
40 PRINT D$"PR$0"
45 D% = 1:EP% = PEEK (752) + PEEK
(753) * 256
46 N% = 0
47 HGR
50 CALL EP%
60 PRINT N%
70 N = N%: FOR I = 0 TO N: PRINT
X%(I),Y%(I): NEXT I
100 TEXT
    
```

Dealer enquiries welcome from bona fide computer dealers

We have the largest of Apple related

TRIPLE YOUR DISK ACCESS SPEED

No hardware modification required

FastDOS

Fast Disk operating system for Apple II computers

Completely compatible with DOS disks Loads and saves standard DOS files

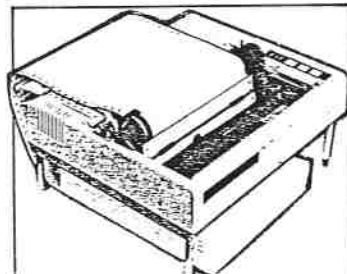
Completely compatible with all DOS/APPLESOFT programs that access DOS through standard hooks, including FID and MUFFIN

Executes all standard DOS commands

Comparative timings:	DOS	FDOS
Blooding integer basic	13 sec	3 sec
Cataloging a 12 file disk	2 sec	1 sec
Saving a 10 sector program	6 sec	2 sec
Saving a 100 sector program	34 sec	7 sec
Loading a 100 sector program	24 sec	7 sec

Requires 48K

£19.95



IT'S OFTEN BEEN SAID THAT THE SIMPLEST IDEAS ARE THE BEST - AND JUST LOOK AT THIS ONE FOR PAPER STORAGE.

Pete & Pam Computer's Stits are four legs which can be installed on to your Epson MX80 in seconds - giving you room for 3 inches of paper.

stits

SPECIALLY REDUCED PRICE **£3.95**

DESKTOP/PLAN II from Personal Software

A programming language for financial analysis.

£69.00

NEW THE WORD HANDLER

The only word processor in the world for Apple that gives you full line capability on the screen, no boards necessary. Two character formats to choose from at all times.

£109.00

THE LIST HANDLER

Holds up to 3,000 records so that 24,000 can be kept on-line at the same time with multiple disk-drives.

The most simple, versatile filing program available that not only stores and prints lists and labels, but prints letters too!

£79.00

FUNCTION STRIP and . . .



ENHANCER II

The Videx Function Strip adds a whole new dimension to your Enhancer II - Apple II Function Keys. Now you can have dedicated keys for your macro definitions. Program often used word processor commands, words or phrases into your Function Strip. Programmers will find it a significant aid to be able to define often used commands and statements. VisiCalc users can define often used commands and file names for single keystroke ease of use.

The Videx Function Strip is a low cost, versatile strip of pressure sensitive switches. The Function Strip adheres to the Apple II's lid - just above the keyboard and connects to the Enhancer II's keypad connector port. The Function Strip is completely compatible with keypads connecting to the Apple II motherboard.

Function Strip **£49.50**
Enhancer II **£89.00**
OR . . . BOTH FOR A SPECIAL PRICE OF: **£135.00**

COMMUNICATIONS PACKAGES



CONVERT YOUR APPLE INTO A VT100 TERMINAL USING ASCII EXPRESS "THE PROFESSIONAL"

WE USE IT OURSELVES!

ASC II EXPRESS - THE PROFESSIONAL

The finest, most complete, communication package you can buy! For operation under native Apple DOS 3.3 in 48k and 64k systems.

£99.00

Z-TERM - THE PROFESSIONAL

One of the most powerful communications packages available for the Apple and the Z-80 softcard. Its compatibility with virtually all types of modems at speeds of up to 12000 baud makes this a very useful package for serious CP/M users.

£109.00

P-TERM (as Z-Term but for Pascal)

£99.00



Now you can get 80 column VisiCalc display on Videoterm, Smarterm and Sup-R-Term

Saturn 128K Card	£359.00
Saturn 32K Card	£149.00
VC Expand	£49.00
VC Expand 80	£59.00
Videx Videoterm	£199.00
Soft 80 Column Switch	£21.95
Hard Switch Plate	£13.50
Inverse ROM (Recommended)	£18.95
Videx Visicalc: 80 Column Preboot Disk (no memory expansion)	£34.95

A new utility will be out soon enabling you to run Applesoft programs up to approx 160K in size.

dBASE II

The most powerful, easiest to use micro data base management system. Don't just take our word for it - read this review from "Info World". "Overall, I would rank dBASE II as excellent. It is fast, powerful and flexible, and it allows applications to be programmed far more quickly and easily than does BASIC or Pascal. It is hard for me to imagine any kind of small business application for which I would prefer one of the traditional languages over dBASE II."

You'll wonder how you managed without it.

dBASE II	£399.00
Requires Microsoft Z-80 Softcard	£239.00

dBASE II Utilities

dUTIL

The dBASE II Utility Program
dUTIL is Fox & Geller's utility program for dBASE II. dUTIL decreases the running time of dBASE II command files. dUTIL combines your command files automatically to produce a faster running time.

£89.00

QUICKCODE

The dBASE II Program Generator
Quickcode writes concise programs to set up and maintain any type of database. Run them as is, or customise them in seconds. You still have all the power of dBASE II and there is no programming required. All you have to do is draw your data entry form on the screen and you're in business.

£249.00

AUTOCODE 1

Autocode 1 - is extremely simple to use, a user with no programming experience and no knowledge of dBase II can produce programs within a hour or so of introduction to the system, since Autocode 1 - sets an automatic file maintenance and a standard reporting facility.

£120.00

dGRAPH

The dBASE II Graphics System
Now you can combine database and graphics. With dGRAPH by far the easiest to use graphics package in existence. Just press one key and you've got your graph.
And what graphs! Sales by month, Expense budget by division. This year versus last year. And each one can be a pie chart bar graph or line graph. It's up to you.
Advanced features make dGRAPH as powerful as it is easy. Features like autoGRAPH which will automatically load dBASE II data, compute scales, draw grid lines, and label charts. Then there's automatic shading and overlay graphs.
dGRAPH draws graphs on Epson, Okidata, and a growing list of other popular printers.

£249.00

BOOKS

DOS 3.3 Manual	£5.00
Applesoft Reference Manual	£5.00
Applesoft Tutorial	£14.00
Fortran Manual	£10.00
Apple II Reference Manual	£11.00
Pascal Lang Reference Manual	£13.00
Pascal Operating Manual	£11.00
Pilot Lang Ref Manual	£8.00
Pilot Editors Manual	£11.00
Everyman's Database Primer	£12.95
App Graph & Arcade Game Design	£14.95
The Book of Apple Software 83	£13.95
Assembly Language by R. Hyde	£12.95
Kids And The Apple	£11.95
How to Write an Applesoft Prog	£10.95
How to Write an IBM PC Program	£13.95
Epson MX80 graphtrax manual	£15.00
Apple Machine Language	£11.95
Pascal Programming For Apple	£10.45
Applesoft Language	£7.65
Intimate Inst In Integer BSC	£5.55
Apple Basic For Business	£11.20
Apple Pascal Games	£11.45
Programming The 6502	£9.70
6502 Applications Book	£10.25
6502 Games	£10.25
6502 Software Design	£5.50
6502 Applications	£9.70
Apple Interfacing	£7.65
Circuit Des Prog For Apple	£11.15
Apple II Users Guide	£10.95
Visicalc Home & Office Compn.	£11.50
Guide To Programming In Aselt	£11.50
Science & Eng Programs (All)	£11.50
A/Soft Basic Data File Prog	£8.95
Assembly Lang Programming	£9.50
Apple Pascal: Hands On Apprch	£12.95
Golden Delicious Games (Apple)	£8.50
Intro to Visicalc Matrixing	£15.95
The Power of Visiplot	£10.95
The Visualc Book (Apple ed)	£11.95
The Custom Apple & a/Mysteries	£16.25
Apple II Assembly Language	£11.95
Interface Proj for Apple II	£10.35
Apple Basic	£10.35
Apple Pats. Comp. for Beginners	£6.95
Wordstar Made Easy	£5.95
Lego for the Apple II	£11.50
IBM's Personal Computer	£8.50
Mostly Basic Applications	£9.05
Graphic Software for Micros.	£15.95
Micro on the Apple Vol. 3	£13.00
Apple's Basic Core	£8.95
Basic for the Apple II	£10.00
M/processor I/F Techniques	£13.10
Apple Files (David Miller)	£11.95
Basic for Apple II (Self Teach)	£8.95
What's Where in the Apple	£8.95
The Power of Visicalc	£7.95
The Power of Visicalc Vol II	£7.95
The Power of Supercalc	£7.95
The Power of Multiplan	£10.95
Power of Visi-Plot/Calc/File	£7.95
Beneath Apple DOS	£11.95

SPECIAL OFFER

Osborne CP/M User Guide
ONLY **£2.95**

Postage - 90p per book

ZENITH MONITORS

NOW ONLY £85



The amazingly compact MICROWATCH real time clockcard and ELECTRONIC DIARY software for your APPLE II computer.

£59.00

Special Offer

range and stock products in the UK

All goods listed
are available from
our dealers
throughout Europe

ALS SUPERCALC

Special
Offer

Accountants, planners, engineers, and business owners have found SuperCalc invaluable for day-to-day "what if" questions, as well as "now what?" for those times when the unexpected occurs.

All it takes is a second to enter the new figure in the appropriate column, and SuperCalc automatically calculates the rest of the spreadsheet.

And, you certainly don't need a programmer - SuperCalc really is easy to use. It's been designed to use the minimum number of commands to get the maximum power, and it's self-explanatory; just press the ? key if you need assistance.

ONLY £59.00

IS Pipe Line

Random Access Printing Buffer

For the first time ever, here is a buffer that not only frees your fast computer from your slow printer but also allows you to rearrange, compose and copy your data on its way to the printer.

- Random Access Printing - stores paragraphs or pictures for printing in any order - any number of times
- FIFO Printing - conventional first-in first-out operation
- Compression of data for efficient utilisation of memory space
- Ability to interrupt long-term buffer operations for straight-thru short-term printing
- Simple Erase feature to clear buffer
- Automatic duplication capability
- Easily expandable, by you, from 8K Bytes to 128K Bytes

The IS Pipe Line is Universal - it works with any parallel (Centronics - style) computer/printer combination. A special version is available for PKASO Printer Interfaces.

8K Buffer £189.00
128K Buffer £359.00

THE BIT STIK CONTROLLER



Simple 3 button control

- Long life plastic track precision servo potentiometers
- Non-slip mat at optimum hand-angle
- Precision electronic interface board with full range trimmers
- Large eyelid with rubber 'bumper'
- Comfortable, STIK control rotates for third axis
- 3-axis direct linkage assembly
- Large smooth-tracking hemisphere with adjustable back pressure
- Long ribbon cable head for convenient operation
- Simple 3-button control

£249

THE GIBSON LPS II LIGHT PEN

If you want to create graphics and want to stay away from using paddles, joysticks, the keyboard, or expensive graphics tablets - then the LPS II is for you.

£249

WESPER MICROSYSTEMS WIZARD Peripheral Cards

WIZARD-EBI

64K Buffer for Epson Printers
With a WIZARD-EBI, you will never again have to wait for your printer to finish printing a job before you can start your next project. That's because the WIZARD-EBI allows you to use your computer on a new task during the time the printer is printing the previous one. The WIZARD-EBI can buffer 8K, 16K, 32K, or 64K characters depending on the number of RAM chips plugged into the board. The unit can be purchased with any buffer size and expanded later by simply plugging RAM chips into the empty sockets on the card.

£109

WIZARD-IP1

Intelligent Printer Interface for Parallel Printers.
The performance features found in the WIZARD-IP1 truly unleashes all the capabilities built into your printer. Look at the functions supported by the WIZARD-IP1: Graphics Screen Dump, Double Size Picture, Inverse Graphics, Centre Graphics, 90-Degree Rotation, Page Length "Perforation Skip", Text Screen Dump, Variable Line Length, Left and Right Margins, Block Graphics (EPSON), Secondary High-Resolution Screen.

£69

WIZARD-SOB

Serial Output Buffer Card.
With a WIZARD-SOB, you will never again have to wait for your printer to finish printing a job before you can attack your next project. That's because the WIZARD-SOB allows you to employ your Apple II or Apple II Plus on a new task during the time the printer is printing the previous one. The WIZARD-SOB unleashes all of your printer's built-in capabilities... hi-res screen dump... and control of text formatting and page indexing. A Personality ROM installed on your WIZARD-SOB tailors the operation to your particular printer. The WIZARD-SOB is remarkable both for its advanced design and ultra-reliable construction. Component leads, except for the RAMs and the firmware ROM, are all soldered directly into the board for the most reliable component interconnections. Low power consumption by the WIZARD-SOB also keeps things cool whilst presenting a minimum load on the power supply.

£169

WIZARD-BPO

Buffered Printer Output Card.
Features are the same as the WIZARD-SOB, but for use with parallel printers.

£149

THE WILDCARD

PLUG THIS CARD INTO ANY SLOT AND IT WILL COPY THE PROGRAM RUNNING ONTO A STANDARD DOS DISC

- Works with any RAM card
- Copies any 48K code resident program (6502)
- No parameter list needed - copies without question
- Fast and reliable - any program in less than two minutes
- Copies made with WILDCARD can be copied again and again with standard copy program
- Core program is accessible
- Not slot dependent
- Programs copied can be run without WILDCARD being present
- Copies even the bit map copiers
- Utilities included for the programmer
- Copies most 64K programs

£99.00



SMITH CORONA TP-1 Electronic Text Printer

- LOW COST DAISY WHEEL PRINTER
- MICROPROCESSOR ELECTRONICS
- SERIAL OF PARALLEL INTERFACES

The Smith-Corona TP-1 Text Printer is a microprocessor controlled high quality daisy wheel printer which delivers fully formed executive quality printout at a speed of 120 words per minute. The TP-1 is a simple, low cost, and reliable printer which can be utilised with word processing systems, microcomputers, small business systems, or in any environment which requires high quality printing. It's small compact size and attractive packaging will allow it to blend into any environment.

£485

Our well equipped SERVICE & REPAIR DEPARTMENTS

IN ROSSENDALE & LONDON ARE NOW AVAILABLE FOR REPAIRS ON ANYONE'S APPLE.

Rates are very reasonable
£10 1st ½ hour, £7.50 per each subsequent ½ hour in Rosendale

£12 per 1st ½ hour, £9 per each subsequent ½ hour in London.

Call
STEVE McCLEAN
in Rosendale (0706 227011)
OR
DAVE MERCER in London
(01-769 1022)

MACHINE CARE DUST COVERS

Apple II	£6.95
Apple & 2 Discs	£8.95
Apple & 12" Monitor	£8.95
Apple 2 K&B 12" Monitor	£9.95
Apple 2 DK&B 9" Monitor	£6.95
Single Disc	£3.45
2 Stacked Discs	£4.45
9" Monitor	£5.95
Epson MX80/70	£5.85
Paper Tiger 445/80	£7.45
MX100	£9.95
Dume 5 W/Tractor	£10.95
Nec 12" Monitor	£7.45
Hitachi 12" Monitor	£7.45
Decca RGB Monitor	£9.95
Sirius Keyboard	£5.95
Sirius Proc & Monitor	£10.95
Prism Printer 560	£8.45
Anadex 9000 Series	£6.95
BBC Computer	£6.95
IBM PC Monitor & Cover	£9.95
IBM PC Keyboard	£4.95
NEC 8023B-C Printer	£6.45
Pet 4023/8023/8096	£9.45
Pet 4040/8050 Disc	£6.95
8060 Hard Disc	£6.95
Pet 4022P Printer	£5.95
Pet 8023P Printer	£7.45
Pet 8309P Printer	£9.45

HEAD CLEANING

Clean read/write heads the way leading manufacturers recommend 5 ¼" disc head cleaning kit £18.95

DISCS & DISC BOXES

BSAF single sided, single density discs
10 for £17.90 50 for £84.50 100 for £159
Kass-ette storage boxes £2.45

ALPHA

The Apple-IBM Connection
Transfers any file back and forth!

Increase VisiCalc and Wordstar power by transferring files from the Apple II to the IBM Personal Computer - with no retyping and no errors!

CONNECT Apples to IBMs, Apples to Apples, or IBMs to IBMs. Transfer information from any file thousands of miles - in minutes.

UPGRADE your 64K Apple VisiCalc to 256K IBM VisiCalc power. Your worksheets can be larger.

INCREASE your Apple Wordstar 130K floppy capacity to IBM DOS Wordstar 320K floppy capacity. Over twice the space on disc.

CONTROL communication from either side in either direction with Master/Slave operation.

COMMUNICATE with people using the Electronic Mail mode. The Apple-IBM Connection can be used to send messages to Apples or IBMs.

£149

Pete & Pam Computers

Mail Order & Distribution:
New Hall Hey Road,
Rossendale, Lancs., BB4 6JG
Phone: (0706) 227011
Telex: 635740 Pctpm G

Norwegian Agent:
The Norwegian Software House
Address Okernveien 145
Oslo 5

Telephone 47 2 64 55 77

Prices do not include VAT please add 15% to your remittance
Postage and Packing FREE



for apple entry

London Retail:
103-5 Blegborough Road,
London, SW16 6DL
Phones: 01-769 1022/3/4
Telex: 923070 PCCOMP G

Little Genius presents

COMPUTER

®

SCRABBLE

Play against the computer Built-in dictionary
For 1 to 4 players Play at 4 levels

ONLY £24.95 (inc VAT)

Requires Apple II with 48K and one disk drive.

**TRADE ENQUIRIES
INVITED**

NORTHERN



Mail Order & Distribution:
**New Hall Hey Road,
Rossendale, Lancs., BB4 6JG**
Phone: (0706) 227011
Telex: 635740 Petpam G

SOUTHERN



**15 Jocelyn Road, Richmond
Surrey TW9 1BR.**
Telephone 01-948 0461 (24 hours)

SCOTLAND

**TURCAN RESEARCH
SYSTEMS LTD.**

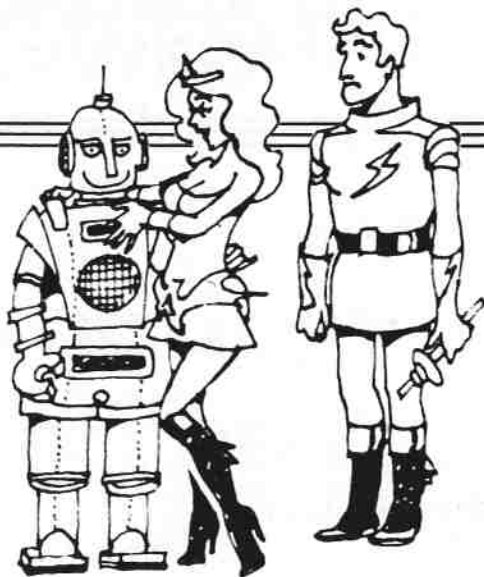
**39 Rowallan Gardens,
Broomhill, Glasgow, G11 7LH
Scotland.**

Telephone: 041-339 9409

COMPUTER SCRABBLE produced exclusively by Little Genius Ltd.
SCRABBLE trade mark and copyright licensed by Scrabble Schutzrechte und
Handels GmbH (a J.W. Spear & Sons PLC subsidiary).
"The SCRABBLE program was written by Peter Turcan of Turcan Research
Systems Ltd., as part of a PhD research study into word structures and their
analysis through 1979-1982".

22 Inverness Street, London NW1
Telephone: 01-267 7679





There's more to Blackpool than sticks of rock

WHEN I was a lad in Liverpool, there were three holiday resorts available to us. New Brighton was just "over the water", Southport was a train ride away up the coast, but the ultimate northern holiday town was Blackpool.

Consequently, when I saw the title of this adventure game from Sirius, I couldn't take it seriously! How can you think of great adventures when all your immediate associations are to sand castles, sticks of rock, the tower and the illuminations?

I very quickly became serious when I booted the disc because *Blade of Blackpoole* is a very good adventure game. The object is to recover the magical sword Myraglym and return it to the altar from whence it was stolen.

You begin the adventure at a point from which it is very difficult to proceed, since your routes are blocked by quicksand, a landslide, a pond and a carnivorous plant. However, you must find a way through if you are to complete the quest.

Another difficulty concerns your carrying capacity. Although there are lots of things to be picked up, you can't carry much at any one time. Consequently, you need the right combination of things in order to solve the various puzzles.

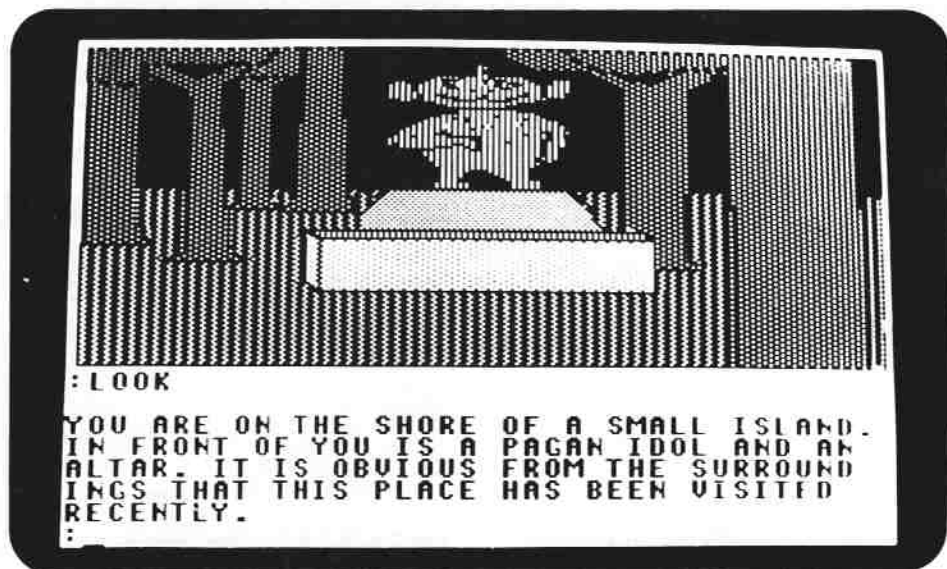
If you are completely stuck at a particular point, there is a hint facility which may or may not be useful. The hints are carefully thought out so that they may get you moving again without spoiling the game.

The game is scored on number and correctness of moves, and there is no penalty for using hints.

The format of *Blade of Blackpoole* is slightly different, as the accompanying screen picture shows. Instead of ordinary Apple text at the bottom of the screen, the game uses inverse text at the bottom of the graphics screen.

On a monochrome screen, I found I had to reduce the brightness a bit to compensate for the visual effect of the text. However, on a colour set it didn't seem as bad.

The first time you reach a location, a "long" description is given. On subse-



The great adventure gets under way

quent visits, a brief description is given instead. This saves you having to read masses of text repeatedly, but the long description can be called up if your memory needs refreshing.

The game has an extensive vocabulary so that in most places precision of phrasing is not important. It is also possible to use multiple commands like "Go North then drop the rock". If you have played any other adventure games, you would have no trouble communicating.

The game comes on a double-sided disc, of which both sides are used. To start a game, the front side is booted and results in a prompt to insert a copy of the back side. (Sirius recommend copying the unprotected back and using the copy to play.)

All the game is played on the back side, so there is no movement of discs once play has started. Up to 10 games can be saved to the back, and a saved game can be resumed from within a game.

I found *Blade of Blackpoole* quite demanding, and therefore highly enjoyable. Even when I thought I'd solved all the puzzles, I was killed off just before the end. When I did reach the end, it was with less than maximum points so there was obviously room for improvement.

I think the game is a bit hard for a first-timer but if you've enjoyed any other adventure games I can recommend this one.

Incidentally, I gather the people at Sirius looked at a map of England in order to pick a suitably alliterative name for the game. Just think, I could have been reviewing *The Wand of Wigan!* — **Cliff McKnight**

Title: The Blade of Blackpoole
Author: Tim Wilson
Publisher: Sirius Software
Requirements: Apple II
and DOS 3.3.

THERE are some things that I would rather not achieve with the use of an Apple — such as preparing my own slogans.

Well, that is what I thought on my first encounter with Banner Magic. I was also rather peeved at opening the package to discover that it wasn't a new game as expected. There followed a general disappointment and disinclination to proceed.

However, I hadn't reckoned with Christmas, New Year and my son's birthday.

The three events provided an auspicious setting for a test run and now, rather like a football pitch strewn with toilet rolls, my house is festooned with strips of continuous listing paper — and all because of the innocuous Banner Magic program.

I discovered too that it IS a game of sorts — to children. I tested the package with standard, fuddy duddy messages such as "Happy Birthday", "Good Grief" and "Happy New Year", but when the family had their turn they generated such things as strip targets for their dart guns, mixing large letter scores with the different character fonts of the Apple keyboard!

And its use suggested new forms of wall friezes, initially generated by the Apple and later filled in and coloured at the artist's leisure.

Banner Magic is used to print slogans up to 75 letters long, either full size (7in) or half size height, written vertically along continuous sheets of paper.

On booting, you are presented with a list of cursor movement commands (use the space bar to move the cursor and the right/left arrows to alter values) followed, on pressing RETURN, by a simple menu.

Move the cursor to the message option and you can type in the required script.

Note that the message to be printed must be typed in upper case letters and

Magic all of its own

that the package does not generate any lower case letters.

Other variable options include printer selection (only NEC 8023A, Apple dot matrix, Epson MX-80 and C. Itoh Pro-writer allow both full and half size letter fonts), the printer slot and one of six characters (X,&,#,\$,* or graphics) used to produce the letters in the banner.

The graphics character, which enables block printing, is available only on the Epson MX-80 and the NEC printers.

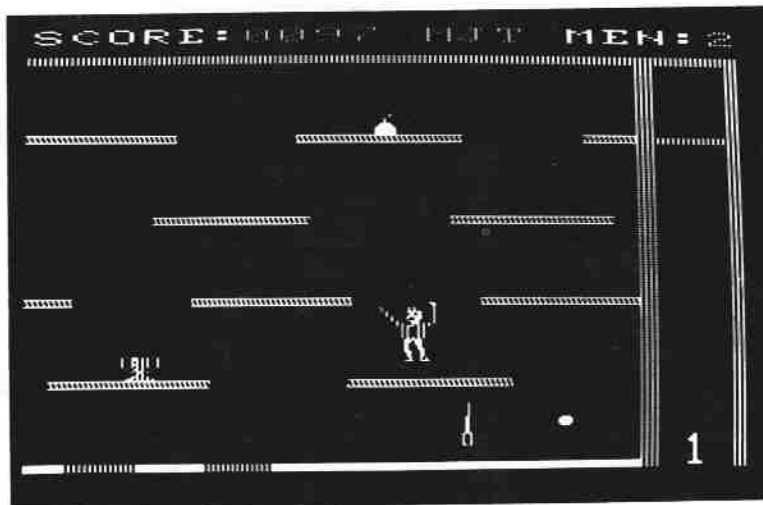
The instructions do not mention a plotter but it would certainly add to the package if it could be used to generate colour slogans.

I found the package had novelty appeal

only but I think it would be useful in schools or in clubs. Certainly the children from five years old to early teenagers who have tried it found it great fun.

The younger ones in particular derived tremendous satisfaction at being able to generate reams of output which they could then read and do things with, all on their own. **David Creasey**

*Title: Banner Magic.
Author: Barry Star.
Publisher: Phoenix Software.
Requirements: Apple II 3.3 DOS,
any printer.*



Gaining points on the way down in Free Fall

QUICK SPINS

Teleport. Aliens are teleporting into your dimension. Your mission is to stun them and send them back to their own dimension via the infinity door. Your low energy supply means that you can only stun one at a time, so you must avoid active aliens — they are confused and dangerous. (Cavalier Computer Corp.)

Star Thief. Thieves are out to steal the valuable power pods, and your mission is to stop them by either ramming them or shooting them. If they succeed, you're finished. Game can be played by one or two players in co-operation. (Cavalier Computer Corp.)

What goes up mus

IF you've ever played Suicide and felt for the little guys dropping out of the sky, you'll love Free Fall from Sirius Software. The basic game involves letting go of the ceiling and guiding yourself down into one of four holes in the floor. If you make it through a hole, it fills up and you take the elevator back to the ceiling.

There are three playing screens, each with a ceiling and floor and girders moving laterally and each with its own varieties of hazards.

Once you get through the third screen you revert to the first, but this time on difficulty level two. There are three levels of difficulty and if you get through the third screen on level three you revert to screen one on level three.

You start the game with three lives and

can win bonus lives in various ways. For example, at times one of the safety holes turns orange, and falling through an orange hole gives you an extra life. However, on a monochrome screen it is not always easy to tell if a hole has changed colour.

The game ends, not unnaturally, when you run out of lives. Points are gained in various ways. For example, just clinging onto the girders will give you points. However, the girders will also carry you off the screen and lose you a life.

If the bouncing ball hits the bomb, it explodes and will kill you if you are near. On the positive side, there are prizes to be gathered which yield a bonus if you complete the level.

In "keyboard" mode the game uses the

Computer often has the last word...

COMPUTER Scrabble has a dictionary of over 9,000 words and it is a formidable opponent if you choose to pit your wits against the program at its top level.

It is just as compelling as the original board game (and follows faithfully its format on screen) but is also entertaining in its own right.

The rules and play of the game are those of the Scrabble board game. Players can play against each other, with the Apple doing only the scoring; or one or more hands can be played by the Apple on up to four levels of difficulty.

We managed to beat level one without too much trouble, but the game was much harder at the higher levels.

It was very interesting to see the ingenious plays made by the computer at level four. On this tack we enjoyed making the computer play all four hands, with each set at a different level of difficulty.

In most instances the results were in line with these levels, but sometimes a lower level beat a higher due to the random run of tiles selected.

After a while one does tend to recognise the words that the computer will use, due to the size limitation of its dictionary.

(Note that in Peter Turcan's article last month he discussed the methods used in the program to select the word to play, where score and strategic use of letters were the criteria rather than the actual nature of the word.)

The game can be played in black and white or in colour, the latter making the premium squares much more obvious. You're asked to select colour or black and white mode on booting as well as to choose to have sound or not, to select the number of players and the skill factor.

The program asks for the player's names and also whether the Apple can play that particular turn. If you opt to have the Apple play itself (in any combination of one to four hands) you won't be able to

come down

two arrow keys and the space bar. It can also be played using one of the paddles or a joystick. I tried it with keyboard, paddle and joystick and prefer keyboard on the whole, but then I usually do.

The structure is certainly complex, but playing it is easy, fast, and addictive. Although playing is easy, winning certainly isn't. Just as you are about to drop into a hole, a needle shoots up (painful, to say the least) and another life is lost. **Cliff McKnight**

*Title: Free Fall
Author: Mark Turmell
Publisher: Sirius Software
Requirements: Apple II with one disc drive (13 or 16 sector)*

In last month's issue Peter Turcan, who developed a program for playing Scrabble on the Apple as part of his PhD research study into word structures and their analysis, described some of the problems he encountered and the techniques he used in developing the program. Here MARY and IAIN MACLACHLAN examine the commercial result of his work, Computer Scrabble.

interrupt the game without rebooting but it is interesting to watch how the play proceeds.

Usually the Apple will display a possible play and then pause while it searches its dictionary for a better, presumably higher scoring option.

Once the game options have been selected you have to turn the program disc over, as that's the side the dictionary is stored on.

The standard Scrabble board is displayed on screen during the game, with players' scores in the top right hand corner and the letters for the player whose turn it is at the bottom.

Various control key options are displayed on the right hand side of the screen. They allow you the choice of ABANDONing the game, CHANGEing your letters (instead of placing a word), JUGGLEing and RE-ORDERing the letters on your rack, PASSing or bringing to the screen a temporary display of the premium SQUARE CODES or the letter VALUES.

DISTRIBUTION shows you how many of each type were available at the beginning of the game.

The control options cannot be accessed if Apple is controlling a turn but can be called up at any time by a human player.

The player whose turn it is has his letters displayed on the screen. Once he has made his choice and typed his word in at the bottom he must move a cursor from

the top left hand corner of the playing board to position the first letter of his word on a square, and then select the direction (across, down or cancel) it is to be played.

He's told how much the word would score and is given an option to change his mind. Once he has accepted it the scoring is automatic.

Illegal entries include a word which runs over the board perimeter or using letters not in the rack. If a selected word is not in its dictionary, the program asks "Are you sure Y/N?" If you type "Y", however, it ignores you and won't allow placement. You can get around this by pressing ESC Y.

When all the tiles are out and one player manages to clear his rack, the game ends and other hands' scores are adjusted for tiles remaining in their racks.

We couldn't find a way of ending the game with adjusted scores in the case where all players were passing their turn because they were unable to play. And we found that use of the ABANDON game option does just what it says - everything is cleared off the screen.

Playing the game with human players only and with the Apple simply keeping score was more trouble than just playing on a board.

Other players need to look away while a player's tiles are displayed before making his move, and unless they make a note of their own tiles, they cannot be working out their next move as they await their turn - a factor which makes for longer periods between turns.

Apart from this the family, from age 11 upwards, found the instructions easy to follow and the game interesting.

Playing against the computer was fun, and Computer Scrabble is excellent for one player playing against one or more computer hands.

*Title: Computer Scrabble.
Author: Peter Turcan.
Publisher: Little Genius.
Requirements: Apple II with one disc drive.*

Lower case display for Basic strings

MANY readers must have installed a lower case character generator in their Apples for word processing but are not using its capabilities in Basic programs.

I was keen to put my screen messages in lower case because I believe it easier to read — but how to do it? On consideration it seemed best to embed a command in the string to be printed which would control the output of that string.

Flipping through "What's Where in the Apple" I found a zero page byte at \$F3

By MAX PARROTT

which will control output. This usually holds the value 0 to produce upper case but if it holds \$20 lower case output results.

I also found another zero page byte at \$32 which controls output, giving normal,

flashing, or inverse output. It seemed only sensible to use both of these bytes so that NORMAL, INVERSE, and FLASH commands could be issued from within the string itself.

The easiest place to interfere with the output is immediately before the final screen printing routine and this is very easy on the Apple by using the CSWL, CSWH pair of bytes at \$36,37 (see the reference manual, p.83).

The assembly language routine (*shown left*) after assembling and saving to disc effects the results I wanted. After BRUNning, the output hooks are switched to \$30B where all output is scanned for CTRL-I (inverse), CTRL-F (flashing), CTRL-L (lower case) and CTRL-N (back to normal and upper case output). When one of these is encountered the appropriate masks at \$32 and \$F3 are changed.

I have been using this technique for some time without ill effect, but it annoyed me that the precious space at \$300 was being used yet again. It dawned then that the routine at \$30B was relocateable and therefore could be buried in the Basic program itself. My final solution was to create a "standard starting program" which I keep on disc. When beginning a new program I LOAD this and then type in the remainder.

There has to be a drawback, of course. What happens is that as the program is edited the latent position of the output hook is changing but Applesoft is only informed of this on RUNning the program. Therefore when purely editing there is no problem but if the program is RUN and then edited, undesirable results can occur. If in this position, using RESET before editing solves all problems.

My usual trick is to keep the line which actually changes the hooks (63990) as a REM statement while the program is being developed. When everything is perfect (except I haven't seen any lower case) I edit the REM out of the line, SAVE it to disc and RUN it.

This is how to create a "standard starting program". First make sure you are in Applesoft, and type FP. Issue the CALL -151 command to enter the monitor and type 800L. The first four bytes should have zero values. Enter the following hexadecimal dump beginning at \$804:

```

800- 00 00 00 00 C9 B9 D0 09
808- A9 3F B5 32 A9 00 B5 F3
810- 60 C9 B6 D0 09 A9 7F B5
818- 32 A9 00 B5 F3 60 C9 BE
820- D0 09 A9 FF B5 32 A9 00
828- B5 F3 60 C9 BC D0 05 A9
830- 20 B5 F3 60 4C F0 FD 00
  
```

```

0800          1 *****
0800          2 * LOWER CASE DISPLAY *
0800          3 *****
0032          4 INVFLG      EPZ $32
0036          5 CSWL        EPZ $36
0037          6 CSWH        EPZ $37
00F3          7 MASK        EPZ $F3
00FF          8 NORMAL      EQU $FF
007F          9 FLASH      EQU $7F
003F          10 INVRSE     EQU $3F
03EA          11 DOSET     EQU $3EA
FDF0          12 COUT1     EQU $FDF0
0300          13 ORG      $300
0300          14
0300          15 USE:
0300 A9 0B     16          LDA #60
0302 A0 03     17          LDY /60
0304 B5 36     18          STA CSWL
0306 B4 37     19          STY CSWH
0308 4C EA 03  20          JMP DOSET
030B          21 GO:
030B C9 B9     22          CMP ##B9      ;CNTRL I
030D D0 09     23          BNE CHECK
030F A9 3F     24          LDA #INVRSE
0311 B5 32     25          STA INVFLG
0313 A9 00     26          LDA #0        ;MASK FOR UPPER CASE
0315 B5 F3     27          STA MASK
0317 60        28          RTS
031B          29 CHECK:
031B C9 B6     30          CMP ##B6      ;CNTRL F
031A D0 09     31          BNE CHECK1
031C A9 7F     32          LDA #FLASH
031E B5 32     33          STA INVFLG
0320 A9 00     34          LDA #0        ;MASK FOR UPPER CASE
0322 B5 F3     35          STA MASK
0324 60        36          RTS
0325          37 CHECK1:
0325 C9 BE     38          CMP ##BE      ;CNTRL N
0327 D0 09     39          BNE CHECK2
0329 A9 FF     40          LDA #NORMAL
032B B5 32     41          STA INVFLG
032D A9 00     42          LDA #0        ;MASK FOR UPPER CASE
032F B5 F3     43          STA MASK
0331 60        44          RTS
0332          45 CHECK2:
0332 C9 BC     46          CMP ##BC      ;CNTRL L
0334 D0 05     47          BNE PRINT
0336 A9 20     48          LDA #$20     ;MASK FOR LOWER CASE
0338 B5 F3     49          STA MASK
033A 60        50          RTS
033B          51 PRINT:
033B 4C F0 FD  52          JMP COUT1
033E          53          END
  
```

When finished move the "end of program pointer" \$AF,BO by typing AF:37 8. Now return to Basic with a CTRL-C command and enter the following lines of program:

```
63970 ADD = 256 * PEEK (176) + PEEK (175) - 51
63980 HI = INT (ADD / 256):LO = ADD - 256 * HI
63990 REM POKE 54,LO:POKE 55,HI:CALL1002
63995 RETURN
```

Now SAVE it to disc and you are done. To use it, merely LOAD it and type in your program, remembering to embed your screen control commands in strings and REM statements as appropriate. When it

is finished edit out the REM from line 63990.

A tip! If your printer uses control characters such as CTRL-1, listing on it will be difficult. It may be better to change

the output routine to use other, innocuous, embedded control characters. Also, using the printer will disconnect the output hooks, which will need resetting. This is why the Basic routine which finds the address of the output hook is presented as a subroutine.

To initialise it merely GOSUB 63970 and to reset the hook after using the printer use the GOSUB 63990 command.

There is one other point to note: Before issuing a DOS command from within the program make sure that the CTRL-N command has been printed so that upper case is printed. The usual Basic commands are not affected, so the CTRL-L command can be left in effect from one line of Basic to another if desired. 🍎

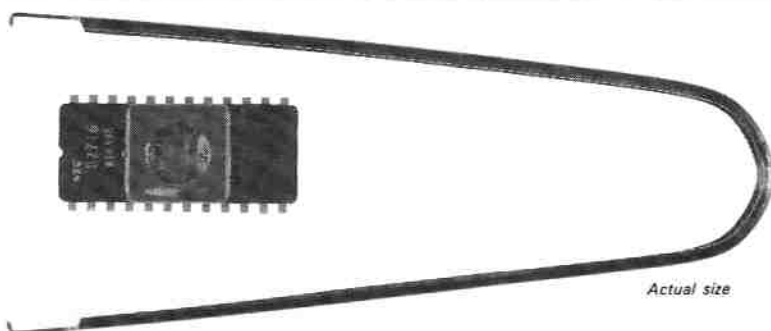
Enhance your word processing with our lower case generator

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

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


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

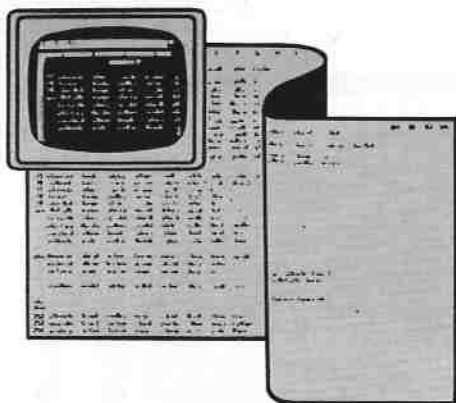
(Users of the older Applewriter I should note that a modification is needed



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

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

Please supply		<input type="checkbox"/> I enclose cheque	<input type="checkbox"/> Paid by credit card
Windfall Lower Case Generator(s) at the special introductory price of £25.			
Name	Credit card	<input type="text"/>
Address	Number	<input type="text"/>
.....	Expiry	<input type="text"/>
.....	Signed	<input type="text"/>
Send to: Windfall, FREEPOST, Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY. No stamp needed if posted in UK. Introductory offer expires April 30, 1983			



Magnificent obsession... that's Multiplan

WHEN a businessman commits himself to a financial planning program it's like getting engaged to a very sophisticated, stimulating and adventurous companion (ask any Visicalc enthusiast). It follows therefore that reviewing and evaluating any kit for financial planning is like providing business executives with marriage guidance.

My first advice must inevitably be directed to business executives who are already engaged or married to partners of the human species! Get your better half to join the Apple Widows Club (such a club really does exist in America), for once you get immersed in manipulating electronic worksheets you are hardly going to have any time left to devote to your partner.

The financial planning program you use, or are going to select, will only become your truly dependable working partner if you get to know it intimately. So having committed yourself to a specific program, you will have to sacrifice precious time to interface with it every week, and the more sophisticated the planning program, the more time you will have to spend on it. So allow yourself at least six to eight hours every week (more during the honeymoon period) spread over two or three sessions).

Also be prepared during those sessions to patiently put up with your program's inherent stubbornness and apparently illogical responses to your attempts to manipulate or fail to manipulate its reactionary zones.

Remember that what started as a casual acquaintance with a planning package picked up off the shelf could eventually develop into a long term close association which you will find difficult to discard. So make sure you choose a program with which you can develop a satisfying and harmonious relationship.

You could, of course, resolve to avoid getting seriously involved with anything that could make you a slave to a piece of computer software, but 'freedom' of that sort would sooner or later, for better or for worse, remove you from the executive race to the top.

Can you imagine a manager of the



By NICK LEVY
Principal,
Interface Management

future who does not know how to use an electronic spreadsheet? He would be in the same position as a contemporary executive who does not know how to use a pocket calculator, or a sales representative who cannot drive a car. He could get by without it — but not very far.

And just in case you're hoping that you could get away with only a superficial knowledge of how to use a micro to prepare your financial plans, let me assure you that these programs do not respond well to business executives who only flirt with them occasionally.

Learning to use these kits should not be regarded as just a one off exercise. They only bestow their favours on someone who is committed to working with them regularly, to explore them continuously, and who is prepared to make them an extension of himself.

Incidentally, the American *Time* magazine recently selected a computer as the Man of the Year, so my comparison of a financial planning package to a moody fiancée would seem after all not to be too far fetched.

How do you go about selecting a package which is right for you? If possible, try out a few and select a kit which you find challenging to master and yet not too difficult to learn and to program. You

should certainly not go just by the technical specifications. Regard such claims as stipulations which not everybody using the program should expect to be able to perform. If you are prepared to be frank, and admit to yourself that you are not going to make regular use of advanced analytical management techniques, then don't be swayed in your choice of a program by technical specifications which include such functions. Their presence will only slow you down, and possibly hinder your efforts to develop simple practical analytical models which you can use with confidence.

After such a long preamble you will appreciate why I approach the subject of reviewing Multiplan with apprehension. On one hand I would like to say, at the risk of others doing likewise for the wrong reasons, that I would not like to be without Multiplan in my armoury.

I became infatuated with it when I first heard that you could use Multiplan to sort a column in either alphabetical or numerical order. My obsession deepened when I discovered that you can insert a row in any column in the middle of your model without this additional row stretching to any of the other columns on either side.

I was both puzzled and dazzled by Multiplan's ability to create eight(!) windows on the screen. The package would certainly make a user rethink and redesign his models in order to take advantage of Multiplan's facilities.

For example, have you thought of the possibilities being opened up by a function which allows you to incorporate in your formulae the column and row numbers which appear on the border of the electronic sheet? (Unlike Visicalc where columns are denoted by A, B, C etc., Multiplan numbers the columns 1, 2, 3 etc.) It is like adding "read only" columns and rows to your screen. Or consider what you can do given the facility to convert text entries into numbers, or to use text in the result column or row of a Lookup table!

Remember, the ability to perform such

maxell®



WHEN ONLY THE BEST IS GOOD ENOUGH

CONTACT:

CFM

Excell House, Trust Industrial Estate,
Wilbury Way, Hitchin,
Hertfordshire. SG4 0UZ
0462 51511

Loadplan

28 Hereford Road, London, W2 5AJ
01 221 0005

Symons Computer Services

4A Porchester Place, Bournemouth,
Hampshire. BH8 8JS
0202 23776

Word Perfect (Anglia)

4A Granville Street,
Peterborough, Cambridgeshire. PE1 2RJ
0733 310828

Constat Business Forms

92 Warren Gardens, Lisburn,
Co. Down, Northern Ireland. BT28 1HW
08462 82131

Data Total Computers

Haywood Way, Ivy House Lane,
Hastings, Sussex. TN35 4PL
0424 444460

Disking International

Moonrakers, Wheatsheaf Enclosure,
Liphook, Hampshire. GU30 7EJ
0428 722563

Michael Collins Computer Supplies

Canbury House, Tolworth Close,
Tolworth, Surbiton, Surrey. KT16 7EW
01 390 5655

Hestair Dataline

2nd Floor, 60 Charles Street,
Leicester. LE1 1FB
0533 56215

Alan Henry Computer Services

Effective House, Rainhill Road,
Rainhill, Merseyside. L35 4LD
051 430 0111

Computer Supplies Co.

8-18 Union Street, Bo'ness,
West Lothian, Scotland.
0506 823393 Telex 727479

Scotmedia Computer Supplies Ltd

Unit D, 46 Bavelaw Road,
Balerno, Midlothian. EH14 7AE
031 449 5557

Vlasak Computer Systems

Vlasak House, 8 Stewart Road,
High Wycombe, Buckinghamshire.
HP13 6AG.
0494 448633

maxell®

UK distribution through CPU Peripherals. Tel: Walton-on-Thames 46433/4/5/6.

operations should not in any way be regarded as a recommendation that you choose this program in preference to others which do not have them. To begin with my reasons for liking and wanting to use Multiplan are bound to be entirely different from yours. Besides, being a bit of a spreadsheet bigamist, I also like to spend time with Supercalc and Visicalc, and I am certainly not going to give them up for the sake of Multiplan.

So before committing yourself to using Multiplan on the basis of what you've read so far, kindly ignore my prejudicial remarks, and also take with a pinch of salt the claims in the promotional material on how easy it is to learn and to use the program.

Multiplan for Apple II comes with a 420 page manual, a 15 page quick reference guide and a combined boot and utilities disc and a system disc. Minimum requirements are 64k memory, 16 sector DOS and one disc drive. It is important that every time you boot the system, you should set Multiplan's Transfer option for use with two disc drives. If you use it with only one you could find yourself frantically swapping discs, and this can be very off-putting.

The system disc is marked "Disc 1 of 2", so you will be forgiven if you try to use that disc first. However you will soon find out that you have to start with the one marked "Disc 2 of 2". So you boot the system and if you want to see what utilities are available, you press the ESC key as instructed by the startup menu. The utilities menu appears on your screen.

An attraction for Visicalc users is the fact that Multiplan can convert Visicalc data files to the Multiplan variety. Once so converted you can execute a few commands and perform functions on your model which are not in Visicalc.

You can, for example, lock any cell containing formulae to protect it from being accidentally overwritten. You can also enter either the % sign or the \$ as part of the number appearing on your model, and in certain circumstances you can have negative numbers appearing in brackets instead of with a minus sign in front of them.

It is also possible to format each column in your model to a different column width, to sum or copy a range of values arranged diagonally and to automatically perform a number of calculations, such as finding the standard deviation or calculating the internal rate of

An attraction for Visicalc users is the fact that Multiplan can convert VC data files to the Multiplan variety

return, which are not functions inherent in the VC program. However - before you rush to transfer your VC data files to Multiplan, please read on.

After loading Multiplan about 20k of memory is left free to "play with". This may be sufficient for some model builders, but many business plans would require more user memory. So although Multiplan offers you an electronic sheet of 63 columns by 255 rows you will be able to utilise possibly only about a fifth of that area.

I tested it with the Ramex 128 expansion board which gives me 136k user memory for Visicalc (compared with Multiplan's 20k), but I wasn't able to use the additional memory with Multiplan. So if your models are likely to require more than 20k memory then you will have to decide how best to split up your master model into small modules and then set Multiplan's External list command facilities to automatically link between the various modules. In any case, you certainly would not be able to transfer to Multiplan any Visicalc models which are larger than 20k.

Multiplan certainly tries very hard to be user friendly, and wherever possible provides a menu of commands and options as well as prompts to guide you. In spite of this, if you are going to use it efficiently, you will still have to memorise more than 20 key strokes and learn to apply them - almost instinctively. An example: Suppose you are editing a formula. You will have no difficulty in entering the edit mode - it's there on a menu and you can't miss it. But editing a formula involves inserting a square bracket (Multiplan makes extensive use of square brackets as well as the round variety.)

How do you enter either a left handed or a right handed square bracket? The section on editing in the tutorial does not tell you anything about it, the chapter on editing in the reference section of the manual doesn't mention square brackets and the index offers no help either. Eventually you discover that CTRL-B produces a left hand bracket and SHIFT-M a right hand one. There it was all the time in the quick reference guide and on the Help screen. But until you are more familiar with how these sources of help are structured, your search will not be either quick or easy. Memorising a score of keystrokes, all of which operate in conjunction with the CTRL key, is essential.

Multiplan displays two cursors, one for getting you round the spreadsheet, the other to help make selections from the various menus. The program uses the CTRL key together with almost every letter of the alphabet (except G, J, T, U, and V) as well as the space bar, to move the two cursors about and to perform various editing functions.

If, like me, you browse through books from back to front, you will find towards the end of the Multiplan manual, on page 377, "Notes for the Visicalc User." On page 367, under "Helpful hints" you will find the statement: "Use the PAGE, HOME, and END keys to scroll rapidly across and down the worksheet."

Now where on the Apple keyboard do you have such keys? The HOME key, for example, is CTRL-Q and keying it will move the cursor to the top left hand corner of the worksheet. Unfortunately the Multiplan tutorial lets you find this out the hard way and just as you get the feeling that you are getting on well with the tutorial you are instructed to look up the Quick Reference Guide and find the HOME key.

And how do you find HOME in a 15 page booklet? The word does not appear in bold letters, it does not appear as the first word on the left hand side of any page, nor can it be traced alphabetically under any heading. When you finally locate it, on the lower half of the first page of the reference guide, it is a good idea to memorise it together with all the other keystrokes referred to only by name (e.g. Character Left, Character Right, Backspace) to avoid recurring delays.

With Multiplan you can round figures to any number of decimal places (another

What is

VOICE INPUT ?

VOICE INPUT, completes the man/machine interface through speech, **the most natural form of communication.**

It's natural ... it's simple ... it's fast ... and it's accurate.



VOICE INPUT LTD

15 St Margaret's Road, Girton, Cambridge CB3 0LT Telephone (0223) 276097

What for?

FOR APPLE II® USERS

The voice-card simply slots into your APPLE II and you're away, talking as well as keying.

FOR PROGRAMMERS

It takes the tedium out of programming with your fingers.



..chatter...

You've probably heard of C.O.R.P., but you may not have heard of EASITRAN. EASITRAN provides a link between your Applesoft programmes and Visicalc. You know what Visicalc can do for you - if you could only transfer the information from your Applesoft programme. Our INCOMPLETE RECORDS system does that - but EASITRAN makes the technique generally available. Of course, if you're not 100% happy about writing the Applesoft programme, C.O.R.P. will do all that for you... Just a reminder about THE APPLE CORPS - it'll now cost you £5 to register, but shouldn't you? WORDSWRIGHT 737 is generating some interest, especially amongst people who want to produce nicely formatted reports easily, and without the software costing too much. In case you've forgotten, ALL our quoted prices include not only postage, but also V.A.T. For overseas customers, we adjust. ACCESS and VISA cards welcome, by mail or telephone. P.S. If you want an ORIC, we have some - if you hurry.

EASITRAN enables you to transfer data from your Applesoft programme to VISICALC - easily. C.O.R.P. lets you generate an Applesoft programme - easily. Used separately or together, they can get your application off the ground quickly.

EASITRAN £69.95
C.O.R.P. £239.95

ALL PRICES INCLUDE V.A.T.

numeric keypads

If you input a lot of figures into your Apple II, you'll find it a lot easier with a numeric keypad. We've a choice of two, both Visicalc compatible.

AIDS Keypus £86.75
APPLE Keypad II £90.99

DIGITEK

New low price on 16K RAM card. £71.50

the apple corps

The unique register for Apple people: registration costs just £5, and a search of the register, to find the six service providers most exactly matched to your problem costs just £25. Ring or write for further details.

jetstream - the fan

There wasn't much point in showing a picture of an Apple II fitted with a JETSTREAM fan. It fits inside the case, so you can't see it. You'd have trouble hearing it too, as it is almost silent in operation. You can fit it in less than a minute, and you won't have any extra switches. The fan module is Swiss-made, and moves 220 litres of air every minute. What's more, it sucks air through the computer, keeping it cleaner than blowers.

ORDER CODE 001 £32.95

Incomplete Records for £115?

Written by an accountant, the NUMBER ONE COMPUTERS INCOMPLETE RECORDS system allows the production of final accounts with the minimum of complications. The data entry programme can handle up to 5000 items - and retrieve any one for amendment. A summary of the entered data is passed to a VisiCalc template which produces the profit and loss account, balance sheet, and source and application of funds statement. The system runs on a minimum configuration of a 48K Apple II with Applesoft Basic and one disc drive, making it very suitable for use on client's premises. Full instructions and a sample set of nominal codes are included. The price of £115 includes postage and V.A.T. ORDER CODE 005

wordwright 737

The new report processor from NUMBER ONE COMPUTERS; designed specifically for the Centronics 737, it takes full advantage of the printer's facilities in a way no other system in this price range can match. Mix elongated, condensed, enhanced and proportional characters - underline, right, left or centre justify. ORDER CODE 015 £49.95

number one computers

Francis Street, St. Helier, Jersey, Channel Islands.
telephone (0534) 77268

useful feature not in Visicalc). To do this you must remember the function ROUND (N,m). Other expressions and symbols worth memorising are '&', AVERAGE, COUNT, MAX MIN, NPV, STDEV (Stand,Dev.), ABS, COLUMN, ROW, INDEX, LOOKUP, REPT, VALUE. Otherwise all these marvellous things that Multiplan can do will remain buried in the disc and forgotten.

The same advice could apply to Visicalc, but then, in spite of the gallant efforts made by Multiplan to be as user friendly as possible, there are many more things you ought to learn and remember when using Multiplan than when using Visicalc.

If you have problems with executing the Replicate command using Visicalc or Supercalc then you might be interested to find out how Multiplan handles this problem. Suppose that in column 1 of a spreadsheet you have a series of figures which add up to 75 and in column 2 you want to express them as a percentage of 75. Before performing such an exercise with Multiplan you must give the cell containing the total value of 75 a name. You can call it SUM-OF-WHATSIT or any other name up to 31 characters, and you must remember to underline any gaps between the words in a name (to underline type use CTRL-SHIFT-N). If you don't give it a name but only refer to the cell where the 75 appears by its co-ordinates you will get the wrong answers. Multiplan's use of the formulae language approach to constructing business models is a necessity rather than a virtue as the advertising would have us believe.

Multiplan co-ordinates can be expressed in absolute or relative terms or by their name. A notation reading R7C5 means Row 7 Column 5. If a value in that cell appears in a formula in, say, cell R10C9, then cell R7C5 will be referred to as cell R(-3) C(-4), because it is three rows away from Row 10 and four rows away from Row 9.

So what difference does it make to you? To find out let's look at Multiplan's ability to print the formulae used in cells containing calculations. It is very convenient for checking purposes to have two identically designed models side by side, one showing the results of calculations, the other the formulae used.

But when a formulae is expressed in relative terms who can be bothered to count rows and columns in order to find out if the correct formula was applied? Multiplan allows you to convert relative cell references to absolute references, but this has to be done at the time the for-

mulae are written. Unfortunately the Edit command does not convert a relative cell reference to absolute.

I also noticed when trying to print Multiplan formulae from a file converted from Visicalc that the VC Repeat command (/) followed by '-' which was used for underlining, produced three rows of un-

especially when nested, one within another.

With Multiplan you cannot overlay one screen on another as with Visicalc. I regret this because in the right hands overlaying one file on top of another can be used to solve many problems. On the other hand, Multiplan puts to very good use the creation of circular references, something that the Visicalc manual warns you to avoid at all cost.

Multiplan has an Iteration Option, which automatically performs close looped operations as discussed in this column in November '82. The alternative to this option is to set up complex algebraic formula to solve closed looped problems. This reminds me that I owe apologies to a number of readers of this column who sent me VC formulae following the November article and whose letters I have so far not acknowledged.

The inevitable conclusion must be that Multiplan has a number of features which are more advanced than the equivalent VC features, plus a number which are not in Visicalc. On the other hand, you cannot perform datagramming manipulations with Multiplan datafiles as you can with Visicalc.

Furthermore, what is probably one of the most important criteria by which the two programs should be compared is the ease with which they can be learned and used, and on that score I believe Visicalc will win.

If you are the kind of person with an aptitude for working with computers you might disagree, but most spreadsheet users, myself included, have not got that special aptitude, and it is only by working hard and persevering that we manage to get over this handicap.

I saw recently an advertisement boasting: "My husband's small computer means no more working late at the office." Wait till that wife's husband gets his hands on Multiplan. If he does not stay late in the office, he will most certainly bring the computer home with him. Either way I feel sorry for the wife, if her husband gets hooked on Multiplan. She is bound to be another candidate for the Apple Widows Club. ☹

#1	1	#2	2	3	4	5	6
			January	February	March	April	May
3	Sales		\$20000.00	\$20000.00	\$20000.00	\$20000.00	\$20000.00
5	Cost						
6	Material		\$4000.00	\$4000.00	\$4000.00	\$4000.00	\$4000.00
7	Labor		\$7000.00	\$7000.00	\$7000.00	\$7000.00	\$7000.00
8	Overhead		\$4000.00	\$4000.00	\$4000.00	\$4000.00	\$4000.00
10	Total Costs		\$15000.00	\$15000.00	\$15000.00	\$15000.00	\$15000.00
15	Gross Profits						
15			\$5000.00	\$5000.00	\$5000.00	\$5000.00	\$5000.00

COMMAND: Alpha Blank Copy Delete Edit Format Goto Help Insert Lock Move
Name Options Print Quit Sort Transfer Value Window Xternal
Select option or type command letter
R11C2 86% Free Multiplan SPENCER

Multiplan screen with three windows. Note the border round window 3

Visicalc should come first in the ease of handling stakes

derscoring when used with the Multiplan print formula option. Otherwise the screen appearance and the formulae conversion from VC to Multiplan were perfect.

Multiplan formulae are printed in cells of width of 11 spaces. If a formula contains more than 11 characters a new line is started under the same tabular column. If the file from which the formulae are being printed is not set by default to the width of 11, then any text will appear misaligned. This I think is a small price to pay for the benefit of getting formulae printed in a tabular presentation.

It looks to me as if the creators of Multiplan looked at Visicalc and Supercalc and decided "Anything you can do we can do better," which in many respects they have done. They have excelled themselves. Take the functions performed by Visicalc's DIF files, as discussed in the February issue of *Windfall*.

Multiplan goes a step further and automates the whole process of transferring data from a worksheet on one file to worksheets on different files. Or another example: Visicalc's LOOKUP function can only lookup values in one of two adjacent columns or rows. Multiplan's LOOKUP on the other hand can not only lookup text (labels) as well as value, it can also lookup arguments which are columns apart. The mind boggles when you think of the possible imaginative applications that such advanced functions open up,



Lisa lives up to expectations

APPLE has certainly delivered the goods in terms of new products and concepts. The reception given to Lisa and the IIe at their unveiling exceeded even Apple's expectations – and the micro world is still buzzing with excitement.

All that remains is to see whether Apple's marketing flair matches that of its technological inventiveness.

People who had read all about Lisa and had been told of its marvels were still surprised when they actually saw it up and running for the first time – it is that impressive.

And those who had heard all about the new IIe – and whose first reactions were of disappointment that it didn't incorporate more features than it does – went away quietly impressed once they had seen it working.

A detailed, first-hand review of the IIe will be carried in a future issue of *Windfall*. However we already know that it DOES work with CP/M, its 80 column card

operates well, and while a built-in 80 column display and a numeric keypad would have been welcome their absence is not a major limitation. The Apple II interface cards we tested on the IIe appear to work faultlessly.

Dealers have no complaints. Many sold out of their first shipments of the IIe within days of the launch. One told us: "Everything we can get hold of is going out the door. It's frightening, we've never known anything like it."

"We sold a phenomenal number of IIes before the launch – and now can't keep up with the demand for them."

"We have even received a firm order for a Lisa from someone who said that the price was irrelevant."

Apple UK isn't complaining, either. The company took several thousand orders for the IIe at the Which Computer? Show, and an invitation-only hour long demonstration of Lisa, set up in a special suite at the show for major account representa-

tives, generated considerable interest.

Certainly one of the busiest places at the exhibition was the 10 minute rolling demonstration of Lisa which gave the public a brief insight into the machine's capabilities. Apple had trouble getting people to stay away and kept having to ask visitors who had already had their allotted 10 minutes to make way for newcomers.

The Apple stand itself was vibrant and employees seemed flushed with the success of the launch. Initial response indicates that the success will continue.

Apple UK has now embarked on an around Britain roadshow to give dealers and their staffs comprehensive training on company products. The day-long courses will cover the IIe in depth and give re-training on the II and the III.

The company has also introduced a formal dealer agreement designed to ensure that its machines will be sold properly and given full support and back-up in the field.

"It is essential that the public buys from a retailer who has a secure footing as an authorised Apple dealer. The agreement sets the seal on a two-way relationship from which dealers will continue to enjoy the reputation of the Apple name and second-to-none training facilities," said Keith Hall, Apple's sales and marketing director.

"Without such an agreement poor communications, disputes and misunderstandings are possible," he added.

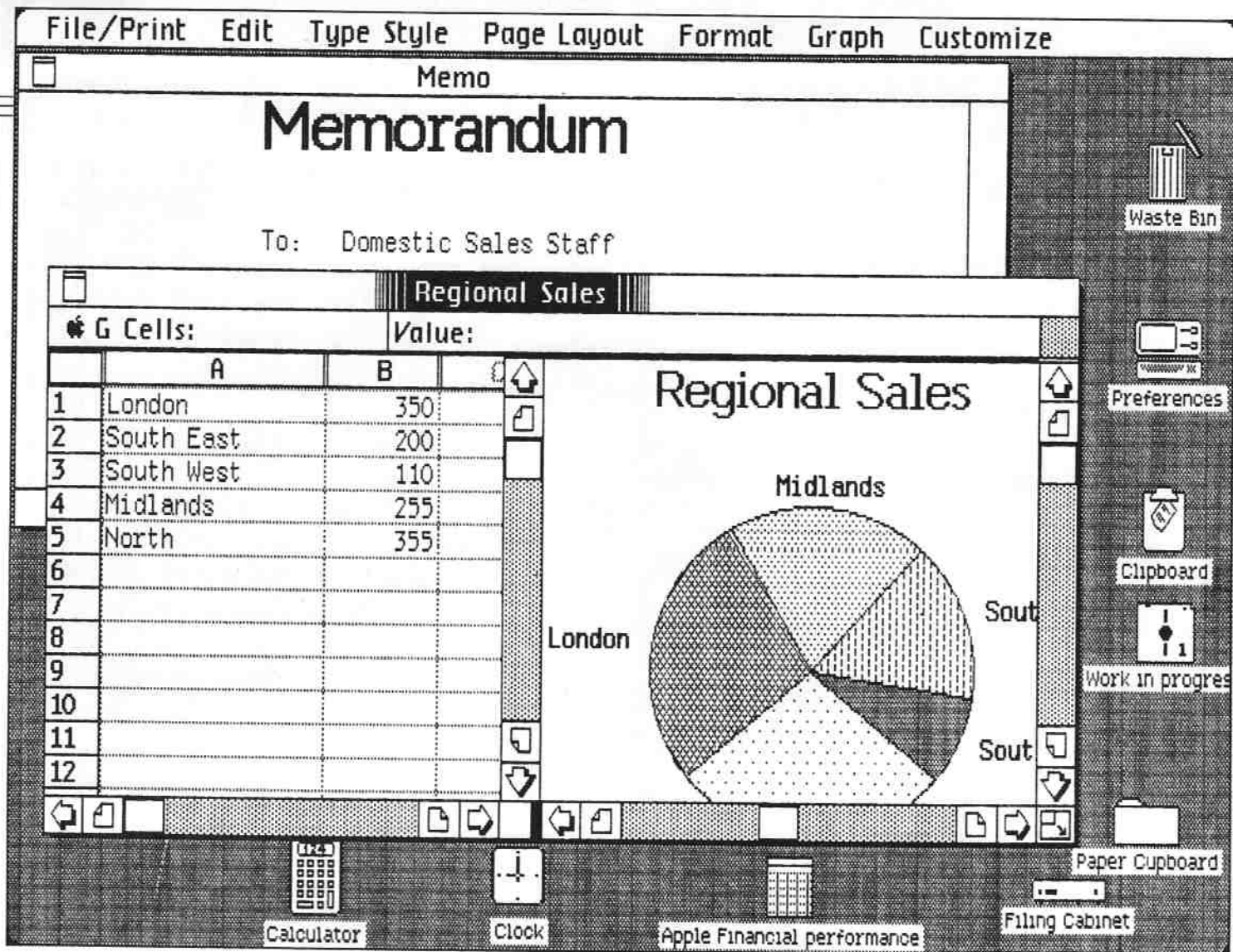
The agreement will be flexible and is seen as a move to strengthen Apple's professional image and marketing base. Dealers will continue their involvement with Apple's dealer reporting programme, part of the company's quality control scrutiny of its products.

It involves a direct link between dealers and Apple's manufacturing plant in Cork, with feedback, through field quality representatives, on initial three month and 12 month failure rates of Apples sold.

Information on faults is reviewed monthly by Apple so that corrective action can be taken on the production line.

Fiscal Year	Net Sales (\$M)	Net Income (\$M)
1978	8	1
1979	48	5
1980	117	12
1981	335	39
1982	583	61

Left and top right: Lisa in action – print-outs from two typical screen displays.



LISA was given a warm welcome in the press, and the only real questions asked were whether it was too expensive (at around £8,000) and whether Apple as a company would hold its own in competition with the IBM Personal Computer. Most predicted that Apple and IBM will be among the few survivors in the battle for the world's micro markets.

The Times headlined its report on the launch of the new IBM and Apple machines: "Friendly Lisa steals the limelight," and its technology correspondent Clive Cookson said: "In international terms Lisa was by far the more exciting event - a new computer of which two public relations clichés, 'user friendly' and 'revolutionary' are justified."

However he suggested that the IBM PC was more newsworthy for British industry because, unlike Lisa, the machine will be manufactured in the UK. Cookson said Lisa was the latest and most spectacular manifestation of the mouse control.

Louise Keyhoe, writing in the *Financial Times*, said Lisa was a new machine glittering with features unmatched by its rivals - although its price tag gave it an untouchable quality for many observers.

"Using Lisa is a new experience - even for the regular personal computer user," she added. "It is like switching from a standard motor car with manual gear change to an automatic with cruise control, electric windows and power brakes.

What the papers said about the big launch . .

Practically all that is left for the driver to do is to choose his speed and steer the car.

"Apple promised that it would introduce a 'revolutionary' personal computer, and with Lisa most agree that the company has delivered.

"The second act, the Apple IIe, was an old time favourite backed by popular demand," said Keyhoe.

The *Observer's* Julian Allason said Lisa received a rapturous welcome at the Which Computer? Show and he commented: "Last week a mouse roared - and the micro computer industry picked up its skirts and ran."

Lisa's arrival had raised the spectre of obsolescence among dealers for other systems, he said, adding: "One competing manufacturer received over 20 calls from retailers anxious to know when they would be able to offer a similar product."

The *International Herald Tribune* said Lisa could revolutionise the personal computer industry and guarantee Apple's place in it if the product succeeds. If it failed, said the newspaper, Apple could recede to being only a moderately successful company that hit it big on one

big product - the Apple II.

"Those who have seen Lisa say it surpasses anything available on the market in terms of ease of use.

"However Apple's immediate financial future is pegged more to the IIe, which can use most of the programs available for the Apple II⁺ than to Lisa," it said.

Business Week said Apple has taken on its biggest test yet. "If the computer industry were a circus, Apple Computer Inc would be a high wire acrobat performing without a net," said the journal.

The president of Software Publishing Corporation, Fred Gibbons, told *Business Week*: "Frankly, technology leadership is Apple's only option. It can't outmarket IBM, and unlike IBM it can't get away with 'me-too' technology."

However he conceded: "Apple is really the only company that is significantly advancing personal computer technology today."

Apple hopes to sell 10,000 Lisas in the first year of release, but the size of its market is uncertain because the machine is so novel.

Progress takes a bite out of the board

THERE have been 13 revisions to the Apple II basic design since it was introduced in 1977, but none have been as extensive as the IIe's.

The new main logic board uses a quarter of the integrated circuits employed by the current Apple II Plus. Two large scale integrated circuits replace approximately 80 separate circuits in earlier models and their use, together with the introduction of 64k RAM chips, cut the internal parts count from 110 to 31 integrated circuits. This provides cooler and more reliable operation which Apple says will reduce both manufacturing and service costs.

The IIe retains the original 6502 micro-processor, graphics, colour capabilities and potential for expansion of the II.

As with earlier Apple II's, eight expansion slots are built into the board. One, a special auxiliary connector, will accept either of two 80 column text cards, one of which incorporates an extra 64k RAM.

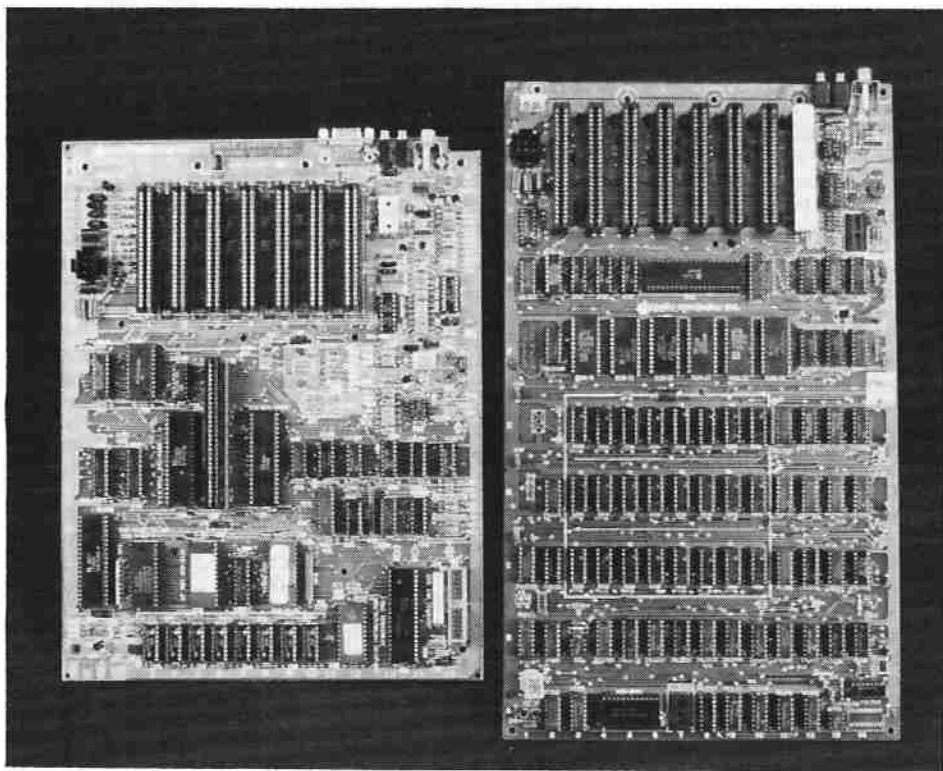
The IIe is designed for international markets and this is reflected in the varying power supplies, logic boards and keyboards available. The German, French and British versions use the International Standards Organisation keyboard layout and have local-language character sets and American characters on the same keys. An easily accessible switch allows the use of either character set at any time.

Other foreign language keyboards being made available include Swedish, Italian, French Canadian, Spanish and Portuguese.

The 64k IIe retails for £845 (the 48k Apple II will be sold for £675 and Apple says that while the enhanced version is intended to succeed the II Plus, the company will continue to support owners of the older systems with service and parts).

The 80 column card with an extra 64k memory costs £180, while the 80 column card on its own costs £80.

A special starter system, comprising a IIe, a disc drive and controller card, a monitor III and stand and an 80 column card costs £1,199.



The simplified motherboard of the Apple IIe (left), compared to the Apple II's

Most Apple II software will run on the IIe

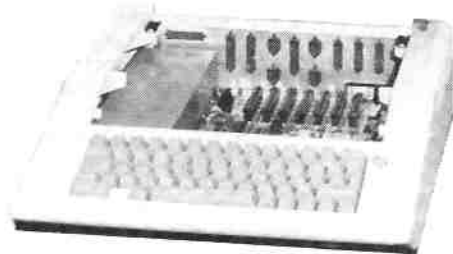
APPLE says that about 95 per cent of existing software for the Apple II will run on the IIe. While not all older programs take advantage of the IIe's enhancements, software producers are issuing new versions of current programs and developing specific applications packages for it.

Apple US has prepared a guide to help the purchaser accommodate Apple II software to the IIe and has also released IIe versions of the Applewriter II word processing package and Quick File II, a versatile information management program.

Microsoft's Multiplan was designed specifically to take advantage of IIe features including extended memory and 80 column options, expanded keyboard and upper and lower case characters, but the package also runs on the II. Fully translated versions of Multiplan are due for release this month for French and German IIes.

Visicalc and all current Visicorp programs for the II work on the IIe and the company is planning to introduce Visicalc Advanced Version and enhanced Visifile programs for the new machine.

Most word processing packages require some modification. Versions already released include SuperText Professional from Muse (who also have Castle Wolfenstein running on the IIe), Screenwriter IIe from Sierra On-Line,



Magic Window IIe from Artsci and Bank Street Writer from Broderbund Software. The latter runs on the II and has a special Apple IIe self-teaching tutorial on the back of the disc.

Broderbund also says its existing entertainment software line including games such as Choplifter, Apple Panic and David's Midnight Magic, are IIe compatible.

The Incredible Jack, an integrated program that incorporates file management, calculation functions and word processing, is compatible and Sirius has produced a IIe version of its learn-to-type game Type Attack.

Also available on the IIe are the PFS trio - File, Report and Graph - the program generator The Last One from D.-J. "A1" Systems and Digitek's range of Rammaster cards and Screenmaster 80 column card. ■

Talk to Prestel with your Apple

Now, with the Owltel communications package, you can use your Apple as an intelligent Prestel or Viewdata terminal. With Owltel, you get all the hardware and software needed for interfacing with Prestel. No external modem is needed, and the system is designed to meet British Telecom approvals.

And Owltel offers other prospects – linking with private or international Viewdata systems, for example – or even forming the heart of an integrated Apple-based communications network.

To boost your Apple's communications capabilities, call Mike Gardner on 0279 723848.



Owl Micro-Communications

The Maltings, Station Road,
Sawbridgeworth, Herts., CM21 9LY.
Telephone: 0279 723848.

COMPLETE BACK-UP FOR THE APPLE PROFILE DRIVE



- COMPLETE PROFILE BACK-UP
- SELECTED FILE BACK-UP
- READ AFTER WRITE CHECK TO ENSURE SECURITY OF DATA
- CAN BE USED AS A TAPE DRIVE FOR ANY OTHER APPLICATIONS

The Shaddow III comes as a complete "PLUG IN AND GO" system and includes complete interface, data cartridges and full operating software.

Based on the well known 3M Data Cartridge Drive to ensure quality and performance, and using Data Cartridges for simplicity and efficiency, the SHADDOW III provides a reliable and secure back-up for the 5 Megabyte Profile Drive.

BE SURE OF YOUR DATA WITH SHADDOW III



**D.N.C.S. Equipment Ltd., West Croft
Industrial Estate, Manchester Old Road,
Middleton, Manchester. M24 4PJ**

"Apple is a registered trademark of Apple Computer, Inc."

Applewriter III is the best of the bunch

EVER since computers came out of the "numbers only" phase when a degree in maths was an essential part of every operator's qualifications and entered the world of lesser humans, word processing has been a key application area.

I am using Applewriter III to write this article. What I am doing at the moment is that I am typing into my Apple III these gems of wisdom, looking at them on the screen and either leaving them alone (rare), moving phrases to new locations in the article (more frequent) or deleting them all together (most of the time). When I have finished the whole thing I will print it out. Isn't that what word processing is all about?

Applewriter III is a very nice word processor. It got my personal award for the most improved software package of 1981 when it replaced Applewriter I which was a very rudimentary word processor for the Apple II. For my level of operation, it balances ease of use with sufficient power. It also will allow me to do more complicated things with it, but of course it will get more complicated to operate as I do so.

Let's take a look at Applewriter III and the available instructions. You use the keyboard to type stuff onto the screen in upper and lower case with a proper shift key. Applewriter III automatically arranges your words on the screen, taking words that don't fit from the end of a line and putting them on the beginning of the next line and so preventing wraparound.

The bit you are typing is held approximately in mid-screen. A white cursor with an arrow in it shows where whatever you type will appear. If the text is too long for the screen the rest will be

held "off stage" either above or below the screen in the Apple III memory.

One of the really big improvements in moving from Applewriter I on the Apple II to Applewriter III is that the screen has 80 columns. With Applewriter I on the Apple II the screen was 40 columns wide so every two lines on the screen equalled one line on the paper — unless there was a

By GEOFF REISS

paragraph or a tab greater than 40 or a centred heading on the third Tuesday in the month.

Unless you bought an 80 column conversion card it was difficult to predict how a letter would look until it was actually printed. Apple III has 80 columns, as do nearly all modern machines. This means that you can arrange your letter on the screen exactly as it will appear on paper so that you can hurl neatly arranged abuse at your creditors with great ease.

Apple III has four cursor control keys —

up, down, left and right — used to move the cursor around the screen. Press one of the keys gently and the cursor will move in the desired direction letter by letter moving up or down a line if necessary and moving the text up and down the screen as required.

If the cursor reaches the foot of the screen and there is more text held in memory, the text will scroll up — some will disappear from the top of the screen and some will appear at the foot. This works in reverse if the cursor reaches the top of the screen. Press harder and the cursor will speed up and move a word at a time. I think that this is easy to remember.

Compare for a moment this simple approach with the CTRL A,S,D,F,E,X,V,T which are Wordstar's cursor movement controls on some machines. The cursor takes up a space on the screen and therefore words to the right of the cursor and on the same line will all move one space to the left when the cursor moves away or when you print out the text. This can be distressing if you are trying to neatly line up a table of figures. Many other systems use a cursor that covers a character and therefore takes up no space.

I am going to describe in some detail how to move phrases from one position to another for two reasons. Firstly moving text is a key utility of word processing. Secondly this will demonstrate how Applewriter III gives you just a few ways of doing most things — ranging from quick and easy to more complex and powerful.

There are three ways of moving text around:

1. Use CTRL and the left arrow to "pick up" characters into a holding area called a buffer. As the cursor moves to the left the characters disappear from the screen. Now release the CTRL key, move the cursor to a new location and use CTRL and right arrow to drop the characters back onto the screen.

2. Point the cursor to the left (CTRL D switches the arrow round) and then type CTRL X. This puts a whole paragraph into the buffer. Move the cursor to its new location, turn the cursor arrow the other

Various "Help" screens can be referred to instantly at any stage.

APPLE WRITER /// COMMAND SUMMARY		PAGE 10A
EMBEDDED PRINT COMMANDS		
COMMAND/KEYSTROKE	ACTION	
CP ?	Accesses PRINT and WPL PROGRAM COMMANDS menu	
CP np	PRINTS present file to screen or printer	
phrase	UNDERLINES all characters between backslashes	
.LM	Sets LEFT margin at character space #	
.RM	Sets RIGHT margin at character space #	
.L# or - #	Adds or subtracts from left margin setting by #	
.R# or - #	Adds or subtracts from right margin setting by #	
.P#	Indents 1st line of paragraph; ## adds to LM setting	
.EP	Printer ignores all text following	
.EP1	Printer prints all text following	

ALL EMBEDDED PRINT COMMANDS MUST BE ON LINES BY THEMSELVES
except UNDERLINE

way, and again type CTRL X, which drops that paragraph back down onto the screen.

3. Save a complete segment of the text onto the disc as a file, and load it back into a new location. Position the cursor at the beginning of the text and type a save command, marking the last word in the bit to be saved and giving the file a name. Then move the cursor to a new location and load the file back into the computer.

Applewriter III always loads files into the text wherever the cursor happens to be. It also prints whatever happens to be in memory at the time of printing. This is different to Wordstar, where you work with the letter, create a file on disc and then print files from the disc.

I have a number of standard phrases and paragraphs stored on disc such as names and addresses and an "endit" paragraph suitable for concluding letters. Typically I will send a letter like this:

- Load a name and address from the disc.
- Place an envelope in the printer and print out the name and address. (The name and address is still on the screen.)
- Type the date, type some pearls of wisdom (e.g. please pay my bill).
- Perhaps load some standard paragraphs (standard threats).
- Load the "endit" file.
- Put some cheap paper in the printer.
- Print the whole thing for filing. (The letter is still on the screen.)
- Correct my spelling mistakes.
- Print it out on proper paper.

I could then change the name and address and reprint the letter – thus sending two very similar letters to different people at the press of a button.

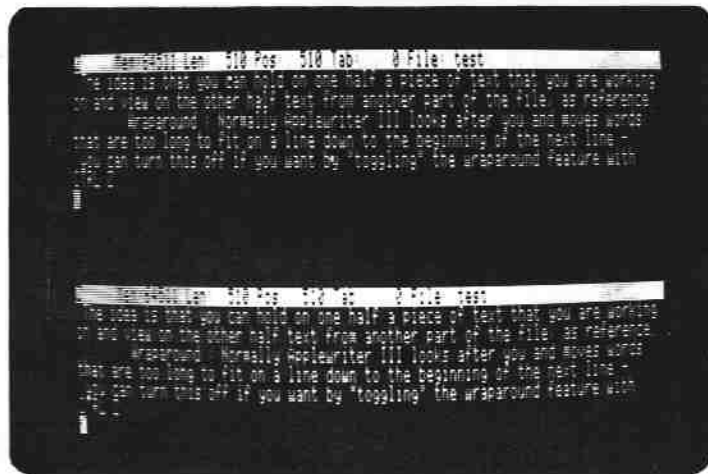
The other commands follow the pattern described above and are usually multi level – from easy to hard, from simple to powerful.

Global editing: CTRL F accesses the find and replace commands. You can find a string, replace a string or replace a part of a string once, many times or wherever it appears. When I am typing I use odd characters (no – not my colleagues) like ** or qq in place of a phrase or expression that I know will come up often. When the letter is nearly ready I will do a global change and automatically change all instances of ** to the required phrase, such as "Applewriter III". This means that I save my finger ends and get each occurrence spelt correctly.

Glossary: CTRL G allows you to create a short list of frequently used phrases and to use it by typing CTRL G and the single key reference of the glossary term you want. This works rather like an automatic global change facility.

Operating commands: CTRL O

Two versions of a text can be worked on using the "split screen" feature



allows you to examine the discs, delete files and do other operating jobs without leaving Applewriter III. I shall not cover this in detail here as it depends on your machine configuration but for example I use Applewriter III with a Profile disc and I use the CTRL O function to tell Applewriter III to use a part of the Profile disc as its storage.

Insert/replace: Normally whenever you type, letters appear wherever the cursor happens to be, pushing any following text out to the right to make room for the new words. This is like Wordstar's INSERT mode. CTRL R means that instead of inserting extra phrases, you Replace the words on the screen.

Load and Save: You can load files onto the screen which add to the text already there, do some more typing work and save the whole lot away onto a disc. You can use real names as file names (threat, plea, FREDSMITH, article). There is nothing special about the files. You can write Business Basic programs on Applewriter III, save them to disc and EXEC back in as software. It is extremely easy to write Basic programs, merge programs, check for variables, edit lines and so on.

Split screen: You can split the screen into two halves and control and edit each half separately. The idea is that you can hold on one half a piece of text that you are working on and view on the other half text from another part of the file, as reference.

Wraparound: Normally Applewriter III looks after you and moves words that are too long to fit on a line down to the beginning of the next line – you can turn this off if you want by "toggling" the wraparound

feature with CTRL Z.

Printing: There are a number of commands that can be embedded in the text as you are writing it, to control printing. For example, you can control left and right margins, paragraph indents and form feeds in the middle of your text. Also you can create a file of print parameters or standards which control the normal printer formats – lines per page, margins, top and bottom headings, page numbering and justification.

This is like Applewriter I except that when you have set up your normal printer details you need only bother about them when you want to change them – and you don't have to approve the printer set up every time you want to print. A backslash is used to start and stop underlining. You can imbed page headings and page numbering although this takes some practice to master.

If you choose to have 80 columns on your typed letters then Applewriter III will allow you to see on the screen almost exactly what will get printed. However I have not yet found a way of controlling the screen display to anything other than 80 columns – say 50 or 100 columns per line.

Getting Apple III to work with a new printer is not a trivial task and should be carried out only by people who either are Apple dealers or who could be if they were not still selling second hand cars. It involves a thing called a printer driver which is a bit of software that goes between an application program like Applewriter III and the printer. Still this is a once only task for your Apple III and printer system.

Tabs: The TAB key works in a manner similar to a typewriter but you can alter either permanently or temporarily the tab position to suit your own kind of work.

Help: These pages can be called to the screen at most stages to remind you of the commands available. I got a development version Applewriter III a long time before the manual was written and I used

There are four Applewriter packages on the market. Applewriter I and II were designed for the more limited features of the Apple II.

Applewriter III and the new Applewriter IIe however capitalise on the improved keyboard design of the III and IIe machines.

it successfully for ages without ever seeing a manual, so the help must be good enough for a dimmy like me to be able to sort out how to drive the package.

CTRL C accesses a feature that allows you to do bulk case switching. You can change word after word from uppercase to lowercase and back again if you wish. This is particularly useful if you gaily go on typing without looking at the screen and having forgotten that you left the shift lock key on. IT IS ALSO USEFUL IF YOU DECIDE THAT CAPITAL LETTERS MIGHT EMPHASISE A POINT IN YOUR TEXT.

Apart from the word processing functions a programming language, WP, is incorporated in the package which can be used to make Applewriter III do more complex jobs. You have to write a program in the Word Processing Language to do mailmerging for example. In case you don't know what mailmerging is, it is the system that causes all that garbage to fall through your postbox inviting you to buy books, take holidays and buy tasteful coin collections featuring vintage cars or the Queen Mother.

It works by having a list of names and addresses and a standard letter. The com-

puter then sends a personalised version of the standard letter to everybody in the list. Some systems are much more powerful than Applewriter III at doing this.

The word processing language (WPL) is as powerful as a simple version of Basic so I could not possibly give justice to it here. It gives Applewriter III the power to perform all sorts of complex operations but is not easy to use.

The manuals are helpful and the tutorial would be especially good for a first time computer user. You can imagine clearly the sweet young thing for whom the tutorial was so obviously written. However it is not easy to find sections in the manual to remind yourself how to do something specific.

I have a few gripes. One is that the cursor when moving up and down the screen does so with the predictability of a spinning top on a trampoline. I frequently have to stop and check to see where it has gone. It will move up and down correctly but it might appear anywhere on the new line. However you can eliminate this irritating feature by switching on the wraparound feature with CTRL.Z. Also the error messages are brief and not very explanatory.

The Apple III keyboard features autorepeat. This does not mean that Apple Incorporated only made one keyboard and it automatically goes on producing copies of itself, thereby saving large sums in production. It means that if you hold down a key for too long it will start to repeat the letter on the screennnnnnnnnnnnnnnnn. This takes some time to get used to, but it can be useful for scoring a line.

On the whole I prefer Applewriter III to everything else I have used to process words. It is easy to use and there is not too much to remember. I use it for writing commercial operating manuals and for programming in Business Basic.

It is not the most powerful system and if you need very sophisticated word-processing then you should look at Wordstar or perhaps at a dedicated word processor. But if you, like me, want the essentials easily available with some power if you can figure how to use it, then Applewriter III is worth considering. 🍏

Geoff Reiss is managing director of Construction Programming Services in Bradford who wrote the Apple Project Manager/Micronet project management software package.

3 WAYS TO GET MORE FROM APPLE.

1 HARDWARE

We have a range of New Products for Apple, a few are listed below.

1. XAD1-low cost Analogue to Digital Converter
4 channels analogue, 0-5V, 12 bit
4 reed relay outputs.
Real Time Clock... All for £99.00
2. XAD2-low cost Analogue to Digital Converter
3 channels analogue, 0-5V, 12 bit
2 channels programmable gain analogue
2 reed relay outputs... All for £99.00
3. XBUB1-Bubble Memory Module for APPLE
Non-volatile
High reliability
Fast
Cold Boot from Apple...
only £495.00
4. XROM1-PROM System for APPLE
Put your BASIC Programs into ROM
Cold Boot from APPLE
I/O facilities on card
5. XCOUNT-6 channel pulse counter/timer
4 counters up to 500kHz
2 up to 4MHz
Interrupt at overflow
Frequency Comparison... £120.00

2 SOFTWARE

We can provide a high degree of programming support for all industrial, technical and professional applications, from machine code through to high level.



3 SYSTEMS

Xcalibur is a systems house specialising in the application of small computers to Industrial and Technical areas. We are able to provide full systems support on Apple and other small computers.



WITHOUT THEM YOU'VE ONLY GOT HALF AN APPLE...

apples grow on

xcalibur

For further information contact.

Xcalibur Computers Ltd.
Spencer House
3 Spencer Parade
Northampton NN1 5AB
Tel: (0604) 21051/4 Telex: 31612

Apple Appeal from Cumana is no windfall!

Cumana Quality Disk Drives sell on sheer performance* for Apple and Apple Compatibles



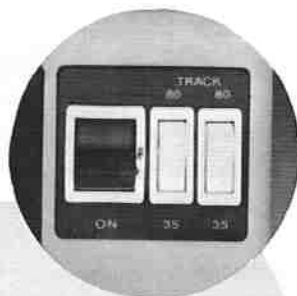
A low cost Apple and Apple look-alike Single Disk Drive . . . a really quiet, dependable unit.

The **AS100** low cost Apple Compatible Disk Drive is silent in operation dependable in performance.

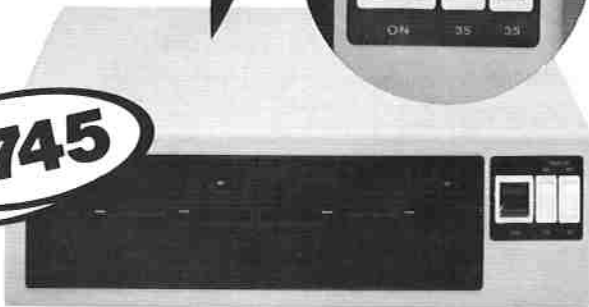
The **AS100** interfaces to Apple II and all Apple II Compatible Micro's. It operates all Apple Software including 1/2 Track Software. Storage Capacity is 143360 bytes at 48 Tracks per inch.

Note the *performance of the **DA 8035** which offers over twice the capacity per drive in the 80 Track Mode. Capacity is 327680 bytes on each drive. Please add VAT to all prices. Delivery at cost will be advised at time of order.

A BIG PLUS!
includes
SWITCH UNIT
for 80 or 35
track use



£745



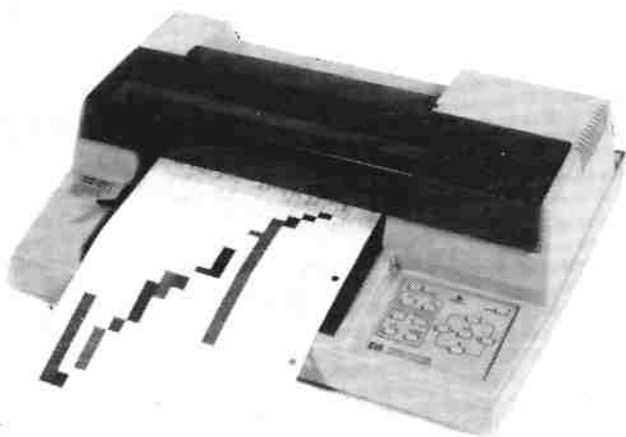
Apple is the Registered Trade mark of Apple Inc.

CUMANA LTD

Unit 1, The Pines Trading Estate, Broad Street,
GUILDFORD, Surrey. GU3 3BH.
Telephone: (0483) 503121. Telex: 859380.

DEALER ENQUIRIES WELCOME. WE OFFER GENEROUS DEALER DISCOUNTS

HP's NEW LOW COST COLOUR PLOTTER



- FAST PLOTTING
- HIGH RESOLUTION
- HIGH QUALITY
- MULTICOLOUR
- A4
- COMMODORE-COMPATIBLE
Special Manual and Disc at £35
- APPLE-COMPATIBLE
- NATION-WIDE SERVICE
- UNDER £1060
- RS 232 AND HP1B
INTERFACES

MAIN DISTRIBUTOR:-

DEALER, O.E.M AND CONTRACT ENQUIRIES WELCOME

THE HOLDENE GROUP

Margaret Smith
Bray House,
Leicester Place,
Leeds, LS2 9EH
Tel:0532 459459.

Gez Mason
48 Great King St,
Edinburgh,
EH3 6QY.
Tel:031-557 4060.

Nigel Jones
Hesketh House,
47 Water Ln, Wilmslow,
Cheshire, SK9 5BB.
Tel:0625 529486.

Please send me further details of 7470A Plotter

Name

Address

Tel. No.:

BACKUP YOUR WINCHESTER ONTO A FLOPPY

with our CP/M*-based utility program CLIP

- As fast as PIP and simpler to use
- Compresses text or data to less than half size
- Large files can span multiple discs
- Most popular CP/M formats available from stock, including Z80-Apple

Price £75.00 + vat, post free in U.K.

PLUS FOUR NEW PRODUCTS TOO!

★ E40 file compression utility for Apple DOS 3.3 £45

CLIP is a development of our E40 file compression utility, with many file handling features too. CLIP (Compressed Library Interchange Program) does all that the name implies. It takes care of most of the chores in building an ordered file library, and can make automatic notes of its own operations. For completeness, it handles uncompressed files too, so that the powerful file-handling capacity is available for every task. Use CLIP with all-floppy systems as well. CLIP your files and clip your costs.

★ JANUS CP/M file transfer £80
★ CLIP for CP/M-86 £95
★ CLIP for PDPII/RTII £250

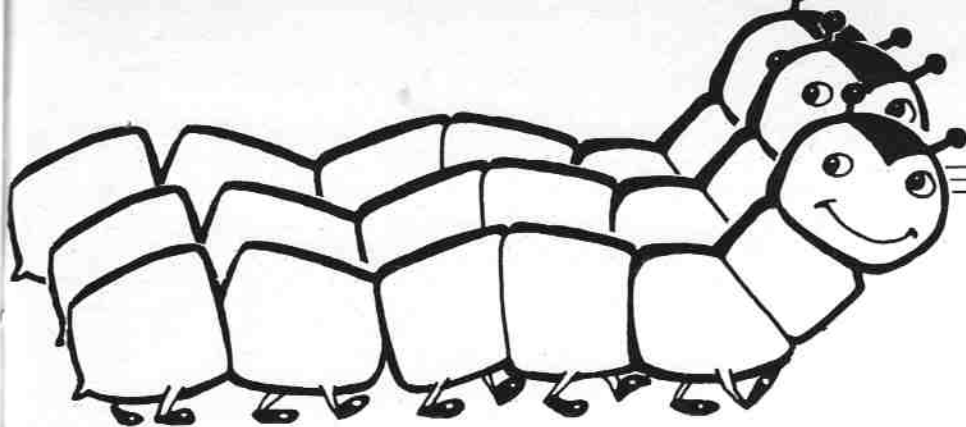


KEELE CODES LTD

University of Keele, Keele, Staffordshire, U.K. Tel: (0782) 629221 Telex: 36113
24-hour telephone service: Access accepted.

Write or call for further details

*CP/M is a trademark of Digital Research



Beat the bugs in Applesoft's error handling

THERE is a bug in Applesoft's error handling routine which causes it to "forget" about FOR . . . NEXT loops and subroutine calls whenever an error occurs. Although this is documented in the Applesoft manual it makes the writing of programs, which are both well-structured and which do their own error handling, very difficult. To take a very simple example the following program:

```
10 HGR : HCOLOR = 7
20 FOR J = 0 TO 279
30 ONERR GOTO 50
40 HPLLOT J, SQR
  ((J - 140) / 140)
50 POKE 216,0 : NEXT J
```

will halt with the error message NEXT WITHOUT FOR after going through the loop once instead of plotting a graph of the square root function on the right hand side of the screen.

The ITT2020 is almost identical to the Apple II except for its high resolution graphics and timing. One difference between its version of Applesoft, Palsoft and Applesoft itself, is that this error handling bug has been fixed. Nevertheless, the Palsoft manual contains the same warning about restarting FOR . . . NEXT loops and subroutines that the Applesoft manual contains, so this correction is relatively little known.

Information about subroutine calls and FOR . . . NEXT loops is placed on the 6502 stack by the Basic interpreter. We can use the existence of Palsoft to compare the state of the stack after an error occurs in Applesoft with what it should be. Luckily it turns out that Applesoft has not thrown away the information about FOR . . . NEXT loops and GOSUB return addresses, but has merely placed "garbage" after them, making them inaccessible.

If we run the program:

```
10 POKE 768,186 : POKE
  769,0:ONERR GOTO 100
20 PRINT 1/0
100 CALL 768
```

the machine will halt in monitor with the X-register containing the stack pointer at

By ANTHONY
WICKSTEAD

the time of entry to this machine code. The stack pointer itself will have been changed by the monitor's break handling routine, so we need the POKES (186 decimal = \$BA is the TSX instruction and 0 is a BRK) to establish a short program to keep a note of it for us. Running this program in Applesoft we find that the stack pointer is EF (we give all subsequent numbers in hexadecimal) so the next stack position available is 1EF and the stack currently occupies 1F0 to 1FF. The data in this range is

```
01F0- 22 D8 D9 DD 00 ED DA 22
01F8- D8 C1 F1 00 01 01 0F 00
```

Running the program under Palsoft the stack pointer is F6 and the same area contains

```
01F0- 95 BA FD F8 FE 84 FF 22
01F8- D8 C1 F1 00 01 01 0F 00
```

The stack in use by Palsoft has the same values as are in the same locations when Applesoft is in use, so replacing the stack pointer by F6 will allow Applesoft to return with the stack in the same state as it would be if Palsoft were in use.

So far this does not help us much as this is only going to be correct if no FOR . . . NEXT loops or subroutine calls are active. To establish a general correction routine we need to know the following facts, (which can be established by examining the stack in a manner similar to that used above):

- (1) Each subroutine call places seven bytes on the stack, the last of which is B0.
- (2) Each FOR . . . NEXT loop places 23 bytes on the stack, the last of which is 81.

(3) Each CALL to a machine code routine places only the return address (22 D8) on the stack.

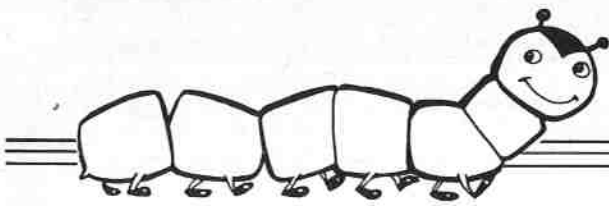
(4) The garbage on the stack is of variable length (depending on the nature of the error) but always starts with the address 22 D8 and does not contain that address anywhere else.

The variable length of the garbage means that we cannot just cut the stack back by a fixed amount. On the other hand the fact that the garbage starts with the same address as the return address for a CALL means that we need not worry about saving a return address for our correction routine.

The routine in Listing 1 simply searches back through the stack until it finds one of the sequences 22 D8 B0 or 22 D8 81 and sets the stack pointer to point at the next location (i.e. one less than the least significant byte of the address of the 22) before its own RTS takes the 22 and D8 off the stack.

If no such pattern is found then no subroutine calls or FOR . . . NEXT loops are active and the stack pointer is set to F6 (1F7 and 1F8 will contain the correct return address whether or not an error has occurred). Although slightly more complex than cutting the stack by a fixed amount, this process means that the correction routine will leave the stack in the correct state if no garbage is there, either because no error has occurred or because the program is running on an ITT2020.

To use this routine, type it into memory using monitor and then BSAVE it (its length is \$26). It is written in position independent code so it can be placed anywhere. At the start of your program BLOAD the routine to a convenient position (the area starting at \$300 (=768 decimal) is safe and is large enough, provided it is not being used for any other purpose). Now make the first statement in any error handling routine be a call to the



```

START   BA      TSX      ;copy stack pointer
FINDKEY BD 00 01 LDA $100,X ;look at byte on stack
        C9 B0      CMP #$B0 ;keyword for GOSUB
        FO 0B      BEQ KEYFND ;if found check for correct return
        ;address after it
        C9 81      CMP #$81 ;keyword for FOR
        FO 07      BEQ KEYFND ;if found check for correct return
        ;address after it
NEXTPOS E8      INX      ;previous stack position is one
        ;address higher
        DO F2      BNE FINDKEY ;look again
        A2 F6      LDX #$F6 ;if no GOSUB or FOR...NEXT loop
        9A      TXS      ;active stack pointer should be F6
        60      RTS      ;for a correct return
KEYFND  BD FF 00 LDA $FF,X  ;if keyword found
        C9 D8      CMP #$D8 ;last two bytes should be D8
        DO F2      BNE NEXTPOS
        BD FE 00 LDA $FE,X
        C9 22      CMP #$22 ;and 22
        DO EB      BNE NEXTPOS
        CA      DEX      ;if so, push pointer past keyword
        CA      DEX      ;D8
        CA      DEX      ;and 22
        9A      TXS      ;before placing in stack pointer
        60      RTS      ;and returning to BASIC

```

Listing 1: Assembler listing of Applefix

```

10 S=768 : REM START OF ERROR HANDLING BUG FIX. CAN BE ANYWHERE.
20 FOR J=0 TO 37:READ A:POKE S+J,A:NEXT J
30 DATA 186,189,0,1,201,176,240,11,201,129,240,7,232,208,242,162,
246,154,96,189,255,0,201,216,208,242,189,254,0,201,34,208,235,
202,202,202,154,96

```

Listing 2: Applesoft program lines to POKE Applefix into memory

first location of this code. Thus if we have saved it on disc under the name Applefix, the program:

```

5 PRINT CHR$(4);"BLOAD
APPLEFIX,A$300"
10 HGR : HCOLOR = 7
20 FOR J = 0 TO 279
30 ONERR GOTO 50
40 HPLOT J, 80 - 80 * SQR
((J - 140) / 140)
50 CALL 768 : POKE
216,0 : NEXT J

```

will produce a graph of the square root function.

As far as I know the routine should work with a cassette-based system as well as the disc-based system on which it was developed. Cassette users, as well as some disc users, will prefer to use Applesoft program lines to POKE the code into memory.

Listing 2 gives such lines to place the routine into memory starting at address decimal 768.

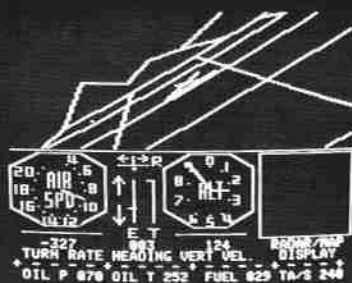
It might be worth mentioning here another bug in Applesoft (and in Palssoft) which affects writing your own error handling routines. After executing an

ONERR GOTO statement, program execution resumes with the next line of the program rather than the next statement.

The solution to this problem is simply to ensure that such a statement is always at the end of a multi-statement line or is in a line of its own.

Finally let me reiterate the need to restore normal error handling (by POKE 216,0) as soon as expected errors have been dealt with. If this were omitted in the first program in this text then it would hang, as the NEXT WITHOUT FOR error causes a jump to line 50, which causes a NEXT WITHOUT FOR error, which causes ... 🍏

Introducing . . . the SubLOGIC line of quality software for your Apple II



A2-FS1

FLIGHT SIMULATOR – Combines superior flight simulation with the best animated 3D graphics available. Practice take-offs and landings, other aerial maneuvers, declare war on the enemy. 16K cassette, 32K disk.

A2-PB1

PINBALL – The ultimate arcade simulation program, an exciting pinball game with the ball and flipper precision to make increased skill pay off. Includes 10 different play modes and 100 user-adjustable modes. 48K disk.



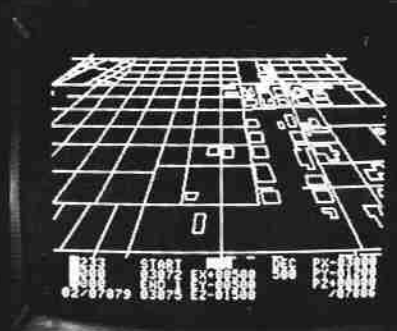
A2-SG1

ESCAPE! – A challenging game of skill and strategy. You've broken out of your cell and now the electronic guards are closing in fast. Can you escape? DOS 3.3 Applesoft 48K disk.



A2-3D1

GRAPHICS FAMILY – State-of-the-art 3D graphics. Define 2D or 3D wire-frame objects in any size and orientation, view them from any perspective. Offers variable field of view, color or hi-res (280 x 192) line generation, object instance nesting, and independent object manipulation. **Graphics Editor** lets you add 3D text to your scene, superimpose 2D text labels in upper- or lower-case, and record your entire presentation for playback. A BASIC interface is included to aid in the development of your own control programs. DOS 3.3 48K 3 disks.



A2-2DA

SATURN NAVIGATOR – A hi-res 3D adventure simulation of a space flight from earth to Saturn. Maneuver your ship into orbit around the ringed planet, rendezvous with the Saturn space station. Available as a complete package or as an adjunct to the A2-3D1 graphics package. Applesoft 48K disk.



subLOGIC

Communications Corp.
713 Edgebrook Drive
Champaign IL 61820 USA
(217) 359-8482
Telex: 206995

See them today at your dealer . . .

or contact SubLOGIC for further information.

Apple is the registered trademark of Apple Computer Inc.

This series by SEAN OVEREND takes the lid off assembly language and machine code programming, by describing the purpose and structure of a sophisticated assembler written in Basic.

Putting the assembler to work

MNEMONIC OPCODE	ADDRESSING MODE (T)				
	2	4	5	7	9
ASL	0A	0E	06	1E	16
LSR	4A	4E	46	5E	56
ROL	2A	2E	26	3E	36
RDR	6A	6E	66	7E	76

See listing 2 of opening article of series (Nov '82) for key to modes (T)

Opcode Operand
 ROL NUM1: ROL is in the third row. If NUM1 is defined as non-zero page, T will be 4 (absolute). Thus machine code opcode is 2E, and 6502 will expect 2 bytes of operand to follow.

Figure 1

HAVING described the structure of the editor-assembler, I will now illustrate the assembly process further, with particular reference to some aspects of the Basic program and some uses of the assembler itself. The illustrations relate to the fields in an assembly language line, starting at the opcode.

On the basis that as much work as possible should be done by the assembler at source code entry time, it is logical to identify the assembly language opcode as soon as it is entered. Remember, there are 50 mnemonic opcodes, together with the pseudo-opcodes.

However, production of the machine code opcode is not possible at this stage, since the addressing mode only becomes apparent on analysis of the as yet unentered assembly language operand.

By arranging that each mnemonic opcode is an entry in the first column of an array containing the available machine

We only handle top quality hardware and software

VISION-80 80 column card for Apple II Computer



Features 9 x 11 dot characters, automatic source switching of graphics, full implementation of Apple's text window as well as HGR, TEXT, HOME, INVERSE, TAB; CP/M and Pascal fully compatible. Works with ZARDAX, SANDY's WP, WORDSTAR, APPLEWRITER II, EASYWRITER, LETTER PERFECT and now FORMAT 80. Communications facility present in hardware on the board. **RRP £195 + VAT**

SCREENMASTER 80

Similar to Vision-80 in software and hardware. 9 x 10 dot characters and extra character set as standard. 3 scrolling speeds, unique on screen editing commands. Can dump screen contents to Printer. Lacks on board communication software. **RRP £185 + VAT**

80-COLUMN VISICALC

Pre-boot utility for all versions of 16 sector Visicalc. Simply the best visicalc 80 column display - Inverse and flashing characters as standard for VISION-80 or SCREENMASTER 80. **RRP £29.50 + VAT**

80/COLUMN VISICALC EXPAND

Pre-boot utility which gives 136K memory with Visicalc and 80 columns when using 128K RAM cards with your VISION-80. **RRP £39 + VAT.**

80-COLUMN APPLEWRITER II

Pre-boot utility from PYNWON SOFTWARE, giving a beautiful display with APPLEWRITER II for the VISION-80 or SCREENMASTER 80 - the resultant display is better than an Apple III running Applewriter. **RRP £18 + VAT**

ROSETTA

DOS/PASCAL utility. This superb Australian program is written in PASCAL and allows movement of any sort of DOS or PASCAL programs in any direction. A library unit called QUASIDOS is included for the user to link to other PASCAL programs so PASCAL can read and write to DOS discs. **RRP £35 + VAT.**

PYNWON SOFTWARE HOLDS WORLD-WIDE DISTRIBUTION RIGHTS TO THE ABOVE SOFTWARE. DEALER AND OVERSEAS DISTRIBUTOR ENQUIRIES INVITED. (EXCEPT ROSETTA)

Distributor in UK:

PYNWON COMPUTER SERVICES

Laurie and Elizabeth Boshell, 17 Watermill Lane,
Edmonton, London N18 1SU. (01) 884 0879

The people who put the extra byte
back into Apple II and VisiCalc



VISION-80 rated no. 1 by Byte, Softalk,
Your Computer and Call A.P.P.L.E.
and highly rated by Windfall.

ASSEMBLER LANGUAGE IV



Figure 3

code opcodes for each mnemonic opcode, then it is possible to ascertain the correct row of the array once the source code opcode is entered.

When the addressing mode is discovered from the form of the assembly language operand, the appropriate machine code opcode can then be identified instantly from the relevant row of the array. (See Figure 1 for a short table of four mnemonic opcodes, together with an example.)

As there are 50 numeric opcodes and 13 addressing modes, one way of storing the appropriate information is in an array of size 13x50. However, as there are only 150 machine code opcodes this would be largely empty. The mnemonic opcodes can be grouped into related categories, each of which uses similar addressing modes. One such group is shown in Figure 1. Similarly, the branching mnemonic opcodes, such as BCC, BCS, BEQ etc, only use one addressing mode, namely "relative" mode.

Figure 2 shows my classification of the mnemonic opcode categories (W), each of which is stored in its own array. Thus six rather smaller arrays, containing only the machine code opcodes for the relevant addressing modes of each category, replace the larger 13x50 array.

Listing 1 gives an example of the initialising Basic coding. This shows the declaration of the category (W=6) array AB\$, the data statements to be read into it, and the initial READ statement. The zero row and column is not used for the sake of readability.

The data itself is not enclosed by quote marks, since it is possible to read "literals" into string variables. Nil data entries are represented by "-", meaning that the addressing mode is not available for that mnemonic opcode. This is something that the syntax software will check at a later stage in the input of the source code line.

The last entry in each data line takes the form "***---**". This information will be displayed temporarily on the

screen if the programmer wishes to see the effect of the particular opcode on the status flags of the 6502. The meaning of the display is shown in Figure 3. The display is obtainable when the COMMENT field of the input source code line is reached.

Once entry of a mnemonic opcode is complete, signified by the RETURN key, it is immediately matched against the opcode category arrays, and against each of the pseudo opcodes.

On finding a match, W is assigned (the pseudo opcodes set W from 7 to 11), and the row of the relevant array is noted and stored in a variable II. Knowledge of W and II make it possible to narrow down precisely what will be required of the assembler as the source code entry progresses.

The controlling Basic coding for the entry of the assembly language opcode is shown in Listing 2.

CV is the current vertical position of the screen cursor, ascertained from earlier use of the statement CV=PEEK(37).

Line 1525 prints out the available commands for the opcode field at the bottom of the screen and then returns the cursor to the appropriate position, ensuring that it is not scrolled off, by resetting the bottom frame of the screen.

OC\$ is the opcode, for which an INPUT command is adequate, provided the "?" is later deleted. The cursor is repositioned by line 1535. A "null" entry will merely ring the bell. ?CHR\$(135) does the same thing as ?CHR\$(7).

"^" sends the input software back to the label entry field coding at line 1330 for the purpose of current line editing.

The "?" generated by the INPUT is deleted by line 1560.

The flag NZ simply reports whether the user has forced a zero page opcode by preceding the usual opcode with Z.

Subroutine 2990 is the array matching coding, referred to above, which returns the values of W and I (quickly stored in II).

Mnemonic Category W	Array	Opcodes	Addressing Mode T
1	JMP\$	JMP	4,13
2	JSR\$	JSR	4
3	IAS\$	BRK...TYA	1
4	RA\$	BCC...BVS	3
5	ACS\$	ASL...ROR	2,4,5,7,9
6	ABS\$	ADC...STY	4,5,6,7,8 11,12,9,10

See listing 2 of opening article of series (Nov '82) for key to modes (T)

Figure 2

● The author's interactive, two pass disc based editor-assembler is too long to publish in the series. It is available to readers by sending an initialised (48k DOS 3.3) disc, together with £15 handling charge to Sean Overend, 22 Highland Road, Amersham, Bucks HP7 9AX.

```

880 DIM AB$(17,11)
890 DATA ADC,6D,65,69,7D,79,61,
    71,75,-,##---##
900 DATA AND,2D,25,29,3D,39,21,
    31,35,-,##---##
910 DATA BIT,2C,24,-,-,-,-,-,
    -,76---##
920 DATA CMP,CD,C5,C9,DD,D9,C1,
    D1,D5,-,##---##
930 DATA CPX,EC,E4,E0,-,-,-,-,
    -,##---##
940 DATA CPY,CC,C4,CD,-,-,-,-,
    -,##---##
950 DATA DEC,CE,C6,-,DE,-,-,-,D
    6,-,##---##
960 DATA EOR,4D,45,49,5D,59,41,
    51,55,-,##---##
970 DATA INC,EE,E6,-,FE,-,-,-,F
    6,-,##---##
980 DATA LDA,AD,A5,A9,BD,B9,A1,
    B1,B5,-,##---##
990 DATA LDX,AE,A6,A2,-,BE,-,-,-,
    -,B6,##---##
1000 DATA LDY,AC,A4,A0,BC,-,-,-,
    ,B4,-,##---##
1010 DATA ORA,OD,05,09,1D,19,01,
    ,11,15,-,##---##
1020 DATA SBC,ED,E5,E9,FD,F9,E1,
    ,F1,F5,-,##---##
1030 DATA STA,BD,B5,-,9D,99,B1,
    ,91,95,-,-----
1040 DATA STX,BE,B6,-,-,-,-,-,
    ,96,-----
1050 DATA STY,BC,B4,-,-,-,-,-,9
    4,-,-----
1060 FOR I = 1 TO 17: FOR J = 1 TO 11
1070 READ AB$(I,J)
1080 NEXT J
1100 NEXT I
    
```

Listing 1

```

1510 REM
    ##### OC$ #####
1520 POKE 36,13: POKE 37,CV - 1
1525 POKE 35,24: HTAB 1: VTAB 23
    : CALL - 868: PRINT *->OPCO
    DE/'?CDE/EQU/=/DW/DFB/ASC+R
    ETURN": VTAB 24: CALL - 868
    : PRINT "'^'+RETURN' JUMPS
    BACK TO LABEL ENTRY": CALL
    - 868: POKE 35,21: POKE 37,
    CV - 1: PRINT CHR$(0): POKE
    36,13
1530 INPUT OC$
1535 POKE 37,CV - 1: PRINT CHR$
    (0): POKE 36,13
1540 IF OC$ = "" THEN PRINT CHR$
    (135): GOTO 1520
1550 IF OC$ = "*" THEN PRINT CHR$
    (135): GOTO 1330
1560 POKE 36,13: PRINT OC$: CALL
    - 868
1570 NZ = ( LEFT$(OC$,1) < > "Z ")
1580 GOSUB 2990:II = I
    
```

Listing II

Apple source for the pig farm facts

THE traditional way of dressing a roast pig is to put an apple in its mouth. Now a Norfolk farm has taken the tradition into the 20th century and is using an Apple to help manage its live pigs.

"We weren't using the Apple to its fullest capacity to start with," farm manager Dave Meadows explained. "That has changed - and now all we are waiting for is a program to muck out the pigs!"

Terry Cracknell and Tony Alston own Poplar Pigs (Banham) Ltd. They run 480 sows there, have a pig fattening enterprise and arable farming interests in central Norfolk and are currently establishing a third sow unit. Terry first saw an Apple at an annual pig fair three years ago - but wasn't convinced as to its usefulness.

It took the combined efforts of Terry's wife Marian, farm manager Dave Meadows and dealers Blythe Computers to change his mind. The 48k Apple, a monitor, a Paper Tiger printer and the Farmplan Pig Management program were bought a year ago.

The latter is essentially a management tool and does not, at present, incorporate financial modelling or accounts, so the Cracknells, with stock control and budgeting in mind, added Visicalc to their system and are now putting their accounts on the machine.

The Apple is set up in the farm office at

Banham and is used mainly by Mrs Cracknell and Dave Meadows.

"Our main use of the system is the Pig Program which I operate, and on whose information Dave relies to run the farms as efficiently as possible on a day-to-day basis, liaising with Terry Cracknell in the forward financial planning and managerial areas," said Mrs Cracknell.

"The program acts as a database, storing information on each individual pig and then using this data to produce various reports. Keying the initial information on to the system took the most time, but updating the records and printing out the weekly management reports, both of which I do, takes hardly any time at all.

"What used to take two days in management reports now only takes three

hours, thus enabling quicker and more up to date and accurate decisions to be taken," she said.

The Pig Unit Management report generates several sub-reports. It produces a profile of the herd, dealing separately with the sows, giving details of farrowing sows, such as date due, previous record of litter, and sows due to be served - whether by artificial insemination or by boar.

The farm has 18 boars and also uses artificial insemination methods. The report allows Dave Meadows to check the fertility of each boar, to see the average number of pigs usually produced in one litter and to check the conception rate of each boar.

He uses the information as a forecast-

REPORT AND LIST

UNIT NAME: POPLAR PIGS BUNNS BA

TODAY'S DATE: 27/01/83

ALL SOWS STATUS: 6 DRY SOW

SOW ID	SOW'S PARITY	TOTAL ALIVE		TOTAL WEANED		AVG. DEAD		DATE WEANED	DAYS SINCE WEANING	SOW'S AVG. LW-SVCE.
		TOTAL DEAD	AVG. ALIVE	AVG. WEANED	AVG. WEANED					
125	1	11	1	7	11.00	1.00	7.00	25/01/83	2	0
122	1	6	1	6	6.00	1.00	6.00	17/12/82	41	0
124	1	12	0	10	12.00	0.00	10.00	19/01/83	8	0
62	2	12	0	17	6.00	0.00	6.50	26/11/82	62	7
67	2	19	0	15	9.50	0.00	7.50	13/01/83	14	23
76	2	20	0	17	10.00	0.00	8.50	25/01/83	2	25
95	2	14	2	17	7.00	1.00	8.50	19/01/83	8	6
84	2	21	2	17	10.50	1.00	8.50	25/01/83	2	18
92	2	11	7	9	5.50	3.50	4.50	25/01/83	2	5
111	2	14	0	8	7.00	0.00	4.00	19/01/83	8	4
5	3	16	2	12	5.33	0.67	4.00	02/01/83	25	9
18	3	24	5	17	8.00	1.67	5.67	25/01/83	2	2

TOTAL SOWS 12

HERD STATISTICS													
UNIT NAME	POPLAR PIGS BUNNS BA												
ROLLING AVERAGES												TODAY'S DATE	27/01/83
TIMING DETAILS	4 WEEKS			13 WEEKS			26 WEEKS			52 WEEKS			
	AVGE.	TARGET	VAR'CE	AVGE.	TARGET	VAR'CE	AVGE.	TARGET	VAR'CE	AVGE.	TARGET	VAR'CE	
AVGE. GESTATION	113.43	0.00	113.43	113.95	0.00	113.95	114.24	0.00	114.24	0.00	0.00	0.00	
AVGE. LACTATION	26.26	0.00	26.26	29.54	0.00	29.54	23.81	0.00	23.81	0.00	0.00	0.00	
AV. WN-1ST SVCE	10.50	0.00	10.50	8.53	0.00	8.53	10.43	0.00	10.43	0.00	0.00	0.00	
AV. WN-EFF. SVCE.	14.52	0.00	14.52	15.53	0.00	15.53	13.17	0.00	13.17	0.00	0.00	0.00	
AV. FARR. INT.	163.45	0.00	163.45	181.64	0.00	181.64	172.82	0.00	172.82	0.00	0.00	0.00	
AV. TO GILT 1ST SV.	61.00	0.00	61.00	41.73	0.00	41.73	981.17	0.00	981.17	0.00	0.00	0.00	
AV. TO GILT EFF. SV.	234.00	0.00	234.00	193.38	0.00	193.38	90.43	0.00	90.43	0.00	0.00	0.00	
AVGE. DAYS 1ST - 2ND	0.00	0.00	0.00	15.75	0.00	15.75	46.82	0.00	46.82	0.00	0.00	0.00	
AVGE. DAYS 2ND - 3RD	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
AVGE. DAYS 3RD - 4TH	0.00	0.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	
AV. SVCE-ABORTION	0.00	0.00	0.00	0.00	0.00	0.00	110.00	0.00	110.00	0.00	0.00	0.00	
AV. SVCE.- CULL	0.00	0.00	0.00	74.50	0.00	74.50	8.00	0.00	8.00	0.00	0.00	0.00	
AV. SVCE.- DEATH	0.00	0.00	0.00	113.00	0.00	113.00	0.00	0.00	0.00	0.00	0.00	0.00	

ing guide, as it details the activities due in any one week - which sows are due to be served, or farrowed, which are due to be sold and which pigs are due to be weaned. This enables him to balance out the rate of farrowings in any one month so as not to overtax the farms facilities (or the boars!) at any time.

The herdsman or farm manager fills in an additional blank column on the side of the printed report as each activity takes place. He would record, for example, the number of piglets in a new litter, how many were born dead and how many survived.

The Farrowings Due report also helps Dave schedule the work load in any period. As it lists the old sows (those who have produced seven or eight litters) which are due to be sold he can plan when to buy in new gilts to take their place. This way the herd is never over or understocked, and the balance of livestock activity is kept as constant as possible.

A herd performance sub-report outlines how much tonnage of feed each sow eats, the sales/deaths of any sow, the number of live births per sow in the year, the number of farrowings each year, the number of weaned pigs and the mortality rate.

The farm manager can set his own format, and in Dave's case he has set up one which contains information on a four week, 26 week and 52 week basis, and has entered target figures for a projected period.

Mrs Cracknell said: "Before we had the Apple Dave would have to spend much of his time tied to the desk compiling this information and keeping it up to date. Now that we are computerised he is free to actually do his job and manage the farm, using the reports as management aids.

"The information they contain is all useful statistical data displayed in a clear and concise manner, which has proved invaluable to us."

Dave Meadows predicts that the farm management team will make even wider use of the Apple in future. "The thing about the Apple is that it can be used for different areas of our work. In the end we might even try controlling the pig housing environment with it."

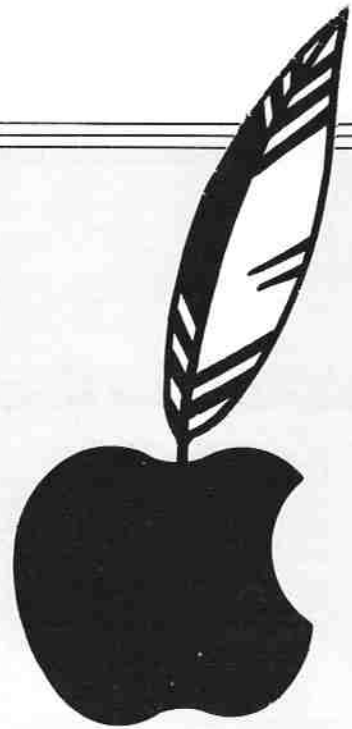
PPLAN E		UNIT NAME POPLAR PIGS BUNNS BA		TODAY'S DATE 27/01/83		PAGE 00:00:41	
MAIN MENU							
1	SETUP SOWS	6	SORT AND LIST				
2	SETUP BOARS	7	INDIVIDUAL REPORTS				
3	DATA ENTRY	8	LITTER ANALYSIS				
4	ACTION LIST	9	UTILITIES				
5	HERD STATISTICS	10	EDITOR PROGRAMS				
ENTER OPTION		0					

The main menu

PPLAN E		UNIT NAME POPLAR PIGS BUNNS BA		TODAY'S DATE 27/01/83		PAGE 00:00:43	
STATUS & PARITY REPORTS							
1.	MAIDEN GILT	4.	SERVED - VE P.D.				
2.	SERVED A/W P.D.	5.	LACTATING SOW				
3.	SERVED + VE P.D.	6.	DRY SOW				

7.	ALL SOWS BY STATUS						
8.	SOWS BY PARITY						
9.	SOWS BY STATUS & PARITY						
10.	SOWS WHICH HAVE LEFT THE HERD						
ENTER..1-10 (0 TO END)		0					

Status options



You'll get help from a club, even if you're only a learner

WRITING instruction and reference manuals for computers and programming languages is extraordinarily difficult to do effectively.

Anyone who has any knowledge of the subject finds it difficult to conceive how little the newcomer knows, and the expert is normally utterly unable to come back down to starter level!

It takes a special sort of computer nut to write good manuals, and there are not many around.

I can assure L. Gazzard that the Applesoft Tutorial and Reference Manual are very good examples of their breed. In comparison with the average IBM manual they are models of clarity and readability.

This doesn't mean they're perfect, though.

To find the capacity of a floppy for instance you have to search the DOS Manual with a toothcomb and even then it's not at all obvious, even when you do find the appropriate page.

Frankly, there is nothing to beat a friendly "expert" on tap to answer your queries. (An expert in this context is anyone who knows more than you!)

This is where your local computer club can be very helpful. In my experience club members are delighted to help a new convert to our hobby, but the new converts don't take advantage of this enthusiasm.

Could it be that we're overpoweringly enthusiastic and scare the tyro away?

Don't give up, Mr Gazzard. You're on the threshold of one of the most fascinating and intellectually stimulating hobbies ever invented. — **Bob Mould, Bracknell, Berks.**

Shape table error

I RECENTLY bought an Apple II computer and have picked up a few back issues of Windfall and tried running some programs.

Your March '82 issue has one on a shape table, which refuses to run and gives an Out of Data error. On going through the listing I find that the values of "M" and "U" have been omitted.

I would be obliged if you could enlighten me on this — **R. Kanga, Singapore.**

● I have typed in the program (p. 23 of March '82 issue) verbatim and it worked perfectly. If you get an "OUT OF DATA" error message then line 60 is missing from your version or you are not finishing your DATA with an E. Try checking a

screen listing very carefully.

The program doesn't need to code for "M" and "U" because of the way in which shape tables work. They merely appear in the DATA statements to act as separators and to make it more intelligible to us.

As a check, try putting in the shape from page 93 of the Applesoft Manual. The DATA statement should take the form
380 DATA D,M,D,M,L,P,L,P,U,M,U,P,U,P,
U,P,R,M,R,P,R,P,R,P,D,M,D,P,D,P,D,
P,L,M,L,P,E

which will encode to give the following:
7000 DATA 1,0,4,0,82,123,123,67,99,
99,99,109,171,118,243,95,88,0

Note how the "commands" of line 380 correspond to the vectors in the middle of page 93 of the manual. — **Max Parrott.**

Out of memory

I AM facing a recurring problem which is resulting in much time and effort spent wandering up blind alleys. I would be extremely grateful if someone could come up with a positive solution.

My problem is this: I am running a program of approximately 40k on a 48k Apple II with a Ramex 128k expansion card residing in slot 0. Backing store is provided by two disc drives. The printer is an Epson MX-100FT.

Under certain circumstances, notably following amendment to a previously input document, OUT OF MEMORY errors are occurring, with no obvious indication as to the cause.

According to the Applesoft II Basic programming manual, page 116, there are nine possible causes.

I have three specific questions relating to the above. They are:

□ Is it possible to identify the exact cause of an OUT OF MEMORY error?

□ How can I establish the line at which the error occurred?

□ Are there any publications which may be of assistance where the Applesoft II manual leaves off?

Finally, while I have found Windfall an immense help in keeping up to date with Apple-related developments, both hardware and software, I feel that there are certain areas relating to program development which would be better understood in a group environment.

If there is anyone in the Newcastle-upon-Tyne area interested in setting up an Apple User Group I should be most interested to hear from them. My telephone number is Jarrow 898436 (daytime). I would also be grateful for any information from existing user groups. — **James Gatens, Jarrow.**

● The OUT OF MEMORY error probably causes more problems than any other, because it can be brought about by the cumulative results of other problems. In other words, in answer to your first specific query, it is often not possible to identify the exact cause.

To the nine causes identified on page 116 of the programming manual must be added GOSUBS without proper exit RETURNS, improper recovery from ONERR GOTO routines and CALLs or interrupts which do not restore the stack.

You can attempt to identify the line at which a problem is being found by using an ONERR GOTO routine as follows:

```
10 ONERR GOTO 2000
   "
   "
Main body of program
   "
   "
2000 IF PEEK (222) < > 77 THEN PRINT
      "THERE IS AN ERROR IN ": GOTO 2020
2010 PRINT "OUT OF MEMORY IN LINE ":
2020 X = PEEK (218) + 256 * PEEK (219)
2030 PRINT X
2040 END
```

I don't know of any publications which

really and truly carry on from the manual with the kind of answers which you seem to require. However, there are plenty of recent books on Applesoft programming. Some of these just contain rehashes of old programs but one or two make good attempts to extend people's skills and knowledge. To mention but two (and thereby probably do an injustice to many others) *Programming the Apple*, by J.L. Campbell and Lance Zimmerman (Mesa Research) and *Apple II Programmer's Handbook*, by Richard Vile, Jr. (Granada) may well help you. — **Max Parrott.**

Non-standard opcodes

I HAVE read and re-read D.M. Miller's note in *Think Tank* (January, p23) and also my reply to A.M. Oldacre's letter in November's *Feedback*. No matter how I try, I cannot put the interpretation on my reply which D.M. Miller appears to have.

I was not referring to any "Synertek assembler" and hence to "Standard 6502 Assembler Opcodes" but to the Synertek programming manual (#6500-50 1976) which is a reprint of the first edition by MOS Technology (1975).

Hence I never suggested that "BLT" or "BGE" are standard to the 6502, in fact I said quite the opposite (bearing in mind the requirements of editorial brevity.)

I happen to agree with D.M. Miller about non-standard assembler op-codes. I never use them myself, especially "BLT" and "BGE", preferring to use "BCC" and "BCS". — **Max Parrott**

Maryland mystery

I ENTERED the three short programs, *Lister*, *Filer* and *Xrefer*, in the *Windfall* October 1982 issue, but they don't work! Have you had reports of any bugs or typing errors in these programs. I would appreciate help on this. — **A. Shirley Weaver, Maryland, USA.**

● Yours is the only query we have had so far — if anyone else has had a problem please let us know.

If you would like to send us a disc containing the listings as you have entered them we will examine them, make suitable amendments and return it to you.

Problem solved

I BOUGHT my Apple II computer in January 1982, but did not know of the existence of *Windfall* until June, when a helpful newsagent, seeing me browsing through the computer magazine shelf, informed me that there was an Apple users' magazine.

Since getting that first copy I have spent hours reading and rereading the magazines — one of the first things I did was to purchase all the back issues. Initially however, some of the articles were incomprehensible to me, a novice in the art.

Over this year my interest and knowledge has grown so that now when I discover a new programming technique I can recall having skimmed a related article in a past magazine. Ah, but which issue and on which page?

A considerable amount of wear and tear on my carefully bound volumes could be averted by the publication of an index, to cover all issues up to the end of this year. Now that would be a real windfall. — **J.C. Warnock, Londonderry.**

Asynchronous definition

ALTHOUGH I find your magazine easily the most informative on many aspects of Apple computing, I am disappointed to see that you are continuing to misinform newcomers to microcomputing with your "ABC of the Apple." I refer to your statement that "Asynchronous Transporting data in and out of the Apple in one direction at a time," and offer the following definitions:

Asynchronous (sometimes called *Start-Stop Protocol*): The transmission of data characters one bit at a time, with a start bit before each character and one or two stop bits after each character.

Half-Duplex or Two Way Alternate: The transmission of data to and from a computer in only one direction at a time.

Full Duplex or Two Way Simultaneous: The transmission of data to and from a computer in both directions at the same time.

I find that computer communication

Send YOUR views to: Feedback, Windfall, Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY.

has had very little airing in computer magazines, even though it is an area in which there are great possibilities for personal use of communicating micro-computers, especially with telephone links to other users. If you wish to include coverage of this area in future issues of *Windfall*, I would be pleased to contribute the occasional article if required. — **P.A. Crumpton, Bromsgrove.**

● Constructive criticism is always welcome — thanks for your comments. With reference to communications, we are compiling information for an article on communications between a variety of machines. The emphasis is on variety, and in order to make the feature universal in its appeal we would like to draw on the first hand experience of readers in getting different machines talking to each other.

We want to cover the transfer of programs and data files from one machine to another (only one of them needs to be an Apple!) and would be happy to hear from anyone about their experiences in this area, with supporting technical details.

Pilot printout

AS a newcomer to using Apple Pilot I have found one problem that I cannot circumvent. I would like to print out the end result of a lesson so that the student has a permanent record of the work done.

So far the only possibility I have found is to try to set up Pascal text files and then print these out but this seems to be far too long-winded and time-consuming. Is there a shorter way known, or is this the only answer? Any advice would be most welcome. — **Peter Kershaw, Wester Hailes Education Centre.**

● The Pilot manual gives very little or no advice about this. Sorry, but we would also like to know if anyone has found a solution!

Bouquet

I HAVE had a subscription to your magazine since its first publication, and I would like to congratulate you on an excellent production.

With the current expansion in the area of home computers, most of the regular monthly magazines have been forced to broaden their subject matter, and this makes a specialist magazine such as yours so important to the Apple owner. — **C.N. Davey, Reading, Berks.**



**The Fulcrum
Centre, Slough,
June 3-5,
1983**

***...the BIG Apple event of the year
- and this year it's bigger than ever!***

Come and meet the experts

Apple '83 will consist of two concurrent events – the prestigious Apple Users' Convention and the companion Apple Users' Exhibition.

At the exhibition, Apple itself and the leading suppliers will be displaying – and demonstrating – all the latest Apple-related hardware and software.

And at the convention some of Britain's top experts in Apple computing will be taking the platform to describe the latest state of the art.

All aspects will be covered – from the development of the Apple as a business tool to the very latest techniques in the use of graphics and the ever-widening horizons of the Apple in industry and education.

Note the date in your diary now. And for more details of the event nearer the time write to: Apple '83, Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY.

Exhibition on two floors

To make this year's exhibition even better, we have responded to standholders' pleas to make it even bigger.

So for Apple '83, the whole of the Thames Hall complex – that's the two upper floors of the Fulcrum Centre – will be devoted to the exhibition.

This has enabled us to offer a more attractive arrangement of stands – one which allows visitors to really circulate.

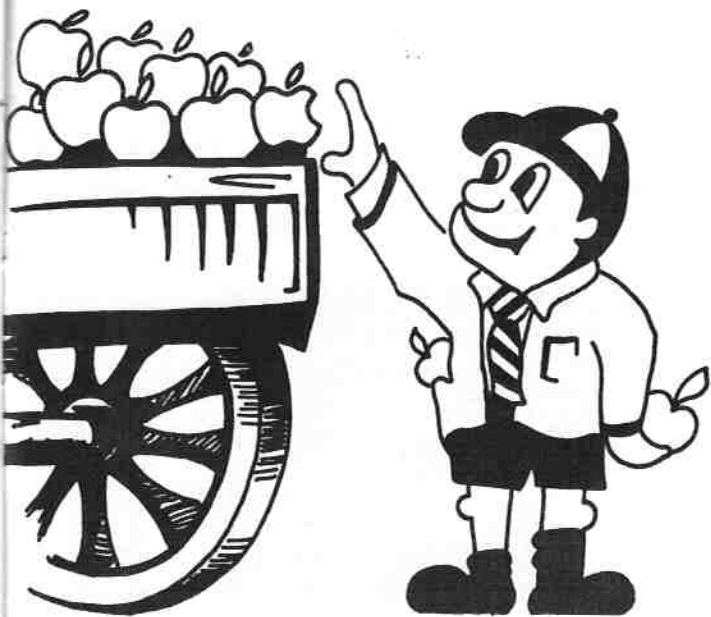
The number of Apple users is growing all the time, and 1983 will see a tremendous amount of publicity given to the new Apple computers.

Add these factors to our success in 1982 and you'll soon see why Apple '83 means more stands, more visitors – and more profits for exhibitors.

Contact John Riding on 061-456 8500 for up to the minute news of stand availability.

Build on success with





Inconsistencies detract from geometry drill

FROM Apple's Special Delivery Software comes Geometry and Measurement, Drill and Practice, a suite of 30 Basic programs on a pair of copy-protected discs, each with a back-up copy, together with a slim instruction manual. Generally I found this package laudable in its aims and presentation but I had niggling doubts about some aspects.

Unlike the geometry of the ancient Greeks, to use this you need a minimum of an Apple II or Apple II Plus with 32k of RAM, a disc drive and controller and a video monitor or television. The discs both booted without problem, presenting firstly an attractive title page and secondly a menu. To give an impression of the contents these primary menus contain on Volume 1:

- 1 Polygon drill
- 2 Length drill
- 3 Easy perimeter/area drill
- 4 Clock drill

And on Volume 2:

- 1 Circle drill
- 2 Angles drill
- 3 Advanced perimeter/area drill
- 4 Volume/area quiz

Using any one of these options loads a fresh menu in from disc which offers more options within the framework of the first. After taking a second option, another program is loaded from disc and the drill or quiz begins.

This all worked very well. My nine-year-old daughter, admittedly used to Apples, had no problems picking out the options she wanted. Other children who came to play with it, some without keyboard experience, very quickly coped. Nobody had need to make recourse to the manual at any time.

Each of the drills had more or less the same format, although there were some slight inconsistencies. After entering the number of

problems (up to 10) you want to try, a hi-res picture is shown and a question asked. You are allowed two attempts at getting it right. If you do, you get a congratulatory message and move to the next problem. If you are wrong a laconic message such as NOPE! TRY AGAIN is given. If you are wrong a second time the correct answer is given and the program moves on to the next question.

After attempting the allotted number of questions a score of those correct at first attempt and second attempt is given. Sometimes, but not always, you are given the number incorrectly answered as well.

One thing which annoyed the children, and me, was the constant name-asking by the program. At the end of each drill a short menu gives the options of restarting "this program", returning to main menu or stopping. By returning to the menu and selecting another program you have to re-enter your name, as you do by restarting "this program". Although the children were tolerant of the constant disc usage as programs were swapped, I was very impatient.

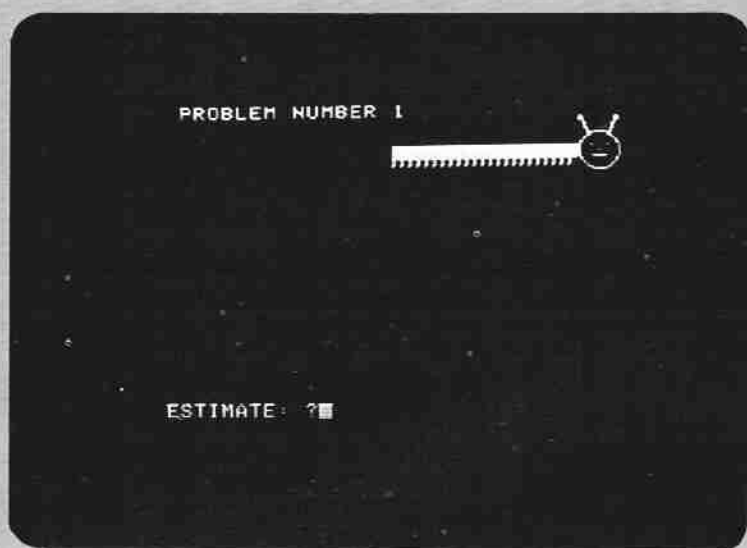
My major criticisms centred around the resolution available on the Apple's hi-res page and subsequent inconsistencies which are disconcerting to the child.

The first inconsistency I noted came in the length drill option. To overcome the variation in screen sizes the program first presents the user with a horizontal line and asks for its length in millimetres to be typed in.

The program then asks whether you want to give answers in millimetres or centimetres as you estimate the lengths of lines or "centipedes" drawn vertically or horizontally. (Incidentally, the program does not say whether to include the head of a

By MAX
PARROTT

Guessing the length of a centipede – is the head included?



centipede in the estimate unless an incorrect answer is given.) You are asked to estimate within 1.5cm or 15mm – however, if you opt for millimetres it gives you the correct length in centimetres when you give a wrong answer.

The program will not let you enter a decimal point in your answer, so only integer answers are accepted although the "true" lengths are given to 0.1cm. Worse than this, on one occasion an answer of 12 produced the response 'EXCELLENT' when the correct length was 10.

Other inconsistencies related more to the Apple's resolution. For example, under angle drill one option is to measure angles from the screen using a protractor. Now my 12in black and white TV screen gives an excellent picture. Circles really do appear as circles, even to the extent that the diameter measured horizontally and vertically is the same to within 0.2cm.

Indeed the circles drawn by these programs were excellently, although rather slowly, drawn – in the clock drill it takes eight seconds to draw the clock each time. However the angles were not what they always claimed to be, a measured 115° was supposed to be 111° and 38° was supposed to be 32°.

The orientation of the lines presented was important because 130° did measure to be 130°. There was a difficulty of course because the lines which appear on the screen are quite coarse and may be jagged, making angle measurement quite hazardous.

This problem with angles spilled over into the triangle drill. One option involves the child typing in, from a list, all the terms which apply to a given, randomly drawn triangle. Right angled triangles looked good when the two sides enclosing the right angle were horizontal and vertical but, when not so drawn, they were definitely obtuse in appearance.

I measured one "right angle" as 101°. So the poor child types in *obtuse* (which it actually is) and is told that it isn't. Allied to this was a similar problem in the quadrilateral identification option. Squares drawn on a corner didn't appear particularly square in shape, although those on an edge looked good.

Because of these high resolution picture orientated problems I "tested" the pictures on other screens. Using a 9in black and white video

monitor I got the same results as on the television. With a Microvitec 14in colour monitor the story was the same but was complicated by the colour fringing (unless the Microvitec's colours had been previously set).

The problems with drawing were not all confined to the hardware. One niggling problem was encountered in the volume/area option. Here a box is drawn, either with dimensions given by the sides or with details drawn in to provide a measure of the sides.

The perspective was often wrong so that a dimension of the z axis (that is going into the screen), although nominally shorter than one on the x or y axis, appeared considerably longer. More serious than this was a problem encountered in the polygon identification drill. Under the option where a child is to type in the name, from a list ranging from triangle to dodecagon, of a given polygon we once were presented with a definite triangle which the program insisted was a quadrilateral.

Presumably the program had calculated one side as either one (maybe two) or possibly no screen dots long. I think this is terrible.

One slight, potential problem involves moving between discs. From the main menu it is not possible to run a program from the other disc. However it is possible to change discs at the end of a program when you are given the option of returning to the main menu by inserting the other disc. I cannot see unsupervised children understanding this too well.

Well, at what level is the package aimed? The manual doesn't help in this respect because it talks of American school grades but Apple says the programs are "for teenagers and above." However I reckon, through observation, children aged 8 to 11. With children of this age I think a lower case display would be an advantage and it's a pity the programs do not take advantage of the fact that some of the questioning is done on the hi-res page which could so easily incorporate lower case.

It also seems to me a lot to ask of a child to measure a line accurately and even more to measure angles from the screen which is probably curved to some extent. I think the package is good for individual use, although it is not suitable for use by young children without supervision.

The package costs £28.00

Fickle finger-proofing educational software

ONE of the complaints voiced by teachers – and others – is that educational software is not “fickle finger-proof”. Not enough care is taken to ensure that only “correct” information can be keyed into a program while it is running, with the unfortunate result that the program is only too easy to crash or produces error messages which are incomprehensible to the user.

How many teachers and their pupils have been put off using computers as teaching aids because of this lack of user friendliness and fickle finger resistance? Rather too many, I suspect. And yet it needn't be so. Fickle finger-proofing is remarkably easy, it just takes a little more time and coding effort, and is so very worthwhile.

In fact, if you have ambitions to sell copies of programs you've written then you'll have to make them fingerproof and user friendly or no self-respecting software vendor will touch them with the proverbial bargepole.

Examples of unfriendly and non-fingerproof chunks of code abound, but two prime examples will show you what I mean:

```
100 INPUT "ANOTHER TRY?";Y#
110 IF Y# = "YES" THEN ....
120 END
```

This probably expects you to answer “YES” or “NO”. However, ANY answer other than “YES” will be taken to mean “NOT YES”, (i.e. “NO”) and will terminate execution of the program. The user wasn't prompted whether to answer “YES” or just “Y” to have another try. However, this shortcoming is very easy to overcome. Merely testing both answers expected is all that's necessary, eg:

```
100 INPUT "ANOTHER TRY (YES/NO)?";Y#
105 IF LEN (Y#) < 1 THEN 100: REM
CHECK FOR 'RETURN' ALONE
110 IF Y# = "YES" THEN ....
120 IF Y# = "NO" THEN 150
130 PRINT "PLEASE ANSWER 'YES' O
R 'NO'"
140 GOTO 100
150 END
```

Even better would be to test only the first character of the reply, then both “YES” and “Y” will be acceptable (or any other reply beginning with “Y” for that matter) eg:

```
100 INPUT "ANOTHER TRY (YES/NO)?";Y#
105 Y# = LEFT# (Y#,1)
```

```
110 IF Y# = "Y" THEN ....
120 IF Y# = "N" THEN 150
130 PRINT "PLEASE ANSWER 'YES' O
R 'NO'"
140 GOTO 100
150 END
```

And how about this:

```
100 INPUT "NEXT GUESS";N
```

expects you to key a number. If you key anything else, you get the message “RE-ENTER” followed by a question mark. Now we programmers know exactly what that means, but think of the frustration experienced by a user who doesn't!

One way round this is always to input into a string variable and then to check whether this string is valid. If the string is to be converted into its numeric equivalent by using VAL, then each character of the string must be a number (i.e. 0 to 9) or either a plus or a minus sign. (We'll ignore the rather specialised exponential form of a number, where 1.234E5 is another way of writing 123400.) eg:

```
100 INPUT "NEXT GUESS";N#
110 FOR J = 1 TO LEN (N#)
120 C# = MID# (N#,1,1)
130 IF C# > "9" AND C# < "0" OR
C# = "+" OR C# = "-" THEN 16
0
140 PRINT N#;" IS NOT A NUMBER"
150 GOTO 100
160 NEXT J
```

The need to press RETURN at the end of each reply is obvious to those of us used to computers, but it's not at all obvious to the uninitiated. So it would be more friendly if it wasn't necessary, eg:

```
100 PRINT "ANOTHER TRY (Y=YES, N
=NO) ?";
110 GET Y#
120 PRINT Y#
130 IF Y# = "Y" THEN ....
140 IF Y# = "N" THEN ....
150 PRINT "PLEASE ANSWER 'YES' O
R 'NO'"
160 GOTO 100
```

GET fetches one character from the keyboard (i.e. the character currently pressed), but does not display it on the screen – it must deliberately be printed. There's no need to press RETURN. However, a problem which arises when using GET is

By R.A.
MOULD

```

10 REM FINGERPROOFING - EXAMPLE
11 REM -----
12 REM
100 HOME
110 CV = 5:CH = 5: VTAB (CV): HTAB
(CH)
120 ST$ = "":C$ = ""
130 OUT$(1) = "TODAY'S DATE : "
140 OUT$(2) = " / / "
150 OUT$ = OUT$(1) + OUT$(2)
160 PRINT OUT$: REM DISPLAY "MEN
U"
170 VTAB (CV): HTAB (CH + LEN (
OUT$(1))): REM PLACE CURSOR
AT FIRST DATA ENTRY POSITION

180 REM LOOP TO RECEIVE DMMYY,S
KIPPING OVER "/"
190 FOR J = 1 TO 8
200 IF J / 3 = 1 OR J / 3 = 2 THEN
HTAB ( PEEK (36) + 2):J = J
+ 1

210 GET C$
220 CV = PEEK (37):CH = PEEK (3
6): REM STORE CURRENT CURSO
R POSITION
230 VTAB 23: HTAB 1: CALL - 868
: REM CLEAR ERROR MESSAGE
240 GOSUB 1000: REM CHECK FOR V
ALID CHARACTER
250 VTAB (CV + 1): HTAB (CH + 1)
: REM RESTORE CURSOR TO DATA
ENTRY POSITION
260 PRINT C$:
270 ST$ = ST$ + C$: REM BUILD ST
RING CHAR BY CHAR
280 IF C$ = "" THEN 210: REM INV
ALID CHAR - TRY AGAIN!
290 NEXT J
300 GOSUB 2000: REM CHECK VALIDI
TY OF DATE
310 IF ST$ ( ) "" THEN 330
320 GOTO 110: REM INVALID DATE -
TRY AGAIN!
330 VTAB 22: HTAB 5: PRINT "O.K.
"
340 END
1000 REM CHECK IF VALID CHARACT
ER
1010 CHARSET$ = "1234567890": REM
LIST OF VALID CHARS. ALL OTH
ERS WILL BE REJECTED.
1020 REM SCAN VALID CHARS,CHECK
ING IF CURRENT CHAR IS ONE O
F THEM.
1030 FOR J9 = 1 TO LEN (CHARSET
$)
1040 IF C$ = MID$ (CHARSET$,J9,
1) THEN 1120
1050 NEXT J9
1060 VTAB 23: HTAB 5: REM PRINT
ERROR MESSAGE
1070 IF C$ = CHR$ (13) THEN C$ =
"RETURN"
1080 IF ASC (C$) > 26 THEN 1100

1090 C$ = ""
1100 PRINT CHR$ (7):C$: " NOT A
NUMBER - TRY AGAIN"
1110 C$ = ""
1120 RETURN
2000 REM DATE VALIDITY CHECK
2010 DAY$ = LEFT$ (ST$,2): REM E
XTRACT DAY
2020 MN$ = MID$ (ST$,3,2): REM E
XTRACT MONTH
2030 YR$ = RIGHT$ (ST$,2): REM
EXTRACT YEAR
2040 DM$ = "312831303130313130313
031": REM DAYS IN EACH MON
TH
2050 IF VAL (DAY$) < 1 THEN 210
0: REM CHECK FOR ZERO DAY
2060 IF VAL (MN$) < 1 THEN 2100
: REM CHECK FOR ZERO MONTH
2070 IF VAL (MN$) > 12 THEN 210
0: REM CHECK FOR MONTH 13 ET
C.
2080 IF VAL (YR$) < 82 OR VAL
(YR$) > 83 THEN 2100: REM CH
ECK FOR 1982 OR 1983
2090 IF DAY$ ( = MID$ (DM$, VAL
(MN$) * 2 - 1,2) THEN 2130: REM
CHECK DAYS DATA IS BELIEVABL
E
2100 VTAB 23: HTAB 5
2110 PRINT CHR$ (7):DAY$ + "/" +
MN$ + "/" + YR$ + " NOT A VA
LID DATE"
2120 ST$ = ""
2130 RETURN

```

that you still need to indicate when you have finished keying in a multi-character reply, unless you know in advance exactly how many characters are required.

To indicate the end of the reply you might as well press RETURN. But using GET instead of INPUT does allow validation checks to be carried out on each character as it is keyed in, and invalid characters ignored. It's even easy to trap such control characters as CTRL-C, CTRL-S and CTRL-D, which otherwise might bring the program to an unscheduled stop. In fact, the only key I've not succeeded in trapping is RESET and even that can be changed to CTRL-RESET on later versions of the Apple. Even backspace and retype are disabled.

The example on this page illustrates how a date can be input, checked that all characters are allowed (in this case, all numeric) and the day and month checked for consistency. Any error is signalled by a beep and a message is displayed at the bottom of the screen.

The only way of crashing this program is by pressing RESET. It's even been tested by the fickle fingers of some fellow members of my local computer club. In this example RETURN is not required since the length of the date (6 characters) is already known.

It is worth noting here that one of the idiosyncracies of Applesoft is that you can position the cursor at row 1, column 1 by using VTAB1 and HTAB1, but PEEK(37) and PEEK(36) will indicate the cursor is at row 0, column 0! The position is physically the same, it's just that the row and column numbering employ different starting points.

A slightly more friendly version would allow the user to key the date in any of a number of acceptable forms such as 01/02/82, 1/2/82, 1.2.82 or 01/02/1982, or any mixture of these. In these cases, since the number of characters keyed in is not predictable (it can vary from 6 to 10), keying must be terminated by pressing some recognised key such as 'RETURN'. The date keyed must then be converted into a standard format for checking credibility. ☘

**R.A. Mould's article will
be concluded next month**



Typewriter emulation for IIe

DESIGNED to provide full typewriter emulation in wordprocessing as well as graphics/text display applications, the Screenmaster 80 gives an 80 column display and other features for Apple II and IIe, on a single card that plugs directly into slot number 3.

The card is "invisible" to the user until access is required and, once installed there is no need to remove it to use the normal Apple, manufacturers Digitek claim.

Buffered address lines and data inputs and outputs are provided for reliability and minimal loading of the Apple bus.

Screenmaster 80 is fully compatible with all Apple languages, Basic, Pascal, CP/M and Fortram and Digitek has software available to run Applewriter II and Visicalc in 80 columns.

Eight operator modes are provided under keyboard control giving efficient program editing, as well as mode switching between the Apple's normal 40 column x 24 lines and the Screenmaster's 80 column x 24 line format.

Split screen mode is also provided, along with six different cursor modes, three scrolling speeds, and a toggle video source command, which allows two independent screen displays - the Apple VDU and a separate, possible remote, monitor to display simultaneously alternative data such as text and graphics.

The card has 256 keyboard characters available - 128 normal character set and 128 alternate character set, including user definable graphics - all based on a 9 x 10 dot matrix. It costs £185. Tel: 0442-63561.

More RAM

A STANDARD size card from Rocon fits into any of the peripheral slots of the Apple II to give it an extra 128k of RAM.

The card, with a manual explaining its use with Assembler, Applesoft and Pascal (CP/M is coming soon) costs £260.

Software includes a modified DOS and FID so that the card can become a high-speed "pseudo-disc".

A Pascal "ATTACH" file to do the same



Digitek's Screenmaster 80

in Pascal, and a program fools the Apple that the card is the "Boot disc".

A "Preboot" disc to run a 143k Visicalc costs £39.

The card is designed as two banks of 256 pages each; each page is 256 bytes. One location in the I/O space is used to pick a bank, another to pick a page. It is then easy to read through a page using the 6502 X or Y registers. Tel: 0235-24206.

Protection from piracy

A UNIVERSAL intelligent security device to prevent software piracy is now available from Tabs to protect other manufacturers' software running on micros with an RS-232 interface. It is a follow-up to the two-year-old Apple-only "dongle" device from Tabs.

Basis for the design is a Z-80 micro-processor communicating with the CPU.

Each device is serially numbered and has three cables which are connected to the CPU and the printer via a standard serial RS-232 interface and to the power supply.

Upon request the device transmits a message to the computer which includes the serial number. This number is checked against its counterpart which is embedded in the protected software.

If this verification is satisfactory the program continues, otherwise a warning is displayed on the screen.

Tabs says there is a unique correspondence between the software supplied and its particular protection device, so software can only be used with the security device sold with the programs.

The device can be activated at any time to check the validity of the system configuration, i.e. security device/serial number/software. It can then be switched off to allow other sections of the program to proceed.

Until switched on by the program the

unit allows the free passage of signals, enabling unsecured programs to run without intervention.

It costs £500 to have the first two devices set up by Tabs and £100 for each subsequent one. Tel: 0264-58933.

Trolley for your Apple

A TROLLEY which will help unclutter an already busy desk without having to get rid of your Apple is available from Gallid.

Selected for the Design Centre in London, it is made to measure with a special "footprint" designed to match up with the base of the monitor and keyboard (Apple II or III) so that it fits securely on the stand at the correct operating height.

It is supplied in an easy-to-build kit form and comes with a five year guarantee. If you change your micro at any time (for a Lisa or Ile?) an up date service allows replacement of the original footprint. Price: £69.50. Tel: 0788-74442.

Network mixer

MIXED Apple-IBM PC networks are possible with the Apple-IBM Connection from Alpha Software of Massachusetts.

The package allows the easy transfer of any file back and forth between the two types of micro and enables an efficient electronic mail communication between the two machines.

It costs \$195. Tel: (0101) 617-536 0470.

Accounting made Easy

THE CP/M-based Easy accounting and business system for the Apple II and Ile has been released by Scorpion Computing.

"The package is written to professional structured standards, is easy to use and to demonstrate, is professionally documented and it works, you can rely on it," claims Scorpion.

"The system even minimises the problems usually associated with operating error and power cuts."

Easy comprises sales and purchase ledgers with a job costing feature, stock control and order entry, and invoicing. Future modules will include a nominal ledger and mail order processing. Tel: 025-126 3706.



The Gallid trolley, designed for all types of personal computers.

Emulating the IBM

SOFTWARE package Owlsync 2780/3780 allows the Apple to emulate an IBM 2780 and 3780 data-transmission terminal.

With it the Apple II can exchange information in batch mode, at high speed and with full error checking and correction, with a wide range of IBM and IBM-compatible mainframes, minis, micros, word processors and terminals, including Honeywell, CMC, Burroughs and DEC types.

Owlsync uses the industry-standard bisync protocol, enabling the Apple II to transmit and receive data at up to 9600 baud.

The Apple can, with Owlsync, be used for collating, correcting and editing local data offline, before transmission to a bureau or mainframe for consolidation and more extensive processing.

Similarly, financial or statistical data can be prepared with an Apple modelling

package and then transferred to a word processor for incorporation in a complete formal report.

The system also makes it possible to transfer mainframe database information to an Apple fitted with a hard disc store, making it available for rapid and economical local access and printout without taking up further line and mainframe time. Centralised company data can be called up and then incorporated into a local financial or production modelling package.

Owlsync costs £545. Tel: 0279-723848.

Speedier Store Manager

ENHANCEMENTS to the point-of-sale inventory control program for the Apple II, The Store Manager, have been announced by High Technology Software of Oklahoma.

The program was first marketed in 1979 and was at one time licenced to Apple which sold it under its brand as The Cashier. Speed and versatility has since been improved.

Reporting, sorting and access to customer records have been speeded up, in some cases by more than 75 per cent, claim the manufacturers. A wider range of printer interface cards are supported, including The Grappler and the PKASO interface cards.

The enhancements are available to licenced users of The Store Manager for \$35. Users of The Cashier may exchange the product for The Store Manager on payment of an exchange fee. The new Store Manager package costs \$250. Tel: (0101) 405-478 2105.

Cat helps identification

IF your Apple is using two or more operating systems the Floppy Cat package will give a quick identification of which discs should be used with which OS.

The program reads directories of discs running under all common operating systems and stores the filenames in a flexible retrieval system.

It quickly determines which operating system a disc is formatted for and displays the directory, complete with the amount of space remaining on disc. The information can either be added to a retrieval system and stored on disc for further processing, or directly printed in either list



*Floppy Cat,
an aid to
identification*

of label format.

Manufacturers DCan claim the system capacity is over 250 discs or 3,000 directory entries.

The retrieval system allows the production of alphabetically ordered lists at a variety of levels; by filename, by filenames containing a chosen set of characters, or a full list of all files. The lists may be limited to files on particular discs or for particular operating systems.

Operating systems currently supported are DOS 3.2 and 3.3, UCSD p-system (Pascal, Fortran etc), Microsoft 13 and 16 sector CP/M, IU Forth 1.7 and Datasoft Lisp.

The package costs £29.95. Tel: 01-928 1931.

Zork trilogy complete

THE final part of the Zork trilogy of adventure games is now available, and manufacturers Infocom say it took five years to develop.

In "Zork III The Dungeon Master" players take the last step down into the heart of the Great Underground Empire. Only by making this journey can they reach the summit of achievement in the Zork trilogy.

The quest hinges upon discovering the secret purpose of the Dungeon Master, who will oversee the player's ultimate triumph – or destruction.

As with Zork I and II, communication is in complete sentences rather than two-

word commands, and in the story time passes only in response to the player's input.

The package costs £25.95 from Pete and Pam. Tel: 0706-227011.

Density no problem

THE FD8 disc drive controller incorporated into the Eicon 2mbyte 8in floppy disc system recognises both single density and double density discs.

It has direct memory access so that data can be entered or read at a rate of 64k a second, and uses a phase-tracking digital separator instead of the more conventional phase-locked loop. This improves its reliability and means that it does not need any of the precision trimming normally associated with double density discs.

Because the controller is digital it requires no adjustment and is immune to thermal drift and ageing problems. Eicon says it has paid particular attention to reducing the power drawn from the Apple. The unit draws only two watts.

In terms of software the three Apple operating systems – DOS 3.3, Pascal and CP/M – can be booted from the system so there is no need to retain a 5¼in drive as a boot volume.

However, 5¼in drives are automatically supported in an adjacent expansion slot and all normal operating system facilities, such as file transfer, are possible across

the two types of drive.

The system doesn't have patch programs resident in the program memory space. It can turn the Apple into a standard CP/M or Pascal machine able to interchange data with all other standard disc format computers.

An optional utility allows the Apple to read, write or directly edit files in either IBM 3740 or DEC RT11 format.

Eicon claims that the system offers all the convenience of a hard disc system but without the back-up problems or the expense. It says a complete duplicate copy of a 1mbyte data disc takes two minutes to achieve.

The FD8 dual drive 2mbyte subsystem costs £1,750 and the single drive 1mbyte version £1,250. Tel: 0954-81825.

Multi-function Keypaddle

RECENTLY released in the United States is the Keypaddle from Tectron.

It looks like a standard Apple paddle except that it incorporates a numeric keypad on the top surface and has firing buttons on both sides of the unit for easy use by any finger of either hand.

The keyboard has 10 numeric, five function and one entry keys. During a game keys may be used as a keyboard or as selector keys.

The paddle also has two LED indicators. Paddle 0 is designated by a red light, and paddle 1 by a blue light.

The Keypaddle connects at the game I/O port for the game paddle function via a small interface card to the encoder board for the keyboard function. Tel: (0101) 619-755 8324.



The Tectron Keypaddle

Apple store

A SIMPLE filing program from Silicon Valley Systems is List Handler which stores and prints lists, labels and letters, turning the Apple into a quick response file cabinet with room-to-grow storage space.

It can hold up to 3,000 records per disc so that 24,000 can be kept on-line at the same time with multiple disc drives.

The package will run on one or two drives, work with any DIF format including Visicalc and DB Master, has unlimited sort fields and can read and write text files.

It stands alone or as a mailmerge interface with Word Handler to make an efficient text editing duo and can also be used with most other Apple word processors. Price: £65 from Pete and Pam Computers. Tel: 0706-227011.

Look out, Littlewoods!

THERE are as many systems for betting as there are punters. The latest is Poolsdata from Selec Software.

It is a compilation of English Football League results, not just a win-lose-draw record. It comprises the actual scores and dates of more than 10,000 matches between 1977 and 1982.

Selec says the package allows sophisticated and statistically significant analysis for football pools predictions.

The database is available for Apples in DOS, Pascal or CP/M formats. It is primarily intended for analysis by users' own programs but the package comes with extensive documentation including starter analysis programs. It costs £15. Tel: 061-428 7425.

Cold booting

IN industrial environments or where a fixed purpose application exists for an Apple, increased reliability and lower cost can be achieved by replacing conventional floppy disc storage with ROM.

The XROM1 System from Xcalibur provides a suite of software and hardware facilities to allow the user to produce EPROMs from both Basic and machine code and then to run the programs from cold boot at switch on.

The suite incorporates a 32k memory



MIOS from Vlasak is a dual floppy disc drive which is compatible with the Apple II (DOS 3.3 and Pascal) and with the Apple III. It is a 5in module which holds 1.25mbyte (formatted) and costs £899. Tel: 0494-448633.

board with eight 4k sockets which will accept any combination of EPROMs, ROMs or RAMs that are pin-compatible with the standard 2716 (2k) and 2532 (4k) 5V EPROMs.

Plus a Basic manager ROM which loads Basic programs to the Apple RAM from the 32k memory board and also conditions Applesoft Basic in memory to be programmed onto EPROMs.

Also a cold boot ROM and an EPROM programmer board for programming 2716, 2532 and any pin-compatible 5V EPROMs.

Once programmed, the EPROMs can be inserted in the 32k memory board for program storage. When not being used for programming the board may be used for input/output to Apple as it has inbuilt a 6522 versatile interface adapter, parallel I/O, timers and shift register on chip.

The complete kit costs £170, and for subsequent applications the individual components may be bought separately. Tel: 0604-21051.

Four in one from USA

A FOUR-in-one package for the Apple II which is being sold in the US on a money-back basis if not satisfied is The Incredible Jack - an integrated personal filer, calc analysis, word processing and mailing list management package.

It is being marketed for \$129 by Business Solutions, which claim that it does "most of what you bought your Apple for."

The package lets users create letters and reports with embedded calculations which are worked out automatically as the document is being prepared.

Word processing features include insert, delete, copy and automatic word wrap and right-justified margins.

A personal filer function allows the creation of up to 1,000 user definable records, and the calc features enable users to build decision making logic into their files, using a powerful IF THEN ELSE function.

The package requires an Apple II with a

16k memory card and two disc drives. Tel: (0101) 516-269 1120.

Interfaces for Apple III

A RANGE of interface cards for the Apple III has been launched by U-Microcomputers. Each includes a full SOS driver allowing it to be used easily with Basic, Pascal or any other of the other SOS languages from Apple.

The cards include an eight channel 12 bit A/D converter with parallel I/O and timer (£245); a Binary Coded Decimal interface capable of acquiring up to eight decimal digits; a digital I/O card with time capabilities (£145); a single port serial interface (£125) and an eight port serial interface (£145). The latter two extend communications applications to allow, for example, the simultaneous connection of printer and modem. Tel: 0925-54117.

Economy in ledger packs

AN economy range of ledger packages has been introduced by Jarman Systems for smaller concerns which do not need the management information reporting facilities of the company's standard accounting suite. They cover sales ledger (J10), purchase ledger, on balance forward basis (J20) and nominal ledger (J30) and cost £350 each.

A spokesman said: "These packages are for the many small companies who want day-to-day accounting tasks performed, but who are not immediately ready to put these under the microscope for analytical and forward planning purposes."

Each of the economy ledger packages has alternative two-drive, three-drive or hard disc storage facilities, and each can be upgraded to the standard Jarman accounting suite for £200. Tel: 0442-826841.

C/WP BITES £200 OFF APPLE II E

Meet the Apple II E, the brand new much improved version of the tried and trusted Apple II. The "E" has (almost) everything you ever wished the Apple had. The memory has been increased to 64k with an optional expansion to 128k. The keyboard has sprouted extra keys, making 63 in all, with proper shift keys and four arrow keys to drive the cursor round the screen. The screen boasts capitals and lower case letters (40 to a line—or 80 with a low cost optional add-on). And for brilliant colour the "E" has a built-in PAL encoder—just add a modulator and it plugs straight into your colour television set.

The 80 column card is only £70 (no, it won't work with the Apple II Europlus). For £150, you can buy another card which provides both 80 columns and an extra 64k of memory which switches in and out as required.

Apple II has joined the big league.

But there's one thing Apple Computer has not changed. The "E" still runs all (or almost all) Apple II's enormous library of software without reprogramming or adaptation. Alas, the "E" costs more than its predecessor. But C/WP has had its way and is cutting £200 off the recommended retail price. The "E" is yours for a modest £645 plus VAT.

Or if you prefer it, we can still sell you an old-fashioned Apple II Europlus at the old-fashioned price—£499 plus VAT.



Prices do not include VAT.		RRP	C/WP Price
Apple II E		£845	£645
80 column card		£80	£70
80 column card + 64k		£180	£150
Monitor and stand		£170	£130
Disc drive with controller		£345	£270
Disc drive without controller		£245	£220
C/WP Contour	3 Mb	—	£995
	6 Mb	—	£1195
	12 Mb	—	£1495
	21 Mb	—	£1995
Multiplan		£185	£175

C/WP

**OUR PRICES STILL
TURN OTHERS GREEN**

108 Rochester Row,
London SW1.
Telephone: 01-828 9000

CLIP the cost of a good memory

THE limiting factor with all computers is the amount of memory available to them. This is true whether you are using a single board four bit micro or a super fast Cray mainframe machine. If there isn't enough memory, the job can't be done.

At the first mention of memory, most people think of the advertised memory inside the computer, those RAM and ROM chips that appear in such profusion on the motherboard, or on plug-in cards. But there is another kind used with all computers, except the very basic - non volatile mass storage memory.

This mass storage can take almost any form, depending on the use to which the computer is being put. It includes punched cards and tape, magnetic tape, floppy and hard discs, and bubble memories. In fact anything at all can be used, as long as the information is there when next required and the computer can read it.

Mass storage costs money. The more you've got, the more it costs. Not only that, but the more you've got on line to the computer at any instant, the more it costs. And speedier storage pushes up the price again.

Unfortunately this cost cannot easily be averted, as the quicker the mass storage your computer has on line the more efficiently the machine can operate.

Trying to sort 1,000 client records on magnetic tape would take about 100 times as long as on a comparable magnetic disc, all other things being equal. That can turn a sort from a few minutes into hours.

Once a system of mass storage has been bought it is very difficult to increase its size without further major investment in hardware. If you have opted for magnetic tape as the primary mass storage you can't get a floppy disc to work on the tape machine, no matter how hard you try.

If, like the vast majority of Apple users, you have opted for magnetic discs, there is now a software product, from Keele Codes at the University of Keele, that goes a long way to doubling the size of your discs, be they floppy or hard, without any extra hardware and for minimal cost.

This software is called CLIP, short for Compressed Library Interchange Program (*the Americans get everywhere don't they?*) and it enables archive files to be compressed to about half their normal size. Sounds simple doesn't it? I found the concept as easy to type as the suite of programs is to use.

In fact, the operation of the software is much more complicated than that, even though the procedure is transparent to the operator.

Each alphanumeric character used by the computer is encoded and represented to the Apple as an eight bit code. Your Apple uses these eight bit words to operate. When it stores them, it uses one memory location for each code. When it stores these words on disc, they are

By T.N. THOMPSON

expanded further, and take up even more space.

These character codes can in fact be further encoded so that each word is reduced to about $2\frac{1}{2}$ bits. When they are then packed together, you get just over three characters to a single memory location instead of one - a major saving.

The drawback is that the more you reduce the word size, the longer it takes the computer to encode the data. So that reducing the code to the theoretical maximum would take an enormous amount of computer time to achieve. What's the point of quadrupling the size of your disc storage if you can't use the computer all day?

The clever thing that the University of Keele has done with CLIP is to balance the amount of time taken by the computer to encode the data with the time saved by sending a shorter version to and from disc, computing time being about 1,000 times faster than disc access time.

This method encodes the data to about 40-50 per cent of normal size, thereby using half the disc space, or effectively doubling the size of the disc.

The code developed has been given the title E40, and is guaranteed to remain constant by Keele Codes. This means that while new utilities may be developed to operate on E40 code, the basic code will remain constant; and when your archives are coded into E40 by this suite of programs they will not become redundant when a new package comes out.

The version of CLIP I used was for CP/M, and the remainder of this article will be specific to this environment and its Z80 microprocessor. There is a version for

the 6502 micro used by the Apple's motherboard, so you don't need the Z80 card for it to work. The end result will be the same regardless of which is used.

The suite has a number of options that allow different things to happen as the files are compressed and expanded.

When compressing Wordstar files there is an option that enables the "soft" characters to be compressed as such, and they are restored when the file is expanded again.

Another option provides an efficient means of archiving files. By selecting this option inside a SUBMIT file, CLIP will automatically mark each file that has already been compressed so that the process won't be repeated on it. Only those files that have been altered will be compressed on future runs.

One of the features of the system is that if you run out of floppy disc space while compressing files it will prompt for a fresh disc to be inserted in the drive and put the remainder of the compressed files onto the new disc without the usual BDOS ERROR message.

Although I have concentrated on floppy discs, hard disc archiving to floppy, and hard disc to hard disc is just as easy. An obvious advantage for those archiving hard discs is its ability to split very large hard disc files onto multiple floppies.

One of the programs in the suite enables E40 files to be transmitted along a serial line or modem. The cost of using the modem can be reduced beyond the reduction in code because of the way the file is encoded.

The program and code have an excellent error checking feature. Normally when sending data on a serial line, if a single bit is corrupted or lost then all the following data will be corrupted.

With this program, and the error detection inherent in the way that E40 files are coded, only two or three characters will be lost before the code corrects itself.

Taking a standard system as an Apple and two disc drives, the cost of doubling the amount of data that can be stored by conventional means comes to about £550. CLIP effectively does the same thing for only £75 - and reduces the expense of feeding the disc drives by getting twice as much on each floppy. If you have a hard disc as well, its ease of archiving just enhances its appeal.

All in all, CLIP is an excellent product, literally worth its weight in gold. 🍌

GOODBYE TO FLOPPIES C/WP INTRODUCES A HARD DISC FOR £995.



C/WP have done it again. We proudly announce the C/WP CONTOUR, a range of British-made high technology 5-inch Winchester discs at prices starting below £1000.

Suddenly your micro-computer has come of age. One little box, not much larger than a floppy disc drive, stores up to 21 million characters. That size costs £1995 and stores the equivalent of more than 160 floppy discs, or 35 full-length books. And in a maximum of around a fifth of a second the C/WP CONTOUR finds any piece of information your computer asks for.

C/WP CONTOUR is available now for your APPLE II, IBM Personal, Sirius, Superbrain and many other CP/M and S100 machines. On APPLE the C/WP CONTOUR supports DOS 3.3, Pascal and CP/M operating systems.

Write or telephone for full details of this great price breakthrough. Now you can afford the luxury of a Winchester.

C/WP CONTOUR PRICE LIST

3Mb (formatted)	£995
6Mb (formatted)	£1195
12Mb (formatted)	£1595
21Mb (formatted)	£1995
Tape streamer back-up (21Mb 4min)	£1495

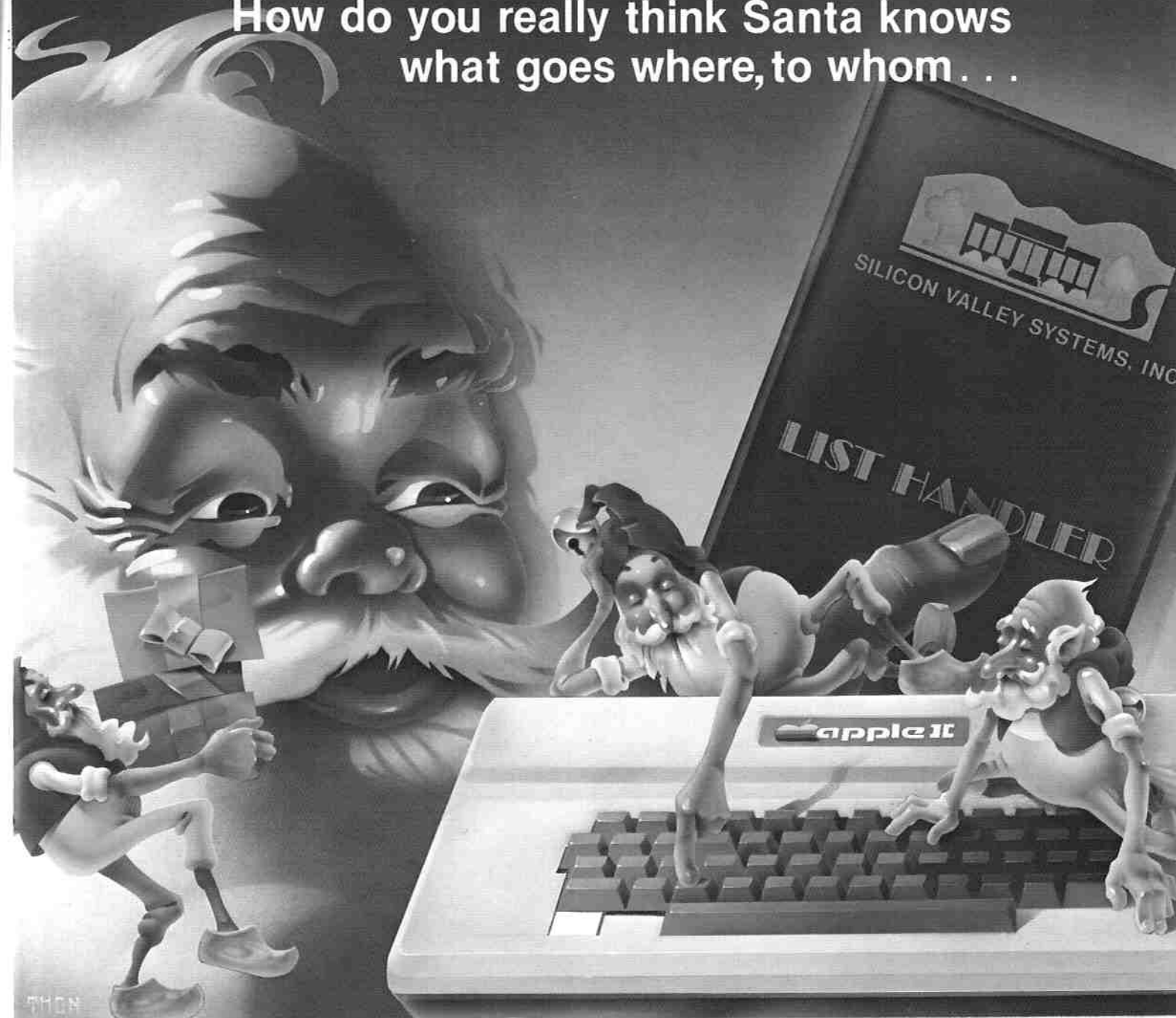
All prices exclude VAT

C/WP FOR BIG VALUE IN HARD DISCS

C/WP

C/WP Computers
108 Rochester Row, London SW1 1JP
Telephone 01-828 9000

How do you really think Santa knows
what goes where, to whom...



LIST HANDLER

The List Handler is, **without doubt**, much more than a mailmerge program.

Presto! List Handler turns your Apple® into a quick response file cabinet with room to grow storage space. **With List Handler you can hold up to 3000 records per drive so that 24000 can be kept on-line at the same time with multiple disk drives.**

These records can be addresses if you choose, but here's where the versatility and flexibility come in.

Put what you like on those records!

- inventory
- product lists
- form letters
- short newsletters
- mailing lists
- personnel directories
- invoices
- labels

The list is endless.

The List Handler will run on one or more drives, read and write DIF format and has unlimited sort fields.

List Handler can stand alone or as an interface with your Word Handler (or most other word processors) for the

most efficient word processing duo around.

The List Handler will surprise you, but the first surprise will be the price! At 89.95 the List Handler is the best and the only buy of its type around.

The enormity of Santa's job may have you skeptical of Santa's existence—but when you see the List Handler you might just believe in Santa again! See your Apple dealer for the List Handler.

Apple is a registered trademark
of APPLE COMPUTER, INC.

Simply the best...

Silicon Valley Systems

U.K. Distributor—Pete and Pam Computers

Head Office: New Hall Hey Road, Rossendale, Lancs. BB4 6JG Phone: (0706) 227011 Tele: 635740 Petpam G
London Office: 103-5 Blegborough Road, London, SW16 6DL Phones: 01-769 1022/3/4 & 01-677 2502



**“When I need words . . .
I use
The WORD HANDLER”**

It speaks for itself!

The Word Handler is the easiest word processor around . . . also the most sophisticated. The Word Handler is a single-key command word processing program that runs without hardware modifications to your Apple®, or Apple compatible computer.

Words can't describe how much I love the Word Handler but let me tell you the Word Handler gives me unlimited tabs, incremental spacing, vertical spacing and a two character format. My Word Handler comes with a simple-to-understand manual, complete customer service and free, yes, free upgrades.

The Word Handler's many print features are displayed on the screen so I can see at a glance exactly what will be printed. For example: underlining, **bold**, ^{super script}, UPPER / lower case, even / normal justification.

See your Apple, or Apple compatible computer dealer for sophisticated simplicity . . . The Word Handler.

Let it speak for you.

Apple is a registered trademark, of APPLE COMPUTER, INC.

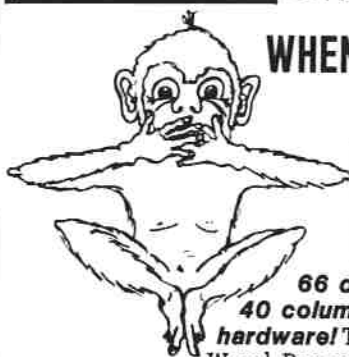
**Simply the best . . .
Silicon Valley Systems**

U.K. Distributor—Pete and Pam Computers

Head Office: New Hall Hey Road, Rossendale, Lancs. BB4 6JG Phone: (0706) 227011 Telex: 635740 Petpam G
London Office: 103-5 Blegborough Road, London, SW16 6DL Phones: 01-769 1022/3/4 & 01-877 2502



PROGRAMS WITH A DIFFERENCE



WHEN I NEED WORDS
I USE THE

WORD HANDLER

66 columns from a standard 40 column Apple without any extra hardware! This coupled with full Word Processing facilities makes this the most powerful package available at such an economical price. **Retail £109** (£125.35 inc.VAT)

WHEN I NEED TO SEE & KEEP
RECORDS I USE MY

LIST HANDLER

Up to 3000 records on ONE standard Apple II disk! You completely design your own list formats and can have up to 255 fields in each record. You can have dozens of separate lists storing all manner of information from prices to literary quotations. Full merging facilities together with a report format and form-letter capability.



**Retail
£65**
(£74.75
inc.VAT)



AND WHEN I NEED TO LEARN
I USE MY **E-Z Learner**

E-Z LEARNER will store your own notes and then **ASK YOU QUESTIONS** until you've learned them thoroughly! This has to be the most positive way of memorizing large amounts of data no matter what the subject and no matter whether your studying for City & Guilds or your doctorate.

£25 (£28.75 inc.VAT)



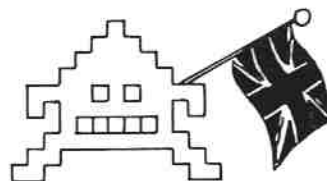
10 Eastfield Parade
Forbes Avenue, Potters Bar
Herts. EN6 5ND
Potters Bar (0707) 44808

**Potters Bar
computers**

NAME	Qty	Item	Cost	P&P
ADDRESS				
Postcode				
Telephone				
MAKE				
MODEL				
ACCESS BAR CARD				
Credit/POrder/Cash/Carb No. Inv				

NO STAMP REQUIRED!
FREEPOST 2003,
Potters Bar, Herts.
EN6 2BR

Callers very welcome.
Our retail shop is open from
10 till 6 (Closed Wednesday)



Can YOU write a game for the Apple?

Why should all the Apple games come from the USA? We know there is gamewriting talent in Britain – and we are determined to find it.

If you've ever written a games routine and would like to discuss the possibility of developing your skill in this rewarding field contact the Windfall office NOW.

**Ring David Creasey
on 061-456 8383**

COPPICE SOFTWARE



Software for the serious
APPLE user.

MSI Software:

- GALE** – Global Applesoft Line Editor – **£27.95**
- Directory Master** – Disc/Catalog utility – **£20.95**
- Ampersoft** – Increase the power of Applesoft using the ampersand command set. Includes Print using, Sort, matrix handling and more – **£34.95**
- VIP-II** – Print out formatted reports of your spreadsheet data – **£20.95**

All software requires 1 disc drive and 48K of RAM with DOS 3.3 (Ampersoft also requires memory expansion card). Documentation provided with disc.

Please add 15% VAT + £1.00 postage and packing.

NIBBLE Magazine

1983 orders for this most useful of magazines for the APPLE user still being taken. 8 issues per year (the first one in late Feb) for £20.80 inclusive.

**Coppice Software, 7 March Street, Kirton in
Lindsey, Gainsborough, Lincs. DN21 4PH.**
Telephone: (0652 648550)


```
10 GOTO 990
19 REM
```

CIRCLE DRAWING

```
20 X1 = R:Y1 = 0:FL = 0
30 FOR I = 1 TO 64:T = X1 * C -
  Y1 * S:Y1 = Y1 * C + X1 * S:
  X1 = T
40 SX = X1 + X:SY = Y1 + Y
50 IF FL THEN 70
60 H PLOT SX,SY:FL = 1
70 H PLOT TO SX,SY
80 NEXT I: RETURN
89 REM
```

SECTOR FILLING

```
90 CD = COS (.01):SD = SIN (.01
  ): FOR TH = PI / 20 + ST TO
  2 * PI STEP PI / 5:C = COS
  (TH):S = SIN (TH): FOR TG =
  TH TO TH + PI / 10.5 STEP .0
  1
100 T = C * CD - S * SD:S = S * C
  D + C * SD:C = T
110 H PLOT R1 * C + X,R1 * S + Y TO
  R * C + X,R * S + Y: H PLOT R
  2 * C + X,R2 * S + Y TO R0 *
  C + X,R0 * S + Y: NEXT I: POKE
  1024,65 + F:F = F + 1: NEXT
  I: RETURN
119 REM
```

SET UP INITIAL CONDITIONS

```
120 X = 140:Y = 96:Z = 0:C = COS
  (.1):S = SIN (.1):PI = 3.14
  16:B = - 16384
129 REM
```

DRAW THE CIRCLES

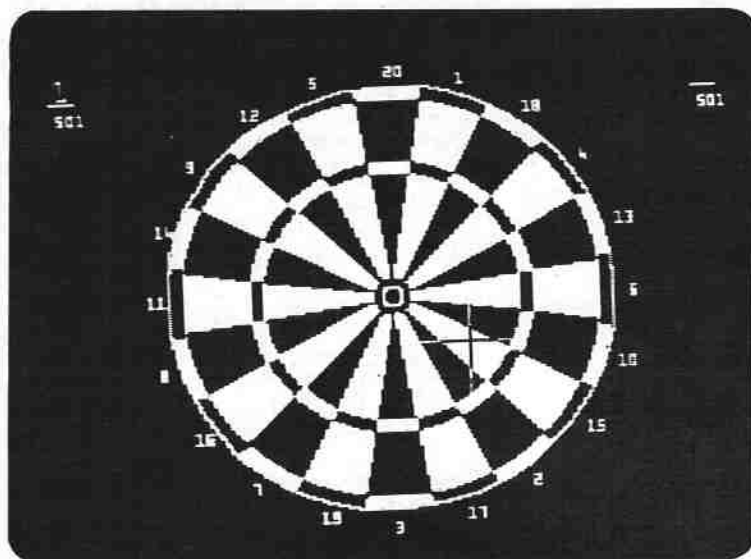
```
130 R = 4: GOSUB 20:R = 86: GOSUB
  20
139 REM
```

STRAIGHT LINES FOR MARKS

```
140 ST = 0: H PLOT 10,13 TO 20,13:
  H PLOT 260,13 TO 270,13
149 REM
```

FILL ALTERNATE SECTORS

```
150 R = 54:R1 = 50:R2 = 85:R0 = 8
```



Player 1 would score 15 if he "threw his dart" with the cross hair sights in the above position.

```
1: GOSUB 90
160 ST = PI / 10:R1 = 8:R = 49:R2
  = 55:R0 = 80: GOSUB 90
170 DIM S(20),P(3),X(2),Y(3),T(3
  ),SC(2,1),NAME$(2): POKE 232
  ,0: POKE 233,3: ROT= 0: SCALE=
  1
180 Y(1) = 10:Y(2) = 260:Y(3) = 1
  60:Y(2) = 166:Y(3) = 172
189 REM
```

INITIAL SCORES

```
190 FOR I = 1 TO 2: FOR J = 0 TO
  1:SC(I,J) = 501: NEXT I: NEXT
  J
199 REM
```

SCORES & SHAPE-TABLE

```
200 FOR I = 0 TO 20: READ S(I): NEXT
  I
210 FOR I = 768 TO 875: READ J: POKE
  I,J: NEXT
  I
219 REM
```

DRAW SCORES AROUND EDGE

```
220 FOR I = 1 TO 20:A = PI * I /
  10:X = 140 + 93 * COS (A):Y
  = 96 + 93 * SIN (A):X$ = STR$(
  S(I))
230 FOR J = 1 TO LEN (X$):P = VAL
  ( MID$( X$,J,1)): DRAW P + 1
```

```
AT X,Y:Y = X + 4: NEXT I: NEXT
  J: RETURN
239 REM
MOVE CROSS HAIRS
240 POKE - 16368,0: ROT= 1:X =
  140:Y = 96
250 D = 1: IF RND (X) < .5 THEN
  D = - 1
260 X = X + D * RND (X) * 3: IF
  X < 45 THEN X = 45
270 Y = Y + D * RND (X) * 3: IF
  Y < 2 THEN Y = 2
280 IF X > 235 THEN X = 235
290 IF Y > 190 THEN Y = 190
300 SCALE= 2: XDRAW 2 * (M1 = 1)
  + 3 * (M1 = 2) AT 15 + 250 *
  (M1 = 2),7: SCALE= 12
310 XDRAW 11 AT X,Y
320 XDRAW 11 AT X,Y: IF AP AND M
  1 = 2 THEN GOTO 340
330 IF PEEK (B) < 128 THEN GOTO
  250
340 POKE - 16368,0:L = PEEK (B
  ): IF L = 65 THEN Y = Y - 4:
  GOTO 250
350 IF L = 90 THEN Y = Y + 4: GOTO
  250
360 IF L = 8 THEN X = X - 4: GOTO
  250
370 IF L = 21 THEN X = X + 4: GOTO
  250
```



Add to your
apple computer
with....

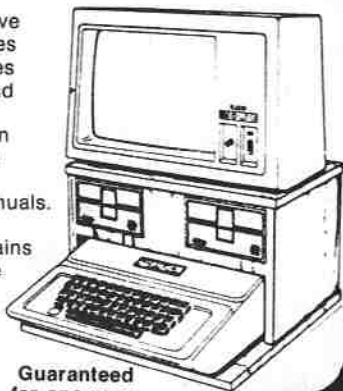
Woodapeel

No longer need an Apple system look like a plate of spaghetti!

Woodapeel, an attractive teak veneer cabinet, hides and protects all the cables and blends with office and home decor.

Woodapeel supports an Apple, two disc drives, a twelve-inch monitor and provides storage for manuals. The solid construction ensures everything remains connected as you move from desk to desk or office to home.

Order your Woodapeel, now - £43.00 plus VAT.



Guaranteed for one year.

PERSONAL COMPUTER PALACE



4-6 CASTLE STREET
READING, BERKS
Tel. (0734) 589249

**TWO WAYS TO ENSURE
YOU GET**

Windfall



The Apple computer users' magazine

EVERY MONTH

1. Complete and mail subscription form on Page 83
2. Hand this form to your newsagent.

Please reserve me a copy of **Windfall** magazine every month until further notice.

- I will collect
 I would like it delivered to my home.

Name _____

Address _____

Note to newsagent: WINDFALL should be obtainable from your local wholesaler, or contact the distributor - Wells, Gardner, Darton & Co Ltd Tel: Faygate 444



INFORMATION
TECHNOLOGY

INTERFACE MANAGEMENT

presents:

INCLUDING
TRAINING IN
DATAGRAMMING
TECHNIQUES

FINANCIAL MODELLING USING DESK-TOP COMPUTERS

Conducted by
NICK LEVY

Author of the VisiCalc Column in Windfall

The object of the seminar is to enable managers, including first time computer users, to devise and develop their own business models for:

- Budgeting ● Cash flow analysis ● Investment analysis ● Financial reporting ● Plus the performance and analysis of many other management functions.

**A UNIQUE OPPORTUNITY TO
IMPROVE YOUR ABILITY TO ANALYSE
AND PLAN YOUR BUSINESS
ACTIVITIES**

Seminars held in:

**Bath, Bristol, Bournemouth, Bracknell,
Brighton,
Heathrow, Ipswich, London, Manchester
Maidstone,
Oxford, Solihull, Stratford-on-Avon.**

and in companies own premises

For further details return the coupon or telephone:

INTERFACE MANAGEMENT

**26 Queen Victoria Street, Reading RG1 1TG.
Tel: (0734)475375. Telex: 849021**

Name _____

Address _____

Telephone _____

APPLE DARTS

From Page 77

```

380 IF L < > 32 GOTO 250
389 REM

DART LANDED

390 FOR A = 1 TO 3:A1 = PEEK ( -
    16336): NEXT
399 REM

CALCULATE SCORE

400 Y = Y - 96:X = X - 140: IF X =
    2 THEN TH = PI / 2 + PI * (Y
    < 2): GOTO 420
410 TH = ATN (Y / X) + PI * (X <
    0) + 2 * PI * ((X > 0) AND (
    Y < 0)) - PI / 20
420 R = SQR (X ^ 2 + Y ^ 2)
430 IF R < 5 THEN S = 50: RETURN

440 IF R > 4 AND R < 9 THEN S =
    25: RETURN
450 IF R > 86 THEN S = 0: RETURN

460 I = 1 + INT (TH * 10 / PI)
470 S = S(I)
480 IF R > 80 THEN S = 2 * S: RETURN

490 IF R > 49 AND R < 53 THEN S =
    3 * S
500 RETURN
509 REM

ROUTINE TO WRITE SUB-TOTAL

510 SCALE= 1: ROT= 2: FOR I = 1 TO
    LEN (T$):X = VAL ( MID$ (T
    $,I,1)) + 1: XDRAW X AT X(M1
    ) + 4 * I,Y(M1): NEXT I: RETURN

519 REM

ROUTINE TO WRITE INDIVIDUAL SCORE

520 SCALE= 1: ROT= 2: FL = 2: X =
    VAL (T$): IF X > 40 THEN GOTO
    540
530 X = X / 2: IF X - INT (X) <
    .1 THEN T$ = STR$ (X): FL =
    1
540 FOR I = 1 TO LEN (T$):X = VAL
    ( MID$ (T$,I,1)) + 1: XDRAW
    X AT X(M1) + 4 * I,20: NEXT
    I
550 IF FL THEN ROT= 6: XDRAW 11
    AT X(M1) + 4 * I + 4,20
560 RETURN

569 REM

ROUTINE TO REMOVE DARTS & SCORES

570 J = M: FOR M = 1 TO J: SCALE=
    3: ROT= 4
580 XDRAW 11 AT PX(M) + 140,PY(M
    ) + 96:T$ = STR$ (T(M)): GOSUB
    510: NEXT M: RETURN
589 REM

ROUTINE TO CALCULATE APPLE'S MOVE

590 IF SC(2,1) - T > 180 THEN X =
    140:Y = 48: GOTO 690
600 IF SC(2,1) - T > 100 THEN X =
    140:Y = 51: GOTO 690
610 IF SC(2,1) - T > 61 THEN X =
    138:Y = 60: GOTO 690
620 IF SC(2,1) - T > 40 THEN X =
    140:Y = 96: GOTO 690
630 S3 = (SC(2,1) - T) / 2: IF S3
    - INT (S3) > .1 THEN IF S
    3 > 5 THEN X = 155:Y = 63: GOTO
    690
640 IF S3 - INT (S3) > .1 THEN
    X = 150:Y = 12: GOTO 690
650 FOR S4 = 0 TO 20: IF S3 = S(
    S4) THEN GOTO 670
660 NEXT S4
670 PH = PI * S4 / 10 - PI / 20:R
    = 83
680 X = 140 + R * COS (PH):Y = 9
    6 + R * SIN (PH)
690 D = 1: IF RND (X) > .5 THEN
    D = - 1
700 X = X + D * 4 * RND (X): IF
    RND (X) > .5 THEN D = - D

710 Y = Y + D * 5 * RND (X)
720 RETURN
729 REM

MAIN THROW-HANDLING ROUTINE

730 FOR M1 = 1 TO 2:T$ = STR$ (
    SC(M1,0)): GOSUB 520: NEXT
740 POKE - 16302,0: POKE - 163
    04,0
750 FOR M1 = 1 TO 2:T = 0
760 FOR M = 1 TO 3: IF M1 = 2 AND
    AP THEN GOSUB 590: GOSUB 31
    0: GOTO 780
770 GOSUB 240
780 PX(M) = INT (X):PY(M) = INT
    (Y): SCALE= 3: ROT= 4: XDRAW
    11 AT PX(M) + 140,PY(M) + 96
790 T(M) = S:T$ = STR$ (S): GOSUB
    510
800 T = T + S: IF T = SC(M1,1) AND
    S < > 2 AND R > 80 THEN GOSUB
    570: GOTO 910
810 IF T > = SC(M1,1) THEN PRINT
    CHR$ (7): GOSUB 570: GOTO 8
    90
820 IF SC(M1,1) - T = 1 THEN PRINT
    CHR$ (7): GOSUB 570: GOTO 8
    90
830 NEXT M
839 REM

FLASH NUMBER AT TOP OF SCREEN

840 SCALE= 2: DRAW 2 * (M1 = 1) +
    3 * (M1 = 2) AT 15 + 250 * (
    M1 = 2),7
850 FOR M = 1 TO 300: NEXT M
859 REM

CLEAN-UP DARTS & SCORES

860 FOR M = 1 TO 3: SCALE= 3: ROT=
    4: XDRAW 11 AT PX(M) + 140,P
    Y(M) + 96:T$ = STR$ (T(M)):
    GOSUB 510: NEXT
870 SC(M1,0) = SC(M1,1):SC(M1,1) =
    SC(M1,1) - T
880 T$ = STR$ (SC(M1,0)): GOSUB
    520:T$ = STR$ (SC(M1,1)): GOSUB
    520
890 NEXT M1
900 GOTO 750
909 REM

COME HERE IF GAME ENDS

910 FOR I = 1 TO 550: NEXT I: TEXT
    : HOME : VTAB 8: PRINT NAME$
    (M1)" WON...WELL DONE" /
920 PRINT :PRINT "ANOTHER GAME?"
    Y/N?"
930 GET T$: IF T$ = "N" THEN GOTO
    980
940 IF T$ < > "Y" THEN GOTO 93
    0
950 FOR M1 = 1 TO 2:T$ = STR$ (
    SC(M1,1)): GOSUB 520: NEXT M
    1
960 FOR M1 = 1 TO 2:SC(M1,0) = 5
    01:SC(M1,1) = 501: NEXT
970 GOTO 1110
980 HOME : END
989 REM

```




**WHO ELSE
GUARANTEES YOU
CANNOT BUY CHEAPER?**

**If you can purchase immediately
at a lower price, we will beat it!**



1. Visicalc	£99.00	THE WELL KNOWN PADMEDE SOFTWARE	
2. Visiplot	£89.00	27. Incomplete Records	£438.00
3. Visi-Trend/Plot	£115.00	28. Time & Cost Recording	£438.00
4. Visidex	£99.00	29. Contract Costings	£289.00
5. Visi-Desk Top Plan	£89.00	30. Quotation & Estimating	£289.00
6. Visi-CCA Data Management	£115.00	31. Purchase Ledger	£289.00
7. Easywriter Professional	£114.00	32. Sales Ledger	£289.00
8. Easywriter	£45.00	33. Invoicing System	£289.00
9. Easymailer	£33.00	34. Stock Control	£289.00
10. Typing Tutor	£19.00	35. Payroll-Computech 350emp	£275.00
11. Data Factory	£69.00	36. The Cashier	£195.00
12. Data Factory (V.5)	£135.00	(Retail Store Management)	
13. Apple Fortran	£89.00	37. Supertalker MHS200/MHPX06	£139.00
14. Apple Pilot	£69.00	38. Speechlink H2000	£137.00
15. Apple Tool Kit	£33.00	(Talk To Your Apple)	
16. Apple Post	£24.00	39. Decca Colour Viewdata VDU	£298.00
17. Apple Plot	£29.00	40. Prism IDS 560	£795.00
18. Integer Card	£75.00	(Graphics/Printer)	
19. D.O.S. 3.3	£34.00	41. Infoscanner Display M3	£130.00
20. Communication Card	£98.00	(Computerised Moving Screen)	
21. Centronics Printer Card	£98.00	42. Nat/Pan 100E	£138.00
22. Parallel Printer Card	£78.00	(Tele/Ph. Answering Machine)	
23. Apple II Dust Covers	£7.50	Verbatim Diskettes 5 yr Warranty	
24. Apple Silenttype Dust Covers	£7.50	With Mini Plastic Cases	
25. Apple Disc Drive Dust Covers	£7.50	43. MD525 16 (Mini Discs)	£18.95
26. Centronics Dust Cover	£7.50	44. MD550 10	£22.95
		45. MD550 16	£22.95
		46. FD-34-2000 (Flexi Discs)	£29.95
		47. FD-32-9000	£24.95

FREE

All Orders Received By 14/3/83 Will Receive
An Apple Manual. ACT NOW Even Our Massive
Stocks Are Disappearing Fast.

Phone Us Now (24 hrs) With Your Access Or Barclaycard No
Or Simply Print Your Name, Address, Phone No. In The
Margin & Mark Or List The Items & Mail Together With Your
Cheque/P.O. Plus VAT & £2.50 P&P.

Accent on
Excellence



**INTERNATIONAL COMPUTERS
EQUIPMENT NETWORKING
MAPLECROFT HOUSE, LOWBOURNE,
MELKSHAM, WILTS.
0225 - 702133/707575**



FINANCIAL MODELLING COURSES

'Hands On' Practical Microcomputer Modelling

- 1 DAY COURSE VISICALC
- 1 DAY COURSE ADVANCED VISICALC
- 3 DAY COURSE MICROMODELLER

CONSULTANCY

Model Design, Writing, Support

- VISICALC
- MICROMODELLER
- PROSPER STAR
- PROSPER +
- MARS
- FCS/EPS



VAL WARDEN CONSULTANTS

110 Western Road,
Tring, Herts. HP23 4BJ
Tel: Tring (044 282) 6774/5

apple classifieds

A/D converters

Monitors

Hard discs

Colour cards

Disc drives

Accounting systems

Databases

Interface cards

Modems

Games

Apple III

Floppy discs

RAM cards

Utilities

Printers

Apple II

apple classifieds

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

					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.

BREAKING large Apple II system. Loads of boards and software. All really cheap. SAE for list. N. Wilkinson, 39 Manorfield, Singleton, Ashford, Kent.

APPLE II Europlus 48k, Hitachi monitor, disc drive, DOS 3.3, Centronics 787-2 printer, manuals, £1,000 ono. Also sales purchase ledgers. Applewriter games books. Tel: 061-962 3691.

ITT 20 20 Apple system 48k. Integer Basic, immaculate condition, £300 ono. Tel: Luton (0582) 38924.

APPLE SILENTYPE PRINTER with interface, lots of paper £135. Apple games: Falcons, Epoch, Space Raiders £8 each. Warp Factor £12. Phone 0203 72438.

APPLE II PLUS, disc and controller, colour card, RAM card, TV modulator and many, many programs. £1,200. Phone (0279) 57961.

APPLE SILENTYPE PRINTER with interface, lots of paper £135. Apple games: Falcons, Epoch, Space Raiders £8 each. Warp Factor £12. Phone 0203 72438.

```

INITIAL TEXT/BOARD SET-UP
990 HGR : HCOLOR= 3: TEXT : HOME
    : PRINT TAB( 10)"A P P L E
    - D A R T S"
1000 HTAB 10: FOR I = 1 TO 21: PRINT
    CHR$( 196);; NEXT : PRINT
1010 PRINT : PRINT "THE GAME IS
    501 DOWN: FINISH ON A": PRINT
    "DOUBLE"
1020 PRINT : PRINT "PLAYED WITH
    ONE PLAYER VERSUS"
1030 PRINT "THE APPLE, OR TWO PL
    AYERS VERSUS"
1040 PRINT "EACH OTHER."
1050 PRINT : PRINT "AIM AS FOLLO
    WS:": PRINT : PRINT : PRINT
    "A.....UP"
1060 PRINT : PRINT "Z.....DOWN"
1070 PRINT : PRINT "<.....LEFT"
1080 PRINT : PRINT "->.....RIGHT,
    THROW WITH THE SPACE BAR"
1090 PRINT : PRINT : PRINT "PLEA
    SE WAIT WHILE I FETCH THE BO
    ARD"
1100 GOSUB 120
1109 REM
CHECK IF ONE OR TWO PLAYERS
1110 AP = 1: HOME : VTAB 8: PRINT
    "ARE THERE TWO PLAYERS? Y/N?"
    "
1120 GET T$: IF T$ = "Y" THEN AP
    = 0: GOTO 1140
1130 IF T$ < > "N" THEN GOTO 1
    120
1140 PRINT : INPUT "WHAT'S THE N
    AME OF PLAYER ONE? ";NAME$(1
    )
1150 IF AP THEN NAME$(2) = "APPL
    E": GOTO 1170
1160 PRINT : INPUT "WHAT'S THE N
    AME OF THE OTHER? ";NAME$(2)
    "
1170 PRINT : PRINT NAME$(1)" PLA
    YS FIRST": PRINT : PRINT "PR
    ESS SPACE BAR TO CONTINUE"
1180 GET T$: GOTO 730
1199 REM
DATA FOR SCORES (CLOCKWISE)
1200 DATA 6,10,15,2,17,3,19,7,16
    ,8,11,14,9,12,5,20,1,18,4,13
    ,6
1209 REM
SHAPE TABLE OF NUMBERS & X
1210 DATA 11,0,24,0,32,0,39,0,4
    6,0,53,0,59,0,66,0,73,0,79,0
    ,87,0,94,0,35,44,53,54,62,39
    ,4,0,36,183,18,45,28,4,0,37,
    60,183,54,45,4,0,158,45,36,3
    6,63
1220 DATA 6,0,49,62,56,36,44,0,
    39,44,181,54,63,4,0,53,62,39
    ,36,44,53,0,82,36,36,63,6,0,
    37,60,55,54,46,37,4,0,39,44,
    53,54,62,39,0,128,48,54,222,
    128,40,45
1230 DATA 5,0,38,62,39,4,0
    
```

OPEN FRAME MONITORS AVAILABLE FOR OEM'S

The 'PRINCE' of Monitors

offers better Monitoring.

24MHz Bandwidth—ensures a clear crisp display.

Available with P4 White

P31 Green

AND L1 ORANGE



Scan: 625 lines/50 Hz. Deflection: 110°. Active raster: 240 x 172mm. Bandwidth (3dB): 10 Hz-24 MHz (at 3dB points). Character display: 80 characters x 24 lines. Horizontal frequency: 15625 Hz ± 0.5 KHz. Vertical frequency: 50 Hz. Horizontal linearity: ± 3%. Vertical linearity: ± 2%. Geometric distortion: ± 1.5%. EHT (at zero beam current): 13kV ± 0.5kV. Power drain: 30 Watt approx. Voltage supply: 110V A.C. 50 Hz/220V A.C. — 50 Hz/240V A.C., 50Hz/ ± 10% upon request. Video input: 2 x BNC — or CINCH — or PL 259, (composite video) negative sync, input 0.5—4V p.p. across 75 Ohms. X-Ray radiation: conforms to I.E.C. Spec. No. 65. Overall dimensions: 320 x 270 x 265 mm. Weight: 7 Kg. approx. Ambient temperature: 0—45°C.

OTHER CROFTON PRODUCTS INCLUDE: Computer peripheral equipment, Frame grabber, Floppy disk drives, Floppy disks, Computer power supplies, C.C.T.V. monitors, Uncased monitors, Monitor P.C.B.'s., Cathode ray tubes, VHF/UHF modulators, Video switchers, Video distribution amplifiers, Camera housings, Pan and tilt units, Camera lens, Camera tubes, Printed circuit board service.

CROFTON ELECTRONICS LIMITED

35 GROSVENOR ROAD, TWICKENHAM, MIDDLESEX TW1 4AD

Telephone 01-891 1923/01-891 1513 Telex 295093 CROFTN G

Catch up on the articles you missed by sending for earlier issues. And when your collection is complete, keep it in one of our attractive binders. You can order by mailing the coupon on the right — or by phoning 061-456 8383 and quoting your credit card number.

October 1981

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

November 1981

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

July 1981

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

August 1981

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

September 1981

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



March 1982

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



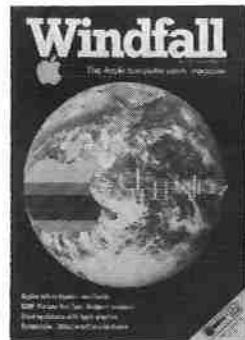
April 1982

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



May 1982

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



June 1982

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



July 1982

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



September 1982

Use of CP/M COPY and PIP programs — Games review (Odyssey, Choplifter) — DOS aid to VisiCalc — The VisiCalc phenomenon — Wordscore game (listing) — Tasc compiler review — Med-res graphics, Part I — Snapshot review — Learning Morse, Part II — Button for multiple choice testing — Asynchronous data transfer, Part III — Bag of Tricks review — G-WHIZ review — Medic review — Sorting with Pascal — Memory test program (listing). PLUS four pages of Compucopia and six Appletips.



October 1982

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



November 1982

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



December 1982

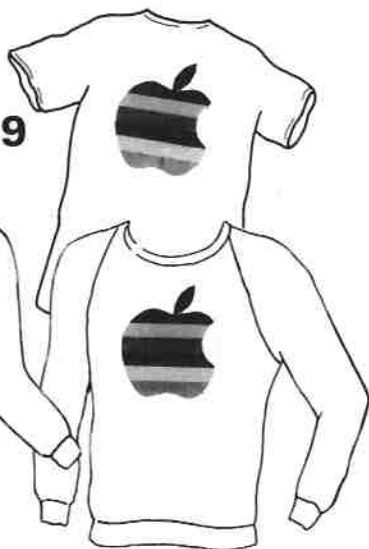
Think Tank — Doing the impossible in Pascal (listing) — Interactive editor-assembler, Part I — Take VisiCalc to the Christmas party — Games reviews (Space Kadet, Crazy Mazy, Mars Cars, Star Maze, Deadline, Musicomp, Electric Duet, Time Zone) and listings (Humpty Dumpty, Christmas Card, Scram) — reviews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



January 1983

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

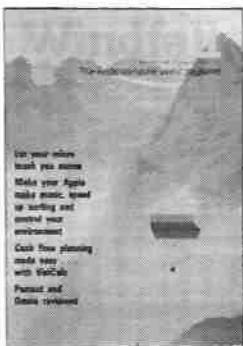
Logo T-Shirts ONLY £3.29



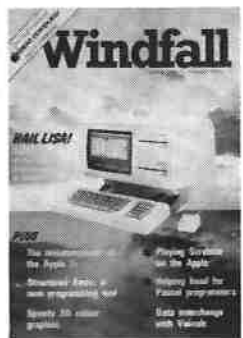
Windfall Sweat Shirts ONLY £6.29

Logo Sweat Shirts ONLY £6.29

Latest additions to our popular range are Windfall sweat shirts, with mini-Apple motif in six brilliant colours. Now available in two child's sizes, and with red or blue background colour. Our original logo T-shirt and sweat shirts sport the giant-size Apple logo on a white background.



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



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

Windfall
The Apple computer users magazine
needs protecting!



Keep your copies of Windfall safe - and enhance your reference library with this handsome green and gold binder which holds a full 12 issues.

Allow 28 days for delivery. **£3.95**



Giant eye-catching poster depicting the distinctive Apple logo in six colours, on a black background.

Size: 749mm x 481mm **£1.50**

ORDER FORM

All prices include postage

SUBSCRIPTIONS

Please enter number required in box

UK £12	<input type="text"/>
EIRE £13	<input type="text"/>
EUROPE £18	<input type="text"/>
USA - Surface mail £15	<input type="text"/>
USA - Air mail £25	<input type="text"/>
Rest of world - Surface mail £15	<input type="text"/>
Rest of world - Air mail £30	<input type="text"/>

BACK ISSUES

<input type="checkbox"/>	UK £1.25	1981	JULY	<input type="text"/>	1982	JUNE	<input type="text"/>
<input type="checkbox"/>	Rest of world		AUG	<input type="text"/>		JULY	<input type="text"/>
<input type="checkbox"/>	- Surface £1.50		SEPT	<input type="text"/>		AUG	<input type="text"/>
<input type="checkbox"/>	- Air mail £2.50		OCT	<input type="text"/>		SEPT	<input type="text"/>
			NOV	<input type="text"/>		OCT	<input type="text"/>
			DEC	<input type="text"/>		NOV	<input type="text"/>
		1982				DEC	<input type="text"/>
		JAN	<input type="text"/>		1983	JAN	<input type="text"/>
		FEB	<input type="text"/>			FEB	<input type="text"/>
		MAR	<input type="text"/>				<input type="text"/>
		APRIL	<input type="text"/>				<input type="text"/>
		MAY	<input type="text"/>				<input type="text"/>

TOTAL

T-SHIRTS

£3.29	Small - 34"-36"	<input type="text"/>
(UK & Overseas)	Medium - 36"-38"	<input type="text"/>
	Large - 38"-40"	<input type="text"/>
	Extra Large - 40"-42"	<input type="text"/>

TOTAL

SWEAT SHIRTS

£6.29 (UK & Overseas)	Age 6-8 28" Age 10-12 30"-32" Small 34"-36" Medium 36"-38" Large 38"-40" Extra Large 40"-42"	Windfall	Logo	
		Red	Blue	White
		N/A	N/A	
		N/A	N/A	
				N/A

TOTAL

NECKLACES

£4.99	<input type="text"/>
(UK & Overseas)	

TOTAL

POSTERS

£1.50	<input type="text"/>
(UK & Overseas)	

TOTAL

TIES

£4.99	Navy	<input type="text"/>
(UK & Overseas)	Brown	<input type="text"/>
	Wine	<input type="text"/>

TOTAL

BINDERS

UK - £3.95	<input type="text"/>
Overseas - £5.00	<input type="text"/>

TOTAL

Payment: please indicate method (✓)

TOTAL

- Access/Mastercharge/Eurocard
- Barclaycard/Visa
- American Express
- Card No. _____
- Expiry Date _____
- Cheque/PO made payable to Windfall



Name _____

Address _____

Signed _____

Send to: Windfall, FREEPOST, Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY.
(No stamp needed if posted in UK)

Or you can order by phone quoting credit card number and expiry date. **061-456 8383**
9am - 5pm

AFTER THE REVOLUTION, THE EVOLUTION



Introducing the Apple IIe personal computer, the successor to our worldwide success, the Apple II. The 'e' stands for 'enhanced', and everything which the Apple II has always stood for. Flexibility. Reliability. Quality.

Apple IIe offers you more features and greater capabilities. Like a 64K user memory, which can be expanded to 128K – so you can create larger files and handle larger numbers of numbers.

It also has a responsive, full-function keyboard. Four arrow keys to speed cursor movement. Upper and lower case text. Eight internal slots, which let you expand your system, including a multi-purpose video and memory expansion slot for inserting an 80-column display card.

But don't just believe what you read. Make sure you see the Apple IIe for yourself.

 **apple computer**
The Personal Computer

LEICESTER
computer centre limited

67 Regent Road, Leicester LE1 6YF. Tel: 0533 556268

Personal Disk Tidy

New
Secure
Convenient
Economical



NEAT, CLEAN, SECURE

- Slim format – easy to lock in a drawer or a brief-case
- Suitable for all private data or security material
- Dust-proof wallet

RENEW YOUR RECORDS ANYTIME

- Unique replacement file register
- Convenient work log to record stage of calculations and entries
- Keep constant track of links between programmes

CLEAR DISPLAY. EASY REACH

- Holds 12 x 5 1/4" Diskettes – ideal with your personal computer
- Disks stand up for easy visibility, easy access

Single copies

£6.80 plus 70p postage (including VAT)

Dealer enquiries welcome.



**JAMES
BURN
OXFORD**

Stanton Harcourt Road,
Eynsham, Oxford

Telephone Oxford (0865) 880458

THE WILDCARD – IT COPIES!

What is the WILDCARD?

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

What do I need to use the WILDCARD?

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

What sort of copy does the WILDCARD produce?

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

Do I need the WILDCARD to use the copies?

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

Additional features:

Screen displayer – display, blank, recover each screen.

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

Auto patcher – finds DOS, resets RESET, etc.

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

16K RAM cards **£70** + VAT (£80.50)

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

ELITE SOFTWARE COMPANY

**2 Almorah Road, Heston,
Middlesex, TW5 9AD.**

Telephone: 01-572 0453

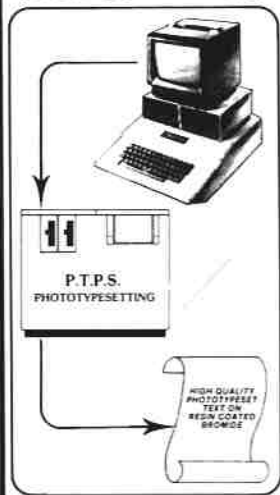
P.T.P.S.

photo-typesetting print services

16, Old Palace Road, Norwich, Norfolk, NR2 4JF.

COMMUNICATIONS....

....We can take your text files written on 5¼" Diskettes and transform them into high quality phototypeset copy on resin coated bromide.



OR

....We can link to your Apple via telephone and accept your text direct!

* UNBELIEVABLE PRICES
...from 80p per 1,000 characters!

* TYPESIZES AVAILABLE
...6 point to 36 point inclusive, in one point increments, including 5½ point and 8½ point.

* WIDE RANGE OF STYLES
....write now for descriptive leaflet.

* ARTWORK & PAGE MAKE-UP
....available in-house

* CONVENTIONAL PHOTOTYPESSETTING
....at competitive rates

TELEPHONE (0603) 667225

ADALAB™

... Interfaces Apple Computers to laboratory instruments.

- COLLECTS & STORES LAB DATA
- CONTROLS INSTRUMENTS & PROCESSES
- SWITCHES VALVES & RELAYS
- TIMES EVENTS
- FULL SUPPORTING SOFTWARE
- EXPANDS AS YOUR NEEDS GROW

The Adalab system is designed and supported by scientists for use in the modern laboratory

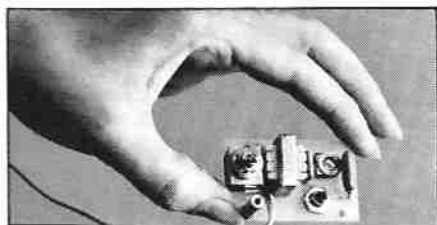
HEYDEN DATASYSTEMS

Heyden & Son Ltd
Spectrum House, Hillview Gardens,
London NW4 2JQ
Tel: 01.203 5171 Telex: 28303

To: Heyden & Son Ltd Spectrum House, Hillview Gardens
London NW4 2JQ

Name.....
Company.....
Address.....
Tel:.....W/3/83

Now make your Apple REALLY sing!



Add a completely new dimension to your Apple with the Windfall Hi-Fi Adapter.

Designed to our own strict specification, it fits neatly inside the Apple with a toggle switch just protruding through a cooling fin on the left hand side.

With the switch in the up position the Apple's

own speaker is activated. Switch down and the sounds of missiles, collisions, explosions – and their musical accompaniment – come through your hi-fi with a startling realism you would not have believed possible.

Fitting is extremely simple and no technical knowledge is required.

Please supply
Windfall Hi-Fi Adapter at the price of £25, plus £1 post & packing.

I enclose cheque Paid by credit card

Name

Credit card name

Number

Address

Expiry date

Signed

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

Call Scotbyte Computers and print-out a bigger slice of business.

If you're making a small business larger – or a big business bigger, call Tom Spence or Frank Webb at Scotbyte. Here's Why –

- Scotbyte know the computer market and deal only in the latest technologies.
- Scotbyte offer the most versatile and complete computers you'd ever need.
- Scotbyte offer a total software/hardware service.
- Scotbyte after sales back-up ensures that you're never without the machine for the job.
- With offices in Edinburgh and Glasgow Scotbyte is ideally placed to serve you – fast.

For these and all other computer needs – 031-343 1005

SCOTBYTE

COMPUTERS

Thain House, 226 Queensferry Road,
Edinburgh EH4 2DQ.
Also at Blantyre Industrial Estate,
Blantyre, Glasgow, G72 0UP.
Tel. 0698 823486

SPARE-PARTS for your Apple and look-a-like!

Keyboard (Upper and Lowercase-key included!)	£145
Power-supply (50 hz/25 amp/220 volt)	£95
Main-board (48k, 8 slots, etc.)	£250
Box	£75
	£665
Together	£450

INTERFACES:

Language card **£68**; Z-80 softcard **£88**;
80 column (Videx-like) **£98** (graph. char. set incl.)

Ask for more - EXCELLENT QUALITY - parcel post - f.o.b. payment.
Reimbursement - Cheque - Access - Eurocard - Visa.
VAT not included.

MICRO ADVIES

De Genestetstraat 6 hs, 1054 AX Amsterdam, Holland
Phone: 010-31-20164842 (Tuesday/Thursday/Weekend)
or 010-31-20165195

GOT IT YET?

Are you one of the half a million Apple owners who still hasn't seen a copy of our catalogue?
It covers a tremendous range of hardware and software for the Apple, including consumables.
Everything is at very attractive prices and post free too!
So send us £1.00 (refunded on first order) for your copy today!
Access and Barclaycard welcome. Full Apple sales and service.

THAMES VALLEY SYSTEMS



GREYS HOUSE,
7 GREYFRIARS ROAD,
READING, BERKS.
RG1 1NU.
Tel: 0734-581829 (2 lines)

Advertisers in this issue

Apple (UK) Ltd	10-11	Leicester Computer Services	84
Apple '83	62	Little Genius	31
James Burn	84	Micromite	I/F/C
Bureau of Information Science	86	Micro Advies	86
		Micro Marine Ltd	86
Computech Systems	6		
Call A.P.P.L.E.	38	Number One Computers	42
CPU/Maxell	40	Nick Levy	78
Cumana	51		
C/WP	71, 73	Owl Micro Communications	47
Coppice Software	76		
Crofton Electronics	81	Pact	7
		Pace	20-21
Dark Star Systems	5	Pete & Pam	30-31
Datacode Systems (Int) Ltd	9	Pynwon	56
Dynatech Microsoftware	38	P.C.P.	78
D.N.C.S.	47	P.T.P.S.	85
Data Warrior	76		
Database	86	S.B.D.	8
		Sub Logic	55
East Central Business Machines	25	Silicon Valley Systems	74-75
Elite Software Co.	84	Scotbyte Computers	85
Gram Business Systems Ltd	12	T.V.S.	86
Hal Computers	22	U-Microcomputers Ltd	13
Hilderbay Ltd	9		
Holdene Ltd	52	Voice Input Ltd	42
Heyden Datasystems	85	Val Warden Consultants	80
		Vergecourt Ltd	I/B/C
ICE	4	Vlasak Computer Systems	O/B/C
ICEN	80		
Keele Codes Ltd	52	X-Calibur	50

MICROSPEED

The microspeed language system

Microspeed is a complete Forth Language System for the Apple II. Very fast processing speeds are obtainable by the use of an arithmetic processor card. This card has the additional benefit that it can be used for **APPLESOFT** and **PASCAL** programs.

Forth produces very compact code which is compiled into verbs, the extension of these verbs into a library can drastically reduce programming time.

Complete Forth manual with discs and processor card
£295.00 + VAT

DATABASE
Suite 1, 147 All Saints Road, Newmarket, Suffolk.
Telephone: 0638 667311

SPORTING FORECASTS

Professor Frank George, one of the country's leading experts in forecasting techniques, has produced the following microcomputer programs based on his researches.

F4 FOOTBALL FORECAST
A pools forecasting program which uses stored team data to compute the expected result of each fixture.
POOLPERM
Produces full perms according to amount of stake and number of matches required.

H5 HORSE RACE FORECAST
A serious punter's aid to sensible betting. Data is entered from a sporting newspaper and the program produces betting recommendations.

Bureau of Information Science, Commerce House,
High Street, Chalfont St. Giles, Buckinghamshire

NOW!

we can typeset
direct from
your  apple disks

with full printing and binding facilities also available

write for full details to:

 **H Charlesworth & Co Ltd**
254 Deighton Rd., Huddersfield HD2 1JJ - Tel: 0484 38341

PROGRAMMERS

£6-8,000

APPLE/IBM/DEC

Micro Marine is a software company selling business packages to the shipping industry. We are looking for 2 programmers to work in Pascal on a variety of the top business micros.

Hobbyists with a professional approach to programme development who are keen to get into commercial software should also apply.

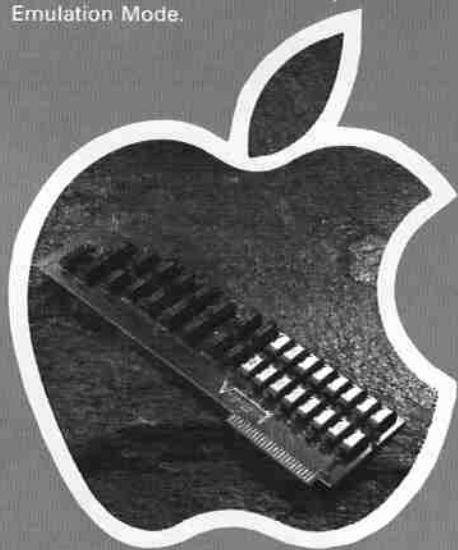
Salary is individually negotiable. Review after 6 months.

Reply to:-
**S. Hargreaves, Micro Marine Ltd,
5 St Helen's Place London EC3A 6AU
Tel: 01-628 5451**

LET US INTO YOUR APPLE II

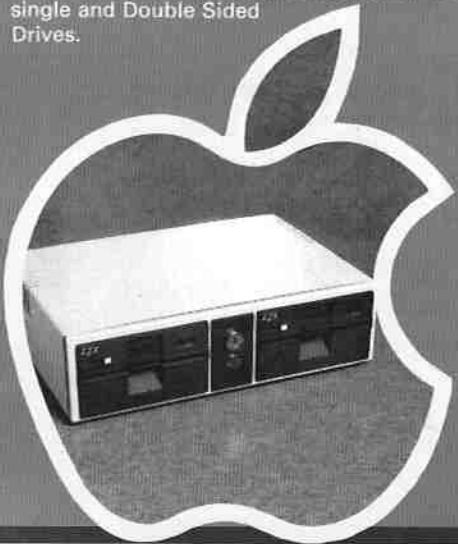
Ramex 128

- ★ 128 Memory Expansion Board using latest 64K Ram chips.
- ★ Supplied complete with Disk Emulation and Memory Management System for Apple DOS 3.3.
- ★ Memory Management System uses up to two existing 16K cards in your computer configuration.
- ★ Integer/Applesoft firmware cards fully supported.
- ★ The Vergecourt Super Expander Software package allows the Ramex 128 to display VISICALC WITH 136K of memory.
- ★ Access times can be increased by as much as 300% in Disk Emulation Mode.

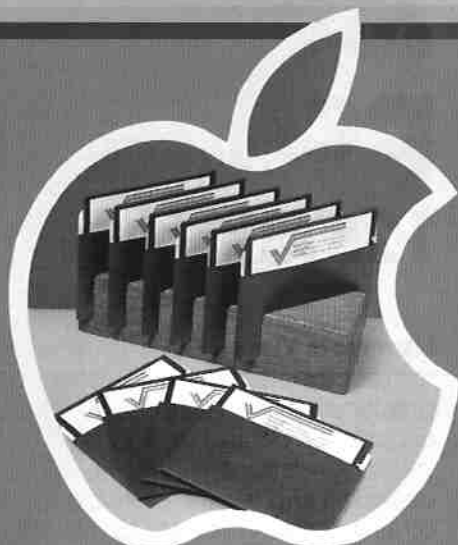


Disk Drives for Apple II

- ★ Three versions of this product currently available in either two, three or four pack configurations.
- ★ Capacity of 622K, 933K and 1244K bytes.
- ★ Maximum file sizes have therefore been increased to 311K bytes.
- ★ Integral switch made Power supply unit for much improved reliability.
- ★ Interface Board and Cable assembly included.
- ★ Formatted for IBM 3470 in 76 tracks.
- ★ Conversion capability between Shugart, Teac and Pertec single and Double Sided Drives.

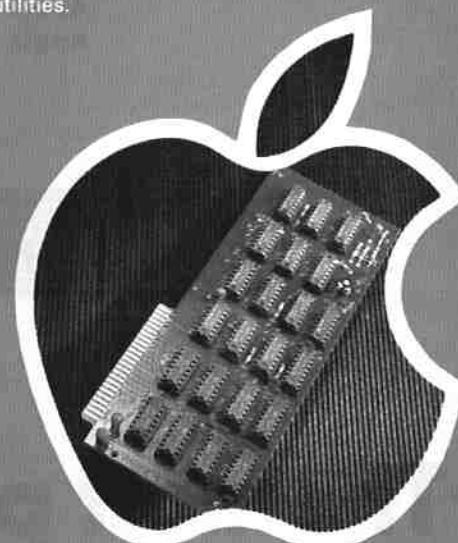


Visicalc is the registered trade mark of Visicorp.
Apple II is the registered trade mark of Apple Computers Inc.



Software


- ★ Super Expander — using 128K Ram Board expands Visicalc to 136K usable memory
- ★ Expander — using 2 x 16K Ram Boards expands Visicalc to 50K usable memory
- ★ Consolidator — to consolidate your Visicalc worksheets
- ★ Manager — for relocation of DOS onto a second 16K Ram Board
- ★ Locksmith — bit copier to take back-ups of your vital programs.
- ★ Inspector — selection of necessary utilities.
- ★ Watson — the Inspectors assistant with additional utilities.



Ramex 16

- ★ The first 16K Expansion Board for the Apple to incorporate on-board Ram re-fresh.
- ★ Language card capability to run Pascal, Integer, 56K CP/M etc.
- ★ DOS Relocation capability using 'The Manager' software by Vergecourt leaves approximately 45K of Motherboard Ram available.
- ★ Over 7000 sold worldwide and available through all major Apple dealers.
- ★ Easy installation as no strap and header chip need to be connected.
- ★ Multiple boards can be used dependant upon application.

VERGECOURT LTD

 DDP RESEARCH & MARKETING

Reg Office: 17 Nobel Square,
Basildon, Essex SS13 1LP.
Telephone: 0268 728484.
Telex: 995323

MIOS- mightier performance for Apple

1.25 Mb (formatted) for only £899

New from Vlasak — the most powerful disk drive for Apple microcomputers at the most competitive unit cost to be produced this year. With years of international systems experience behind us, and on the strength of our long-standing relationship with Apple microcomputers, we have designed and manufactured a disk drive which leaves all others standing. The MIOS disk module — a five-inch trim disk drive for Apple II and /// which holds 1.25 million characters and matches the storage needs of most small to medium-sized businesses. For an incredible £899. This means that by paying only £100 more than for two Apple drives, you get a capacity five times larger.

That's a powerful reason for buying MIOS. Find out more by completing the coupon and posting to the address below.

Fully compatible with: Apple II
Apple II
Apple ///

DOS 3.3
Pascal 1.1
SOS 1.1



OR



COV.

dual floppy

The most powerful disk drive for micros to emerge this year

Training facilities are now available for new dealers

Vlasak Computer Systems, Vlasak House, 8 Stuart Road, High Wycombe, Bucks HP13 6AG.
Tel: 0494-448633.

I would like: further information on MIOS
a demonstration by my local dealer
I would like to become a dealer

Name _____
Company _____
Address _____
Tel. No. _____

**Vlasak
Computer
Systems**