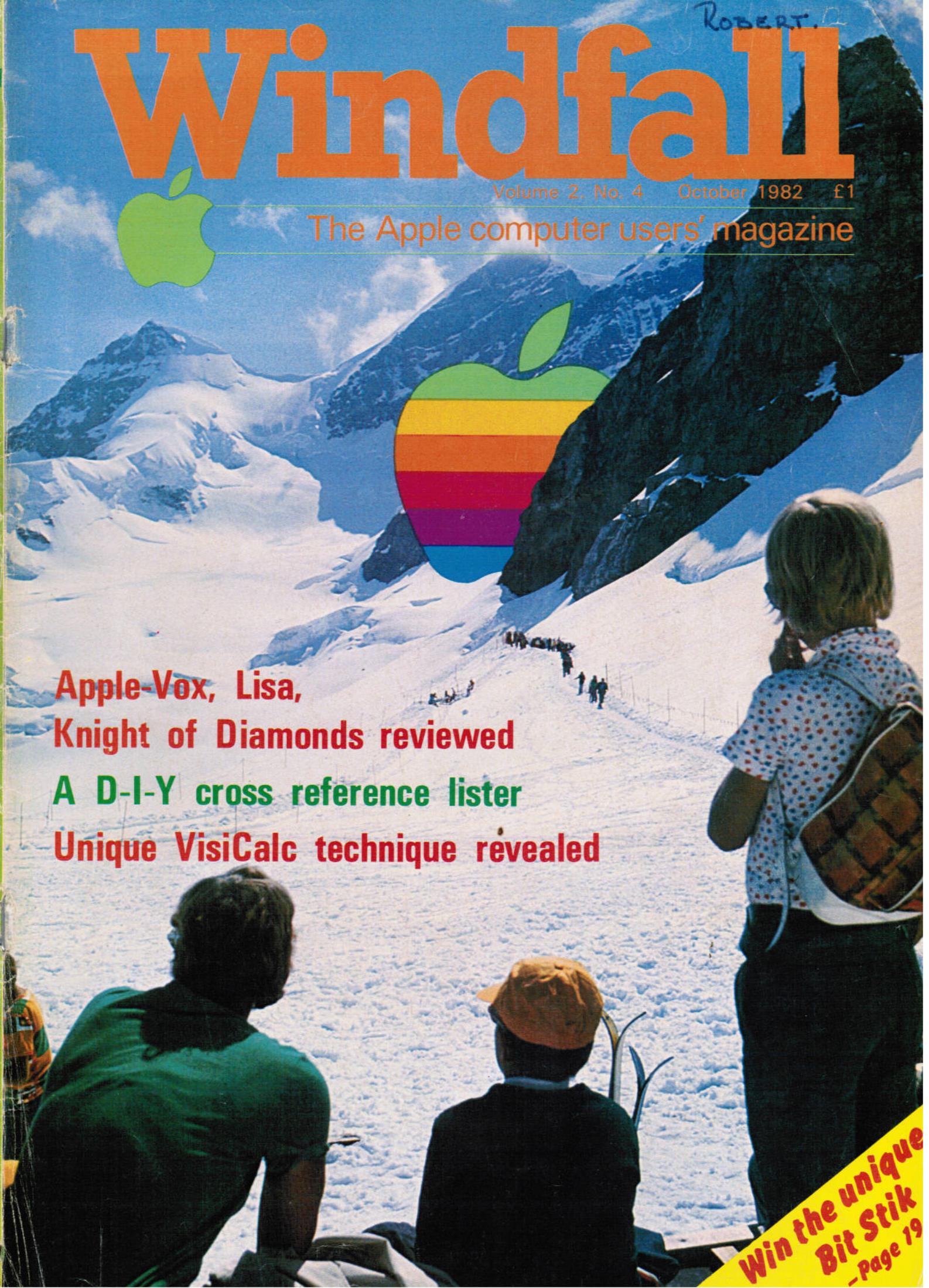
Windfall

Volume 2. No. 4 October 1982 £1

The Apple computer users' magazine



Apple-Vox, Lisa, Knight of Diamonds reviewed

A D-I-Y cross reference lister

Unique VisiCalc technique revealed

Win the unique Bit Stik - Page 19

the 8" Apple

Eicon's dual 8" floppy disk drive system gives the Apple over 2 Megabytes of on-line capacity, enough, for instance, for 15000 items in stock control, or an integrated business system with several thousand accounts.

Of if you need the extra capacity of a hard disk, a single 1 Megabyte floppy disk drive can be an ideal back-up medium.

Eicon's intelligent disk controller, with its unique EDOS firmware, provides complete integration with standard Apple software. DOS, Pascal and CP/M are all fully supported.

With additional software, Eicon drives allow the Apple to read and generate both IBM and DEC floppy disk files.

Prices are from around £1200 to £1900. S100 Bus floppy disk systems are also available.

Software available from Eicon includes:

SYSTEMATICS FINANCIAL CONTROLLER SUITE

WORDSTAR, CALCSTAR, DATASTAR etc.

STOP PRESS

New distributor appointed for Benelux: BIT COMPUTERS Antwerp 359800

Eicon disk systems have a full 12 months warranty, and are supported by the larger Apple Computer dealers throughout the UK. On-site maintenance is available if required.

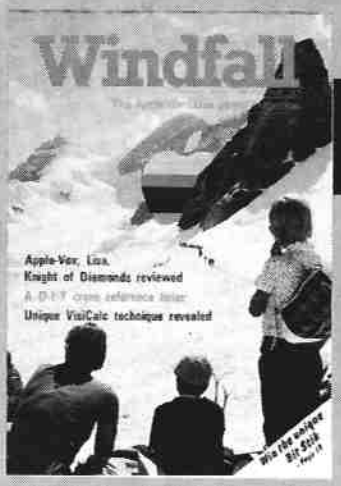
Franchised distributor:
Access Data Communications Limited,
Tel: (0895) 30831, 59016, 59205

Apple make the computer . . .
Eicon make the difference.

EICON
RESEARCH

Eicon Research Limited, Viking Way, Bar Hill, Cambridge CB3 8EL. Telephone 0954-81825

Apple II is a trademark of Apple Computer Inc. CP/M is a trademark of Digital Research Inc.



Vol. 2 No. 4 October 1982

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)
£26 – Rest of world (airmail)

Trade distribution in UK and Ireland by Cemas Ltd, New Road, St. Ives, Huntingdon, Cambridgeshire PE17 4DB. Tel: 0480 65886.

Writing for Windfall: Articles and programs 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.

© 1982 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 Computer is not responsible for any of the articles in this magazine, nor for any of the opinions expressed.

LISTING

17 ***WHAT'S NEWS . . .***
A quick look at the Apple world

19 ***COMPETITION***
Win a Christmas Bit Stik

20 ***APPLETIPS***
They make programming easier

23 ***COMPUCOPIA***
The latest in software/hardware

31 ***GAMESMANSHIP***
Tackling Knight of Diamonds

35 ***THINK TANK***
New forum for programmers

38 ***MED-RES GRAPHICS***
Filling in the shapes

41 ***LISA***
Assembler for all abilities

44 ***VISICALC***
A touch of magic

46 ***BFM . . .***
speedy way to harness power

50 ***SHELLSORT***
Keeping track of variables

57 ***APPLE-VOX***
Good line in synthetic chat

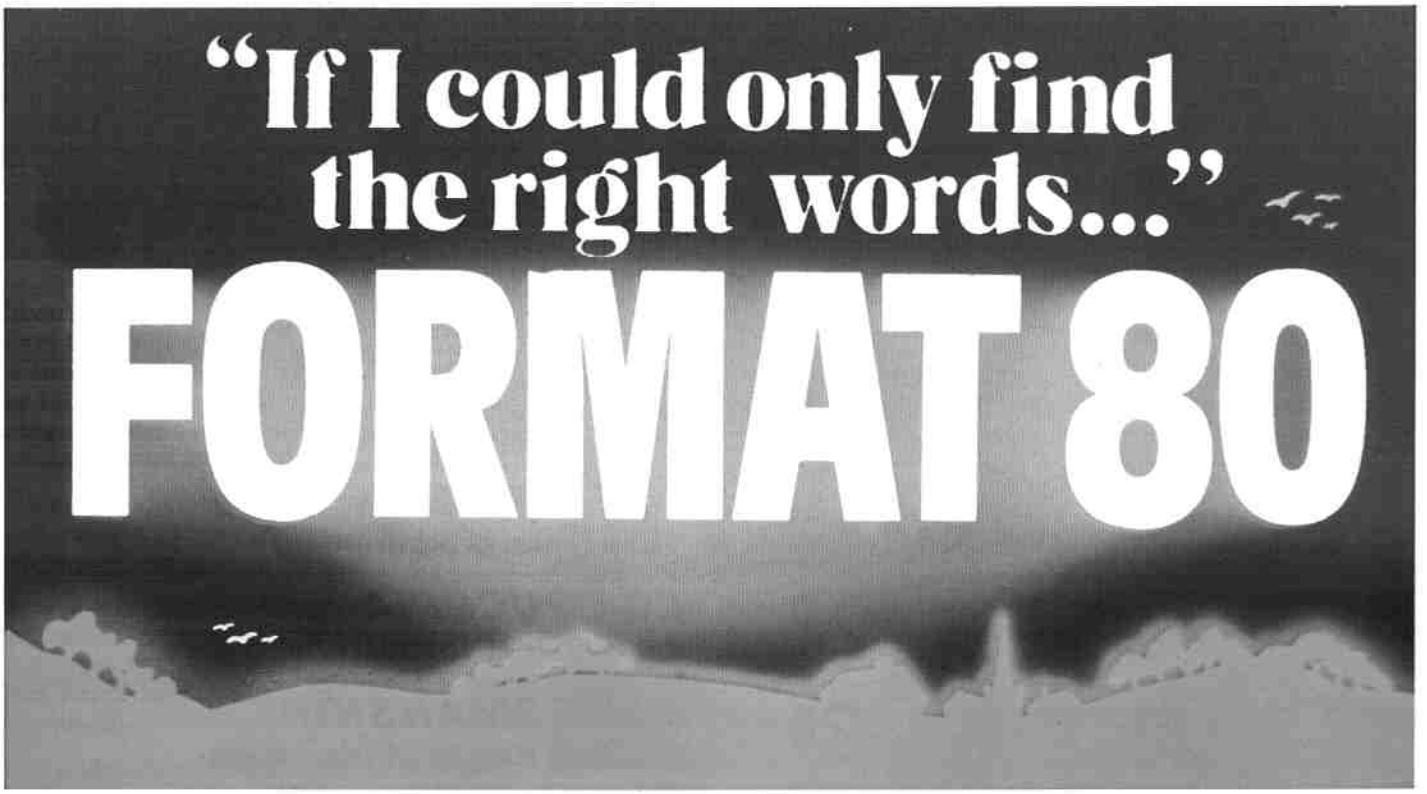
60 ***FEEDBACK***
Guides to machine languages

64 ***MORSE CODE***
The final listing

67 ***APPLECART***
Age of the multi-disciplinarian

77 ***ABC of the APPLE***
Dictionary for beginners

81 ***APPLE CLASSIFIEDS***
Our marketplace for sales and wants



positively the last word in processing

Many people think that because a personal computer does difficult things it must be difficult to operate. Not so. At least not so with the Format-80 professional word processing system.

The Format-80 system lets you and your staff concentrate on doing your work, not on working your computer.

* **EASE OF USE** is the cornerstone of Format-80. Anyone who can use a typewriter keyboard soon feels at home using Format-80 on the Apple II. Example - upper case characters are generated using the shift key - a lot of word processing systems use the ESCape key. Editing commands are introduced using a one keystroke mnemonic command.

* **FEATURES** of entering and editing text make Format-80 the favourite word processing system with office staff. Automatic carriage return insertion (word wrap around) means that they do not have to be concerned with line length; text is automatically adjusted to fit within defined page dimensions.

* **PROFESSIONAL PRESENTATION** of text is enabled using the powerful formatting capabilities of Format-80. Text centreing and justification, coupled with paragraph indentation allow production of high quality work with little effort. Text manipulation commands allow tabulation of columns of figures and easy insertion, location/correction and deletion of text. Whenever text to amended the changes are displayed immediately on the screen - including underlining.

* **PRINTING** of text may be performed on all popular printers. (Telex tapes can be produced directly from an Apple using Format-80). Proportional spacing, emboldening, shadow printing and sub and supercripts are all available on printers which support these functions.

* **COMPREHENSIVE MAIL LIST** facilities allow storage and retrieval of names and addresses which may be printed on adhesive labels or incorporated into documents using standard or specialised paragraphs. Powerful 'logic' commands make it possible to select only those records which match specified criteria.

* **TECHNICAL DETAILS** for the non-technical: Format-80 runs on the Apple II with 48K of memory Apple disk drive and a monitor. An Omnivision or Videx card is also required to provide the 80 character per line display.

* Format-80 is available from most Apple dealers or direct from Personal Computers Limited and costs £300 (ex VAT) - this includes the mail merge facilities as well as a mailing list sorter.

Please send me details of Format-80 and the address of my nearest supplier:

Name .....

Company .....

Address .....

.....

Phone: .....

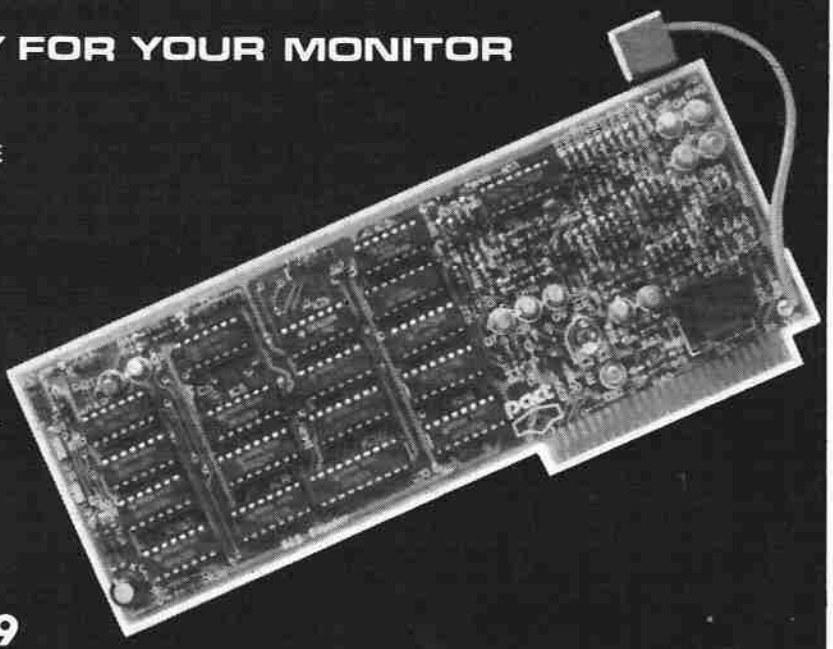
I do/do not own an Apple Personal Computer. .....

Personal Computers Limited

218 & 220/226 Bishopsgate, London EC2M 4JS. Tel. 01-377 1200

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
* Impedence protected

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

Telephone: 01-402 8842/6103
Telex: 22861

American Express Access

SCREEN WRITER

A Complete Professional Word Processor for Apple Computers

SCREEN WRITER is a state-of-the-art word processor that gives you the highest control of the written word available for the APPLE Computer.

SCREEN WRITER was designed to give you the power to easily arrange text so that it prints exactly as you want it to appear, no matter what the format. Form letters, legal contracts and other important documents may be reviewed and updated with just a few simple commands. Often used formats may be saved on disc and called up later as the basis for a new document, thus saving word processing time.

SCREEN WRITER is a complete word processing system. All you need is a standard 48K APPLE II/II+ computer system with a DOS 3.3 disc drive and a printer. No expensive "extra" hardware that costs you money and causes problems. It even has features that other micro-computer word processors CAN'T offer; features like printer spooling*, upper/lower case, seventy columns on screen and a software based keyboard buffer. ALL these features are available without the need for additional hardware. SCREEN WRITER is the only word processor that offers all these features without special hardware.

SCREEN WRITER is a professional word processor, yet is simple enough for even a novice to understand. The first time user and the word processing professional can feel equally comfortable with the system in a very short time.

SCREEN WRITER was built to be user friendly. The processing commands are easily learned, and a complete listing of the commands is included in the actual program. A handy user reference card is also included for quick reference to printing and editing procedures.

FEATURES

*GLOBAL SEARCH AND REPLACE. Change whole words and sentences throughout a file, quickly and easily.

*INSERT AND CHANGE MODES. Two editing formats to assure full coverage of your word processing needs. Insert Mode allows you to insert text by moving text forward to make room for it. The Change Mode allows you to write over old text, deleting it at the same time. Switching between edit modes is as easy as one keystroke.

*MACRO CAPABILITIES. Assign commonly used words, phrases or commands to special keys, making your processing more efficient by eliminating the need to type in the same sections of text multiple times.

*SUPPORT OF SPECIAL FUNCTIONS. Special commands allow you to initiate and change values in special printer drivers and BLOAD Hi-Res images for plotting on your printer.

*PROPORTIONAL SPACING. Supports proportional spacing on many printers (NEC, QUME, DIABLO, CENTRONICS).

*TEXT MOVE. Move whole sections of text around with just a few keystrokes.

*GENERATION OF INDICES. Generate up to four tables or indices while you type in your document with a few simple commands.

*PRINTER SPOOLING. Makes your word processing time more productive by allowing you to print and edit at the same time.

*Printer spooling is only available for printers with SSM AIO (Parallel or Serial interface), The APPLE parallel interface card or Epson interface card.

*SUPPORT OF YOUR EXTRA HARDWARE. **SCREEN WRITER** makes full use of your RAM cards and extra disc drives to make word processing quicker and easier.

*HYPHENATION. Make your final copy look better by eliminating unsightly "holes" in your text.

*FORM LETTER CAPABILITIES. Generate form letters from mailing lists you create quickly and easily. Special commands allow conditions to personalise your form letters.

*COMPLETE EDITING AND RUNOFF FUNCTIONS. Centring, boldfacing, underlining, complete formatting and direct interface with your printer.

LARGE FILE SIZE. **SCREEN WRITER** will handle documents up to 65,000 characters or over 50 A4 pages. Plus you can link files together as you want.

*CURSOR MOVEMENT. Movement of the cursor in your text by character, word, line, page or to the beginning or end of the document.

SCREEN WRITER
is available for £73.95

including VAT and postage and packing from:-

Spider Software

98, AVONDALE ROAD, SOUTH CROYDON, SURREY.

Telephone: 01-680 0267 (24 hours a day — 7 days a week)

ACCESS

SIMPLY THE BEST DATA BASE MANAGER AVAILABLE FOR THE APPLE

– SPECIFICATIONS –

I. DATA FIELD TYPES:

* Numeric
* Alpha characters A to Z and special characters
* Alphanumeric fields combining the above field types
* Calculated fields

II. STORAGE METHOD & RETRIEVAL TIMES:

ACCESS uses a powerful IRAM (Indexed Random Access Method) filing system. Records are stored in entry order. The index consists of the first characters of a specified field of each record (the number of characters used is dependent on the record size). Any record can be retrieved in less than 3 seconds if requested by it's index. Indexes may be created from any field (and stored for later use). Up to 8 indexes may be stored on each program disk. Any record on a diskette can be retrieved in less than 23 seconds using various criteria such as OR, AND, Wild Card, global or range searches on a field or number of fields.

III. CAPACITY:

* Up to 1521 characters per record
* Up to 39 fields per record
* Up to 39 characters per field
* Up to 20 calculated fields per record (calculated fields are not stored on disk)
* Up to 39 screen pages per record
* Maximum of 2640 records per diskette (depending on the size of the records)
* Up to 8 screen forms may be saved on each program disk (includes short forms which display only a portion of the record for rapid update/validation)
* Up to 16 defined report formats may be saved on each program disk

IV. SPECIAL FEATURES:

* Title only fields (do not take up valuable data space)
* Word processor style editor (delete/insert characters etc.)
* Hidden fields
* Simple command structure – Commands may be stacked for fast update and retrieval
* Free format screen design – Very easy to use
* Report generator allows additional calculated results, headings, column subtotals, totals etc.
* Logging of updated records
* Automatic or manual update of records
* Sorts may be merged
* A copy program is provided to enable back-up copies of the program and data disks to be made
* Standard DOS 3.3 text files may be produced in either sequential or random access format using any sorted or selected fields
* Deleted records may be un-deleted or purged from the database
* 7 second boot-up of program

V. SYSTEM REQUIREMENTS:

1. Apple II Plus 48K
2. 1 or 2 disk drives (2 recommended)
3. DOS 3.3 Disk Operating System
4. ACCESS supports most makes of printers (special control characters may be sent to the printer as required)
5. ACCESS will support most 40 or 80 column upper and lower case hardware modifications
6. Versions of ACCESS will be available to support the SyMBfile 5 megabyte Winchester drive and the SyMBstore 8 megabyte 5 inch floppy system

ACCESS is available for **£199.95** including VAT from all good Apple dealers or direct from:

Spider Software

98, AVONDALE ROAD, SOUTH CROYDON, SURREY.

Telephone: 01-680 0267 (24 hours a day — 7 days a week)

COMPUTECH for apple

Authorised dealer, service centre and system consultancy

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

COMPEC '82
16-19 NOVEMBER
OLYMPIA

STAND 1230
GROUND FLOOR
GRAND HALL

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/Calender	£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

TRAINING IN THE USE OF MICROCOMPUTERS

Intensely practical and always relevant, Microsystems Centre training includes two one-day courses of particular interest to Apple users. Both are held at the Microsystems Centre in London.

Retrieval and Database Systems

This course is for managers and others who keep files of information — currently on index cards, sheets, diaries, etc — to which they refer at frequent intervals and from which extracts need to be prepared. The participants will learn how to construct a file of information and retrieve whatever elements of that file they need at any one time.

No previous knowledge of computers is necessary.

Content

- **What is a microcomputer**
- **What is a database**
- **Building a 'Framework'**
- **Putting in information**
- **Searching for information**
- **Printing**
- **Sorting**

Each session includes a substantial amount of 'hands-on' experience.

DATES October 18th December 6th February 22nd
COST £105 + VAT.

The Last One

This continues the Microsystems Centre's series of courses on the application of program generating packages. Covering the use and application of The Last One, it is suitable for microcomputer users at all levels of experience. **All delegates receive a copy of The Last One.** In addition to providing a knowledge of the software package, this course examines and demonstrates the analysis work necessary to establish when and how the package should be used.

Each course is limited to a maximum of eight delegates to allow for substantial 'hands-on' experience.

The initial courses are based on Apple 11 and CP/M machines but subsequent courses will cater for other machines for which The Last One becomes available.

DATES October 11th November 1st December 13th
COST £300 + VAT, which includes a copy of The Last One.

Course places may be booked using the coupon below or by telephoning the Course Co-ordinator at the Microsystems Centre (01 353 0013).

Please reserve ..... place[s] for me on the following course[s]:

Retrieval and Database Systems

October 18th ☐ December 6th ☐ February 22nd ☐

The Last One

October 11th ☐ November 1st ☐ December 13th ☐

Name _____ Tel: _____

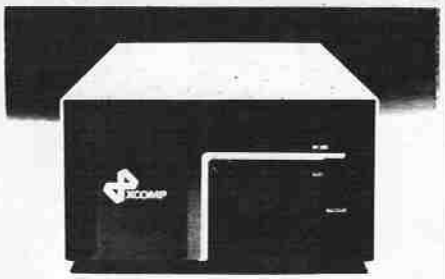
Address _____

_____ NCC WL 10 82

Please send me further details of Microsystems Centre Training ☐

Microsystems Centre

11 New Fetter Lane London EC4A 1PU
Telephone: 01 353 0013/4/5
a division of the UK National Computing Centre



THE XCOMP PHD 20MB HARD DISK
INC. CONTROLLER

Now you can add Personal Hard Disk to your Apple II, Apple III, IBM PC, XEROX 820, NEC PC-8000, OSBORNE and other Z80-Based Computers! Just look at these points:

Store as much information as approx. 110 Apple II Floppies!

The XCOMP Hard Disk sub system is twice as fast as some Hard-Disk sub systems and three times as fast as others.

XCOMP solves your data security problems with the PHD10×10
It operates as a 10 Megabyte (MB) Disk for working Data and 10MB for back-up with special software that meets your specific needs.

XCOMP'S X-CAT Catalog Program for the Apple II will manage all files now on your PHD. Just type the program name and X-CAT will find it.

XCOMP allows simultaneous use of CP/M, DOS, & PASCAL.

And this highly reliable Hard Disk Sub-System is backed with Pete & Pam's technical service dept.

£2495.00

NEW!

SPECIAL EDITION DB MASTER

Special Edition for HARD DISK now available from Pete & Pam - Compatible with CORVUS and XCOMP PHD Hard Disk Drives - Allows you to store an incredible number of records.

£299.00

APPLE CARE

MACHINE COVERS

APPLE II	5.95
APPLE & 2 DISKS	7.95
APPLE & 12" MONITOR	7.95
APPLE, 2 DK & 12" MON.	9.50
APPLE, 2 DK & 9" MON.	8.95
SINGLE DISK	3.45
2 STACKED DISK	4.45
9" MONITOR	4.95
EPSON MX80/70	5.45
PAPER TIGER 445/60	7.95
APPLE /// INC. MON	12.95
MX100	8.95
QUME 5 W/TRACTOR	10.95
NEC 12" MONITOR	7.50
HITACHI 12" MON.	7.50
DECCA RGB MONITOR	8.95
SIRIUS KEYBOARD	4.45
SIRIUS PROC &MON	12.95

HEAD CLEANING
Clean read/write heads the way leading manufacturers recommend. 5¼" disk head cleaning kit. **£18.95**

DISKS & DISK BOXES
BASF single sided, single density disks.
10 for **£17.90** 50 for **£84.50**
100 for **£159**
Kass-ette storage boxes **£2.45**

THE APPARAT EPROM BLASTER

The most versatile EPROM burner available today for your Apple.

The Apparat PROM blasting system will program all commonly used 24 pin EPROMS

It will read copy and program the following EPROMS: 2704 2708 2716 (3 volt) and (5 volt) 2732 2508 2516 and 2532.

And the price..... **£119.00**

BOOKS

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
CP/M USER'S GUIDE	4.95
APPLE INTERFACING	7.65
CIRCUIT DES. PROGS FOR APPLE	11.15
APPLE II USERS GUIDE	10.95
VISICALC HOME & OFFICE COMPN.	11.50
THE POWER OF VISICALC VOL.I	6.95
THE POWER OF VISICALC VOL.2	6.95
KIDS AND THE APPLE	13.95
GUIDE TO PROGRAMMING IN ASOFT	11.50
SCIENCE & ENG.PROGRAMS (AII)	11.50
A'SOFT BASIC DATA FILE PROG.	8.95
ASSEMBLY LANG PROGRAMMING	9.50
OSBORNE C/PM USERS GUIDE	3.95

SYNERGIZER with FREE SUPERCALC contains
Z-Card Z-80 Processor Card
C/PM OP System and Licence
Rodney Zaks C/PM manual from Sybex
16K Samram Ramcard
Smarterm 80 col card with enhanced CHR set and integral soft switch together with free Supercalc

SPECIAL OFFER PRICE *£399.00*
Without 16K CARD *£335.00*

Z-CARD WITH SUPERCALC and CP/M
SPECIAL PRICE £199.00

The Independent Guide to IBM Personal Computers

THE MAGAZINE OF THE IBM COMPUTER

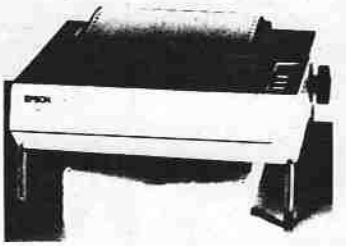
Tells you how to put together the best IBM system and how to get the most out of it. Subscribe today.

Name _____
Address _____

☐ 6 issues £17.50 ☐ 12 issues £32.50
☐ Cheque enclosed ☐ VISA ☐ Access Card
Card No. | | | | | | | | | | | | | | | | |

Send to: **Dept. PC** Waingate Lodge, Waingate Close, Rossendale, Lancs. BB4 7SQ

If not fully satisfied return mailing label within 15 days for full refund.



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

stilts

Pete & Pam Computer's Stilts are four legs which can be installed on to your Epson MX80 in seconds – giving you room for 3 inches of paper. **£5.95**

Printers

EPSON

MX80 F/T TYPE III	389.00
MX80 T TYPE III	349.00
MX82 T Graphics Printer	369.00
MX82 F/T Graphics Printer	409.00
MX100 F/T TYPE III	499.00

NEC

PC-8023 B-C	399.00

SPECIAL OFFER
Free Printer Table Worth £99 with the purchase of any of the above printers. (or equivalent value off other items of furniture).

d BASE 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 then 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

d BASE II **£399.00**
Requires Microsoft Z-80 Softcard **£199.00**

COOLING SYSTEMS FOR APPLE...

COOL STACK **£69.00**
APPLEFAN **£68.60**
PACT FAN MODULE **£49.00**

Prevent overheating.... Call Pete & Pam Today....

The Only Database That's Smart Enough For Business Forms.

- Invoicing
- Purchase Orders
- Client Billing
- Mailing Lists
- Order Processing
- Sales Analysis
- Personnel Records
- Inventory Ledgers

HARD DISK Compatible

VersaForm
Business Form Processor

Certified VersaForm applix II applix III Application

Versa Form	£229.00
Versa Form for Apple III	£295.00
Versa Form Pascal Interface	£139.00

GAMES SALE!

BATTLE OF SHILOH	*25.95*
THE ROAD TO GETTYSBURG	*38.95*
DRAGON FIRE	*25.95*
ALKEMSTONE	*25.95*
KAVES OF KARKHAN	*25.95*
CHECKER KING	*12.95*
DATESTONES OF RYN	*12.95*
FRACAS	*15.95*
METEROIDS IN SPACE	*12.95*
COMPUCUBE	*18.95*
CROWN OF ARTHAIN	*21.95*
TANK COMMAND	*10.95*
HYPER HEAD–ON	*15.95*
SPACE QUACKS	*18.95*
ALIEN AMBUSH	*15.95*
RUSKI DUCK	*21.95*
ORBITRON	*18.95*
RETRO BALL	*18.95*
HEAD–ON	*12.95*
BOTH BARRELLS	*15.95*

BUY ANY 3 – Deduct 30%
BUY 5 – LESS 40%

Function Strip

NEW FROM VIDEX

The Videx **Function Strip**™ adds a whole new dimension to your Enhancer][™, Apple][™ 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.

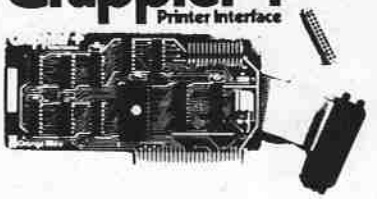
The Videx **Function Strip** is a low cost, versatile strip of pressure sensitive switches. The **Function Strip** adheres to the Apple]['s lid —just above the keyboard and connects to the Enhancer]['s keypad connector port. The **Function Strip** is completely compatible with keypads connecting to the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

Function Strip	£54.95
Enhancer II	£99.00
OR... BOTH FOR A SPECIAL PRICE OF:	£149.00

NEW!

The Grappler+

Printer Interface



The most intelligent full-featured Apple printer interface on the market.

The Grappler+ Features:
• Dual Hi-Res Graphics • Printer Selector Dip Switch • Apple III Compatible* • Graphics Screen Dump • Inverse Graphics • Emphasized Graphics • Double Size Picture • 90° Rotation • Center Graphics • Chart Recorder Mode • Block Graphics • Bell Control • Skip-over-perf • Left and Right Margins • Variable Line Length • Text Screen Dumps.

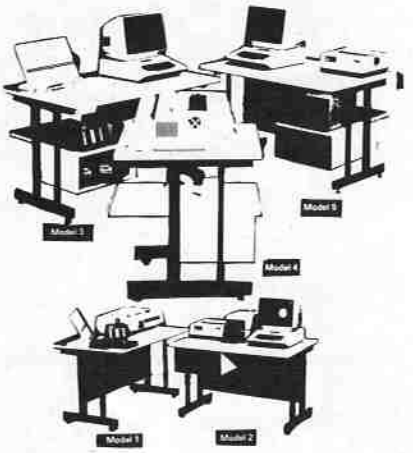
The Grappler+ works with Pascal and CPM.

The Grappler+ Interfaces with the following printers:
• Anadex • Centronics • Okidata • Epson • IDS • NEC • C-Itoh •

£99

COMPUTER FURNITURE

An attractive comprehensive range of computer furniture designed to accomodate most leading computer systems. From the simplicity of the Model I desk to the model 5 Desk which provides a shelf unit for Disk drives, and listing paper and a large drawer for floppy disk storage. The drawer pack + disk drive shelf can be placed to the right or left of the operator — this should be stated when ordering.



Model 1 27½"x46"x30"	£89.00
Model 2 27¼"x46"x30"	£119.00
Model 3 27½"x46"x30"	£119.00
Model 4 Printer Table	£99.00
Model 5 27½"x46"x30"	£149.00

£50 voucher

Yes, Pete & Pam Computers will give you a £50 voucher with every SATURN 128K CARD!

The voucher may be redeemed against any purchase of any Visicorp product other than VISICALC ie VISIDEX. VISITERM. DESKTOP PLAN. VISITREND/PLOT. VISIPLOT. VISIFILE, BUSINESS FORECASTING MODEL, VISISCHEDULE. SATURN 128K CARDS can be used in conjunction with VC EXPAND and VC EXPAND 80 software to provide extra memory for VISICALC models up to a maximum of 177K ie with a SATURN 128K and a SATURN 32K card. VC EXPAND 80 together with a Videx Videoterm 80 column Card will give an 80 column Display together with additional memory.

SATURN 128K CARD	£359.00	VISICALC	£149.00
SATURN 32K CARD	£149·00	VISISCHEDULE	£189.00
VC EXPAND	£ 55.00	VISIDEX	£149.00
VC EXPAND 80	£ 69.00	VISITREND/PLOT	£180.00
VIDEX VIDEOTERM	£195.00	VISITERM	£ 65.00
SOFT 80 COLUMN SWITCH	£ 19.95	VISIPLOT	£125.00
HARD SWITCH PLATE	£ 15.95	VISIFILE	£159.00
INVERSE ROM (Recommended)	£ 18.95	VISICALC B.F.M.	£ 75.00
		DESKTOP PLAN II	£149.00

SATURN CARDS come complete with Disk Emulation Software in Basic (32K), Basic Pascal, and C/PM (128K).
AVOID EXPENSIVE MISTAKES. BEFORE YOU BUY ANY OTHER EXTRA MEMORY CARD – CHECK WITH US!

Pete & Pam Computers

BARCLAYCARD VISA

Mail Order & Distribution:
Waingate Lodge, Waingate Close, Rossendale, BB4 7SQ
Phone: (0706) 227011
Telex: 635740 Petpam G

Norwegian Agent:
The Norwegian Software House
Address Okernveien 145
Oslo 5
Telephone 47 2 64 55 77

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

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

"The Apple][is limited to 64K RAM..."

(...EXPERT c.1981)

"Rubbish, the fact is...

... my Apple][has **128K** ①
and I run
80K Visicalc Models"
(P.A. TO M.D.)

... my Apple][has **192K** ②
and I run
128K Basic Programs"
(PROGRAMMER)

... my Apple][has **320K** ③
and I manipulate
arrays of up to 250 x
250 elements in RAM"
(BOFFIN)

Yes the Apple][once again shows its versatility – just add U-RAM 16, 32 or 128K RAM boards to your Apple with appropriate software and you can have the capabilities the other manufacturers only dream of.

① Basic Apple with one U-RAM 16 and two U-RAM 32.
② Basic Apple with one U-RAM 16 and one U-RAM 128. Chained program.
③ Basic Apple with one U-RAM 16 and two U-RAM 128.

PRICE LIST

Boards

U-RAM 16- 16K RAM board	**£65.00**
U-RAM 32- 32K RAM board	**£85.00**
U-RAM 64- 64K RAM board	**£180.00**
U-RAM128-128K RAM board	**£275.00**

Software

Memory Manager 16 (MMS 16) DOS relocator for U-RAM16	**£15.00**
Versa MMS (VMMS) DOS relocator for other boards	**£15.00**
Versa Visi expand (VVE) Versatile Visicalc expansion*	**£50.00**
Versa RAM disc (VRD) Versatile disc emulation software DOS 3.3*	**£50.00**

*Work with U-RAM16, 32, 64 and 128, *and* multiple *and* mixed boards.

Prices exclude VAT.
Order from your local dealer.

U-MICROCOMPUTERS

a range of quality peripheral cards to enhance your Apple

We now make more Apple cards than Apple!

U-Microcomputers Ltd., Winstanley Industrial Estate, Long Lane, Warrington, Cheshire WA2 8PR, England. Tel: 0925 54117/8 Telex: 668920 U-ONE

A2-PB1

PINBALL

Experience A2-PB1 PINBALL, the ultimate in arcade simulation. If you're already familiar with other pinball games, discover what a real pinball simulation is all about. 48K Apple II disk.

Features:

- 10 selectable modes of play, including *Easy, Competition, High Speed,* and *Cosmic.*
- 40 user-adjustable parameters: create and save your own custom games.
- an instruction card, a hi-score disk label, and a 16-page manual explaining all of the variations available.

subLOGIC

Communications Corp.
713 Edgebrook Drive
Champaign IL 61820 USA
(217) 359-8482
Telex: 206995

See your dealer . . . and see what you've been missing!

"Apple" is the registered trademark of Apple Computer Inc.

The Scotch Diskette is no miracle product. It locks in the data you feed it. It gives you data back, when you need it. Simple, really.

But there's more than that to a Scotch Diskette. It doesn't cause errors. It doesn't lose vital information. It's totally reliable. That's why we call it "the Key to Data Security".

Scotch Reliability

Ever since they introduced the first computer tape, over 25 years ago, 3M have specialised in magnetic media. Today, every Scotch Diskette comes to you 100% certified for error-free performance. Small wonder that 3M media has been chosen for use as the world-wide amplitude reference standard.

3M: Impeccable Service

It doesn't matter what sort of equipment you have. If it uses floppy disks, chances are there's a Scotch Diskette to fit it. And if ever you need advice or help with product selection, handling or storage, there's a nationwide network of 3M distributors to serve you - impeccably.

Whether your system uses computer tape, disks, data cartridges, cassettes or floppy disks, 3M has the key.

For the address of your nearest distributor, contact Data Recording Products, 3M United Kingdom PLC., 3M House, PO Box 1, Bracknell, Berks RG12 1JU. Telephone: Bracknell 58502.

3M: Your Key to Maximum Data Security.

RELIABILITY IMPECCABLY SERVED

3M and Scotch are trade marks

3M

Scotch Diskettes Special Offer

YOURS FREE

This sleek Post-it Note Tray with every purchase of 10 Scotch Diskettes

However reliable a Scotch Diskette might be, it's hardly the sort of thing you'd use to scrawl a note on.

You'd reach for the handiest bit of scrap paper for that job. Or, if you really were living in the 20th Century, you'd reach for a Scotch Post-it Note.

Scotch Post-it Notes: the ultimate in noticeable noting.

Scotch Post-it Notes are rather special sheets of paper.

For one thing, they're the brightest of yellow in colour. Which makes them eminently noticeable, even on the untidiest of desks.

For another, they incorporate a strip of special adhesive on their backside which makes them eminently stickable to any surface - and just as removable. Without leaving the slightest trace of tacky-ness.

All of which means you can stick, remove and re-stick your Post-it Note to anything you like and it will stay stuck - without clips, pins, staples or tape.

The ultimate in noticeable noting?

Very nearly, if you include the unique Scotch Post-it Note Tray.

The Scotch Post-it Note Tray: noticeable notes at your fingertips.

Designed specifically to hold your Post-it Notes, the Scotch Post-it Note Tray is your handy access to instantly noticeable noting.

It's made of sturdy acrylic and it accommodates any of the various pads of Post-it Notes.

Plonk it on your desk and it will sit, tight and true, without budging or squirming, thanks to its weighted, non-slip base.

So you can scribble your messages with one hand while holding the 'phone with the other.

Altogether, the Scotch Post-it Note Tray could take the grief out of your briefs!

And its yours to possess absolutely free of charge.

The Scotch Post-it Note Tray Offer.

All you have to do to acquire your own Scotch Post-it Note Tray (complete with a pad of Post-it Notes) is buy 10 Scotch Diskettes.

On delivery of the Diskettes you will receive your Post-it Note Tray - absolutely free of charge.

To obtain your Scotch Diskettes contact your nearest 3M sales office or complete the coupon below.

But do it now to ensure delivery of your Scotch Post-it note system: the ultimate in noticeable noting. Offer closes 31 December 1982 or while stocks last.

3M Regional Offices:
Belfast: (0232) 42811: Phyllis Carson
Birmingham: (021) 236 5077: Wendy Jones
Glasgow: (041) 332 9622: Janis Galbraith
Manchester: (061) 236 8500: Sonia Bassett
London: 01-659 2323: Mike Banks

To: Danny Welch, 3M UK PLC, 3M House, FREEPOST, Bracknell, Berks RG12 1BR.

I would like to order 10 Scotch Diskettes. Please contact me.

NAME

POSITION

COMPANY

ADDRESS

TELEPHONE No:

Registered in England at 3M House P.O.Box 1, Bracknell, Berks, RG12 1JU No. 241888

Keep your apple™ on your own tree.

Any personal computer is vulnerable

The system, its controller cards and its peripherals can be stolen when left unattended. Unauthorised users can intrude.

Power surges can destroy or corrupt programs and vital data.

Heat can also cause problems.

And, in the office or home, power and interface cables can make a smart system look a jungle of wires.

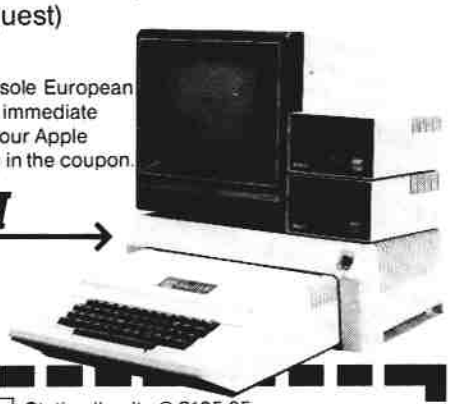
Designed by approved consultants to Apple Computer Inc., Station II is a simple device that removes these problems at a stroke, as thousands of Apple users in the USA have discovered.

Add up the potential cost of these problems and the price of the solution — Station II — will come as a pleasant surprise. £89 plus VAT

For Apple users the arrival of Station II is a windfall not to be missed. (Dealer terms available on request)

Fletcher Dennys Systems Ltd., the sole European distributors, can offer immediate delivery. So, secure your Apple system NOW by filling in the coupon.

Station II



Please send me
☐ Station II units @ £105.25 inc. VAT post & packing
☐ optional integrated fan kits @ £58.85 inc. VAT post & packing

Name Telephone

Address

I enclose a cheque for £

Please debit my Access the sum of

Access card number

Fletcher Dennys Systems Ltd.,
97c Elgin Avenue, London W9 2DA Tel. 01-286 7374

Vlasak Computer Systems

YEARS EXPERIENCE WITH APPLE COMPUTERS AND ACCOUNTING/MANAGEMENT CONTROL PROGRAMS

NATIONWIDE DEALER NETWORK

VLASAK STATIONERY SERVICE
Continuous N C R Stationery

This service specialises in fast turnaround custom continuous stationery. N C R multi-part sets are a particular speciality. For ORBIT software users a range of standard stationery is available. Any design can be handled including any combination of colours and parts, either with the same or different printed layout on each part. Any depth which divides exactly into either 22" or 24" is available subject to minimum depths of 5½" and 4" respectively.

KWIK-SNAP

Kwik-Snap provides you with the ability to mount any standard document you use now on a continuous tractor-fed carrier paper. For example, if you use a word processing system it can save the time usually wasted inserting and aligning letterheads. Copies can also be handled either via N C R or carbon paper.

VLASAK DISK PRODUCTS
Megastor

– an 8-inch disk drive unit compatible with Apple computers which comes complete with interface, DOS and utility software. Two storage capacities are available; 1 Mb and 2 Mb.

Protect

– the *only back-up unit* for your Apple *III* Profile Winchester disk. Copy the entire disk in just 20 minutes on to 10 diskettes. Hold complete back-up cycles to ensure your complete data and program integrity.

THE ORBIT BUSINESS SYSTEM

A comprehensive integrated business system designed to run on the smallest through to the very largest Apple system. The capability of the system is limited only by the amount of disk storage attached to your system. Sales, Purchase and General Ledgers including Profit and Loss, Balance Sheet and Budget reports are all handled. Invoicing and a Stock system complete the package. ORBIT is probably the most powerful, flexible and fastest package available for Apple hardware and exploits fully the potential offered by Apple/UCSD Pascal.

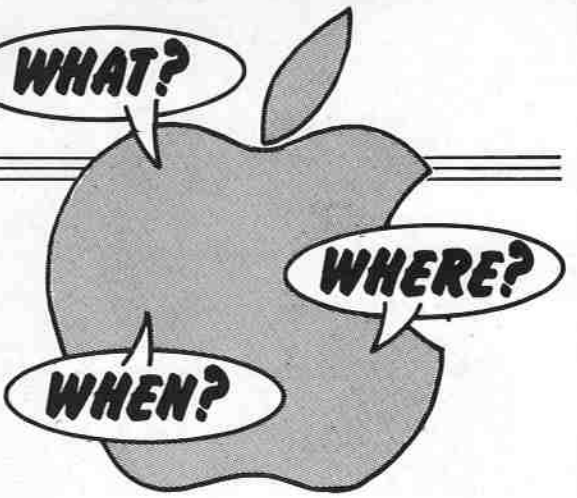
VLASAK COMPUTER SYSTEMS
VLASAK HOUSE, STUART ROAD, HIGH WYCOMBE
BUCKS HP13 6AG Tel (0494) 448633 Telex 837413 VLASAK G

I would like further information on the following VLASAK products:

- ☐ Disk products
- ☐ ORBIT business system
- ☐ Stationery service
- ☐ Please arrange a demonstration with my local dealer
- ☐ Please forward your dealer pack

Name _____
Address _____
_____
Post Code _____ Tel. No: _____

WHAT'S NEWS...



By David Creasey

Writs are flying thick and fast

APPLE is taking strong action against copy-cat companies throughout the world. In a campaign to stop the manufacture and export of bogus Apple IIs the company has filed law suits against several overseas businesses – notably in Taiwan, Hong Kong and New Zealand.

It is also considering legal action against companies in Japan, Singapore and Australia. In Taipei Apple has brought a civil suit under the country's copyright laws against Sunrise Computers, the manufacturers of the Appolo II, an Apple lookalike.

In what smacks of a Hollywood-style dawn raid, the company first seized several Appolo machines as evidence. In a similar operation in Hong Kong (where action is being taken under local patent laws) Apple seized lookalike machines as well as sales and purchase records from a small company.

In New Zealand Apple has obtained an injunction against Orbit Electronics, which it alleges was passing off micros from an unknown Taiwanese manufacturer as Apple IIs.

Apple's main concern must be to stop Asian lookalike machines reaching the much more competitive European and North American markets, where they could present a serious threat to sales. The company has now registered its trade marks and copyrights with the United States customs authorities and a spokesman says already some lookalike machines have been seized and destroyed by customs officials in San Franscisco, Seattle, Los Angeles, Honolulu and Chicago.

Not such good news for Apple, however, was a recent ruling by a Pennsylvanian judge which has considerably weakened its position in protecting its designs. The judge rejected Apple's bid to obtain a preliminary injunction against Franklin Computer, a Pennsylvanian company that produces an Apple-compatible micro.

He said a key element of the Apple computer was not covered by American copyright laws.

PEEKs in Parliament?

GRAHAM Bright has come up with what this journal considers is a very bright idea indeed – we ought to get our MPs computerised. And as Mr Black is one of them himself – he represents Luton East – he's in the right place to do something about it.

He got the idea when, along with other parliamentarians, he went on a hands-on course at the National Computing Centre. After two days putting an Apple through its paces – and becoming more and more impressed as he went along – he decided it was time for action.

"We in Parliament ought to get into the 20th century. We are urging everyone else to do so", he said. "We have ten and 11-year-old youngsters quite happily programming micros to carry out operations in the home or in the schools. I thought the least I could do as an MP and representative of the people was to learn more about computers and their limitations.

"Now I am thinking about computerising myself very seriously. Micros have limitations, but they have enormous capacity for filing and extracting information rapidly."

And there's no shortage of that round Westminster way.

Wish every office was as carefree as this. But with an Apple doing most of the work on Kidsline, why worry? Explanation overleaf.

Up anchor with Apple

ANYONE with a problem getting hold of spare parts for a supertanker or cargo vessel will be delighted with a service offered by Souter, a firm of ship spares, brokers and purchasing agents. They use an Apple to keep up to date with ship spares held in warehouses around the world.

"Shipowners can hire out a vessel for £13,000 a day – and so they keep adequate supplies of spares to ensure that any vessels needing repair are out of commission for as short a time as possible because they don't like to lose all that revenue," said a spokesman for Souters. "But when they eventually sell the vessel they often don't sell their spares as well – which is where we come in."

However aspiring yachtsmen with the scent of a bargain should look elsewhere. The company only carries spares for vessels of over 1,000 tons.

WHAT'S NEWS...

Apple on the kids' hotline

INPUT . . . entering the facts at Kidsline HQ

A UNIQUE telephone information service for youngsters, Kidsline, is alive and well in London, thanks largely to the data handling capabilities of an Apple, and to the initiative of one of its founding directors, Ann Vernon Griffiths.

When Ann realised that her fledgling Kidsline service, then a voluntary organisation, couldn't survive without a computer, she phoned Cupertino to ask for help.

She told *Windfall:* "We were inundated with calls when we started, handling 50,000 in 1979, and because of the scale of the project couldn't have continued without some mechanical system to help us.

"We borrowed an Apple II for a short time and then realised we couldn't do without it, so I rang Cupertino and spoke to one of the Steves . . . I'm not sure which one. He said I should ask for help from Apple in Europe."

Apple agreed to lend Kidsline a machine, and they used it to get over the problems of handling a complex daily diary of events, a comprehensive cross referencing system and a constantly changing mailing list, needed to sustain an effective "what's on" service. Any child in the London area who is bored, or who wants to follow up a genuine interest or something seen on television, can phone Kidsline on 01-222 8070.

The company also provides Capitol Radio with its Kidsline service, and this year is working with London Weekend Television on what Ann describes as "the first genuine tellyphone show." Events ranging from collecting piggy banks to deep sea diving are advertised on the Saturday morning show together with the Kidsline telephone number.

Kidsline now uses an Apple III with Profile hard discs, but has found it still needs more storage! However Ann says the company has been very lucky . . . and it now plans to pass its experience to voluntary organisations. This month it is organising, as part of IT82, a special computer conference for voluntary organisations to show them what can be achieved with the use of a computer.

OUTPUT . . . to one of the customers

Pop goes the curriculum

A POP song and boundless enthusiasm have helped to put Apples on the curriculum at the Holy Cross High School in Hamilton, Scotland. All second year pupils at the 1,800-strong mixed school now have computer studies on their weekly timetable and at the end of the year they'll be able to choose whether or not to continue to examination level.

"The aim is to give everyone computer literacy and hands on experience," says the school rector, Mr Matthew Fox. "There has been tremendous support and enthusiasm from parents, staff and pupils. Computer clubs use the Apples during the lunch break and after 4pm – we can't keep them out."

The school acquired its first Apple 18 months ago, was given a second by the Strathclyde Education Authority six months ago and last month completed the installation of 15 Apples in a special computer studies room.

Ten thousand pounds of the £13,000 target figure has been raised by the school in six months. Some came from a record produced by the school remedial department. It featured an unofficial Scottish World Cup song which had an anti-hooligan theme, and a song relating to the banning of "the belt" in Strathclyde schools.

The Apples, installed by Data Supplies and by Applescott, currently have their own disc drives, but will soon be networked on a single drive controlled by a teacher through the American ROS operating system.

"We have embarked on an exciting venture," said Mr Fox, "and we want to plan it properly." As a next step the school has applied for the secondment to the staff of a full-time programmer. "The local

authority has certain funds available and asked for suggestions," said Mr Fox.

"We want a programmer to work with our teachers on this project, and also to produce programs tailored for Scottish needs which can be used by all Apple users in Scotland."

Bugs in their program

FIRST Division football is nothing new for the Apple, in fact one has been keeping tabs on the home activities of Aston Villa for the past two years.

Roger Eastmead, who installed the Apple at Villa Park, told Windfall he built the electronics to operate the club's scoreboard "and needed a reasonable computer to run it."

The scoreboard apart, there are a few bugs in Villa's system at the moment judging from their performances at the start of the new season and they'll need to iron these out if they are to repeat their recent European successes.

Syntauri angels chip in

APPLE co-founder Steve Wozniak, forever looking for new fields to conquer, has turned his attention to digital synthesizer pioneer Syntauri Corporation.

Steve, who now spends more and more of his time with his new hobby – acting as an independent investor in up and coming companies – has gathered together a group of like-minded "computer angels" to fund a substantial cash injection into Syntauri.

It is a company he knows well. Formed three years ago, its big break came in 1980 when it launched the AlphaSyntauri keyboard synthesizer piggy backed to an Apple II.

This introduced a new concept in using microcomputer technologies for low-cost programmable synthesizers and became a world-beater. Many universities now use it for teaching musical composition, and it is no stranger to professional recording studios. It was also one of the best-remembered stars of our Apple '82 show last June.

In the wake of the big cheques Steve has had some of his financial pals elected to the Syntauri board. They include Nicholas Fortis, former finance chief of Nestar Systems, Thomas Skornia, top man at Advanced Micro Devices and co-founder of venture capital investment fund Third Wave Investors, and Philip Roybal, Apple's communications programs manager.

Top of the pops

IT is a case of discs on disc for the recently-formed Independent Labels' Association, which uses an Apple to keep a record of records produced by independent recording companies.

"There are over 5,000 independent record labels in this country," says Sabrina Rooles of the I.L.A., "and we are compiling a database of all their releases. Dealers in particular and members of the public in general can phone us to obtain free information about those records – such as the name of the artist, title, label and catalogue number.

"At the moment if someone goes into a record shop without knowing the label of the record they want, a dealer has to look through the files of up to 200 small distribution companies, or those of seven major companies. With our Apple-based service they can get this information in minutes."

The I.L.A. is a non-profit making concern and can be contacted on 01-580 6176. Its database covers a six-month period and at the moment all independent label recordings. Later, as membership grows, only Association members will have their details kept.

Design a Christmas card on your Apple – get a Bit Stik in your stocking

WRITE a program to design a Christmas card, making the fullest use of the Apple's graphics, colour and sound capabilities.

That's our challenge to readers in a Windfall competition to round off a year that has seen so many exciting developments in programming techniques.

And for the reader submitting the most imaginative program we have a very appropriate prize – the upgraded version of the Bit Stik, the British-designed creative graphics system that transforms an Apple into a powerful generator of computer graphics.

There are no restrictions on the form of Christmas card your program will create – you can give full rein to your imagination. But it MUST be written in Basic, and any machine code routine you may want to use MUST be poked in from the parent Basic program.

What the judges will be looking for will be originality, and the most imaginative use of colour and sound.

You are asked to submit your program on disc or tape, and to enclose a stamped addressed envelope for its return.

The result of the contest will be printed in the December issue of Windfall, together with the listing of the winning program.

Closing date for entries is Monday, November 1.

——ENTRY FORM——

I enclose a disc/tape as my entry for the Windfall Christmas card design competition.

Name _____

Address _____

_____

_____

Tel _____

For a nicely rounded Applesoft

Although Applesoft has an integer truncation routine **INT**, it does not have a rounding function. The listing right links together some internal Applesoft routines to do the job. The first is integer rounding, the second rounds to two decimal places (convenient for money handling programs). To use one of these subroutines, point the **USR** address (at $B.$C) to $300 or $306.

If you want to round to a different number of d.p, simply slot in more **MUL10s** and **DIV10s**, it's much faster than the usual:

100 J = INT (10000*K + 0.5)/10000.

J.P. Lewis

```
SOURCE FILE: ROUNDING
E7A0:              1 FADDH   EQU  $E7A0     ;FAC:=FAC+0.5
EA39:              2 MUL10   EQU  $EA39     ;FAC:=FAC*10
EA55:              3 DIV10   EQU  $EA55     ;FAC:=FAC/10
EC23:              4 INT     EQU  $EC23     ;FAC:=INT(FAC)
0000:              5 ;
----- NEXT OBJECT FILE NAME IS ROUNDING.OBJ0
0300:              6         ORG  $300
0300:              7 ; Rounding
0300:20 A0 E7      8         JSR  FADDH     ;Add half, then
0303:4C 23 EC      9         JMP  INT       ;take the integer part
0306:             10 ;
0306:             11 ; Round to 2 d.p.
0306:20 39 EA     12         JSR  MUL10     ;Multiply by 100
0309:20 39 EA     13         JSR  MUL10
030C:20 A0 E7     14         JSR  FADDH     ;Add half
030F:20 23 EC     15         JSR  INT       ;Take the integer part
0312:20 55 EA     16         JSR  DIV10     ;Divide by 100
0315:4C 55 EA     17         JMP  DIV10
0318:             18 ;
```

Formatted listings

The program on the right produces nicely formatted listings from the Apple Toolkit Assembler Edasm text files without having to get into Edasm.

It merely reads a text file from disc one byte at a time, expanding 'space' (the Edasm shorthand for 'tab') into several spaces when necessary, or tabbing to the middle of the page if it gets a 'semicolon' (the Edasm 'comment' character) at the start of a line.

If you want to alter the tab sizes it is easy to change lines 2,3,6,7. If you have an assembler with a different tab character just change line 52. And finally, for a different comment character, change line 54.

The **POKE** in line 65 is there to keep slot 6 drive 1 going. The **POKE** in line 110 is to stop it. The **PR#0** in line 100 is there to do an automatic switch-off just in case you did a **PR#1** before running the program.

J.P. Lewis

```
1  GOTO 10
2  IF PSN < 10 THEN  FOR X = PSN TO
     9: PRINT " ";: NEXT :PSN = 1
     0: RETURN
3  IF PSN < 15 THEN  FOR X = PSN TO
     14: PRINT " ";: NEXT :PSN =
     15: RETURN
4  RETURN
5  IF PSN = 1 THEN  RETURN
6  IF PSN > 24 THEN  RETURN
7  FOR X = PSN TO 24: PRINT " ";:
     NEXT :PSN = 25: RETURN
10  INPUT "NAME OF FILE";A$
15  PRINT : PRINT
20 D$ =  CHR$ (4)
22  ONERR  GOTO 80
25  PRINT D$"MON I,O"
30  PRINT D$;"OPEN ";A$
40  PRINT D$;"READ ";A$
45 PSN = 1
50  GET X$
51  IF  ASC (X$) = 13 THEN PSN =
     0
52  IF  ASC (X$) = 32 THEN  GOSUB
     2
53  IF X$ = ";" THEN  GOSUB 5
54  PRINT X$;
55 PSN = PSN + 1
65  POKE 49385,0
70  GOTO 50
80  PRINT D$;"CLOSE";A$
90  PRINT D$;"NOMON"
100  PRINT "PR£O"
110  POKE 49384,0
120  END
```

A sort of Pascal Catch 22

You might think that the following two record **TYPE** declarations in Pascal are equivalent:

```
TYPE ONE = RECORD
A,B,C: REAL END;
TWO = RECORD
X: REAL;
Y: REAL;
Z: REAL END;
```

This innocent looking change resulted in chaos in a program of mine. In a record of type **ONE**, the compiler creates the fields in the order C then B then A. In record type **TWO** the fields are created in the order expected – X, then Y then Z.

In the program concerned the records were created and filed as type **TWO**, then accessed later by a type **ONE** variable. Imagine the head scratching when first and last fields were smartly reversed causing wrong results in the calculations.

D.P. Oulton

Mod for Apple video

Here is a circuit to allow the position of the Apple video pages (text and graphics) to be moved relative to the beginning of the normal video field. The Apple video data is written on only 192 lines of the approximate 296 video lines available.

Most monitors are adjusted to "overscan" in the vertical direction so that the Apple video fills the screen. However, when mixing Apple video with normal video, the Apple data appears in the middle of the screen, which can be inconvenient.

No permanent modifications are necessary and reversion to normal is straightforward. Also only one additional I.C. is required.

The circuits were constructed on piggy-back boards and inserted in the positions normally occupied by the 74LS51 (I.C. C13) Figure 1 and the 74LS02 (I.C. A12) Figure 2.

All pins on the 74LS51 with the exception of pin 12 are reconnected via the piggy-back board to their respective positions on the Apple's main circuit board. Pin 12 is disconnected from the main board and rerouted as shown in Figure 1.

On the 74LS02 board (Figure 2), again all pins are reconnected to their respective positions on the Apple main board with the exception of pin 2, which is taken down to an 0V potential as shown in Figure 2.

Robert Royall,
Cleveland Medical Physics Unit

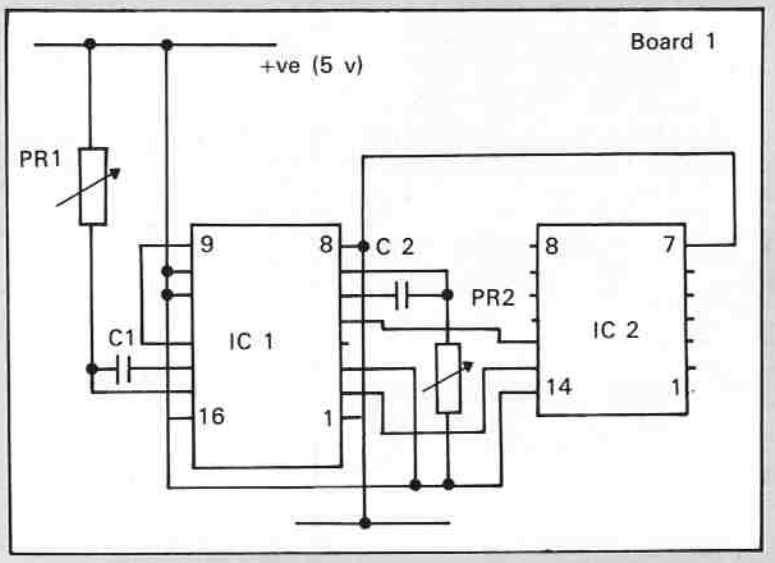


Figure 1

PR1 20k (set position)
PR2 5k (3k9 fixed optional) blanking width
C1 0.1 uf
C2 0.47 uf
IC 1 74LS221 (delay)
IC 2 74LS51 } Existing IC's
IC 3 74LS02 }

IC 1 Pins 4, 12 N/C

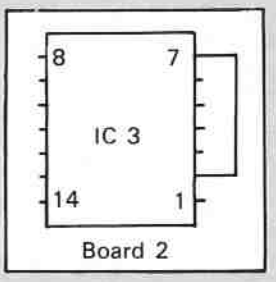


Figure 2

Blessed with Booleans

PASCAL is blessed with Booleans. There is nothing revolutionary about this, you might say, every virile young programming language has them in one form or another. However it does lead to some nice, clear, easy-to-read code. Consider, for example, a series of operations to be repeated a variable number of times under the user's control. The following code fragment expresses the concept:

```
FINISHED := FALSE;
REPEAT
WRITELN ('CHOOSE EITHER X or Y or Z');
WRITELN ('or enter Q to quit);
READLN (CHOICE);
CASE CHOICE OF
'X': DOTHIS;
'Y': DOTHAT;
'Z': DOTHEOTHER;
'Q': FINISHED: = TRUE
END;
UNTIL FINISHED
```

For those who find Pascal code unfamiliar, the **CASE** statement is like a Basic. **ON ... GOSUB. DOTHIS, DOTHAT** etc are procedures, ie self contained named subroutines. Here the appropriate routine is called according to the value of the character variable **CHOICE.**

D.P. Oulton,
Salford College of Technology

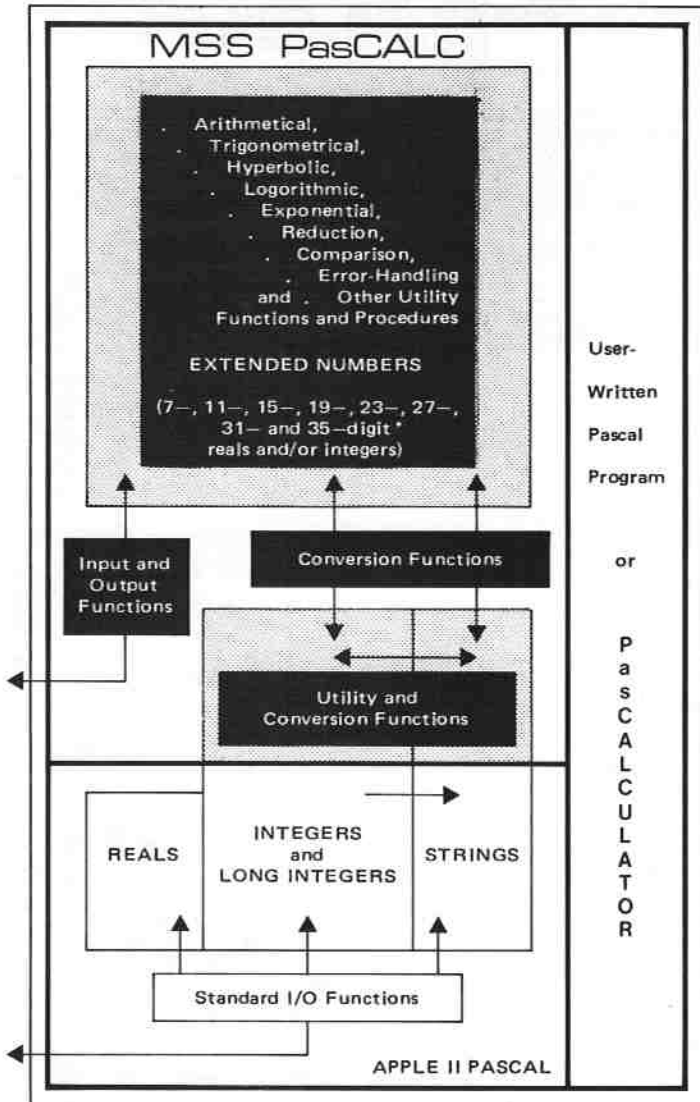
Random access trap

If, when processing a random access file, you attempt to read a record which has not been written, an **END OF DATA** error will be generated. This error could be trapped by an **ONERR GOTO** routine and you might expect that processing could be continued.

Unfortunately, before giving your error routine access to the error code, DOS has already noted the error and marked the file as closed. If you then try to read from the file again, DOS will re-open the file, using the default record length of 1 byte – which could have very unfortunate consequences!

Before continuing to process, therefore, your program must itself re-open the file, supplying DOS with the correct record length.

Neil Lomas



Logical Relationship between a User-Written Pascal Program, Apple Pascal and PasCALC.

To **MATHEMATICAL SOFTWARE SERVICES, FREEPOST, Guildford, Surrey, GU1 1BR.**

Find enclosed cheque/PO for £73.60 for one set of PasCALC and PasCALCULATOR software for precision levels 7, 11, 15, 19, 23, 27, 31 and 35.*

* Circle five precision levels unless you want the standard set (underlined)

. . . . . .

. . . . . .

. . . . . .

. . . . . .

Allow two weeks for delivery WIN 1

To order, write your name and address on the form, showing which 5 precision levels you want, and post it with a cheque or PO to Mathematical Software Services, FREEPOST, Guildford, Surrey, GU1 1BR. No stamp is needed on your letter.

Pascal is the most versatile high level language generally available for microcomputers today, and its popularity is steadily growing. Now, to enhance APPLE II Pascal 1.1, MSS (Mathematical Software Services) brings you

PasCALC

Enhancement in Depth

Extended Number TYPE gives a choice of precisions from 7 to 35 digits, and allows you to mix integers and reals in your Pascal calculations.

Enhancement in Function

More than 70 functions and procedures (see the diagram) for Extended Numbers, Pascal integers, long integers and strings.

- You choose precision at compile-time, so there is no need to re-program when you move from, say, a precision level of 11 digits to one of 23.
- A comprehensive error-handling procedure specially designed to handle your own run-time errors.
- PasCALC is distributed as a suite of Pascal-readable modules with detailed instructions for mounting it in the Pascal SYSTEM.LIBRARY.

PasCALC is written in Pascal, designed with the aim of making greater computational power available to general user and specialist alike. It requires a 48K APPLE II with at least one disk drive, and it can be used by any Pascal program – such as

PasCALCULATOR

which is distributed with PasCALC. PasCALCULATOR is a powerful interactive (conversational) command processor for doing calculations at the keyboard. Simply boot Pascal, exec PasCALC and away you go. For example, you can find (1/(S*SQT[2*P]))*EXP[-SQR[X-M]/(S^2*2)] in only one step!

- 26 names (A..Z) available for keeping intermediate values during the session.
- Ten commands can be RETAINed at any one time for later recall, saving time and reducing keying errors.
- Commands can be REPEATed too – ideal for observing convergence of a result.
- Full Extended Number 'mixed' arithmetic and range of precisions, with many built-in functions.
- Both parentheses (priority of calculation) and built-in functions [brackets] can be nested to any depth.
- Optionally printed session log—no need to write down results at the keyboard.
- Both e and π (to 35 digits) are automatically set up at the start of every session.

Extract from Optional Log (Precision Level 15)

```
   Enter command:
Y:=Y+P^(2*LOG[10-(5*E/4])
   0.9364718364577736E0
   Enter command:
A:=0.125E1
   0.125000000000000E1
   Enter command:
X-SIN[P-EXP[A/(B+Y)]^D]
   -0.185890363973163E1
   Enter command:
RETAIN
   Retained as command 5
   Enter command:
A:=0.15E1
   0.150000000000000E1
   Enter command:
COMMAND5
   X-SIN[P-EXP[A/(B+Y)]^D]
   0.826354927584729E-1
   Enter command:
LISTV
  '-----------------
   LIST OF VARIABLES
   -----------------
   A = 0.150000000000000E1
   B = 1
   D = 5
   E = 0.271828182845905E1
```

PasCALC and PasCALCULATOR: £64.00 plus £9.60 VAT or $144.00 including insured airmail delivery.
100-page User's Guide only: £12.00 ($20.00 airmail).

MATHEMATICAL SOFTWARE SERVICES

33 St Margarets, London Road, Guildford, Surrey GU1 1TL.

Guildford (0483) 69055

APPLE is a registered trade mark of Apple Computer Corporation, and PasCALC and PasCALCULATOR are trade marks of Mathematical Software Services. * Precision limited to 27 digits maximum for some real functions.

COMPUCOPIA

The Basic road to Pascal

THE difference between structured and non-structured languages lies basically in the flow of program control. If you imagine an arrow drawn between each successively executed line, then program control can be considered to flow along such arrows. In a Basic program these arrows often cross each other, but in a structured program they will not so that single-entry-single exit routines are written.

Structured Basic is a program from Island Computer Systems which is designed to take a user well on the way from Basic to Pascal without the need to learn an extra language. It is a 3k extension to Applesoft which offers a further 27 commands and 14 error messages, and which gives the user many of the structures of Pascal, such as REPEAT . . . UNTIL and WHILE . . . ENDWHILE loops, nestable IF . . . THEN . . . ELSE . . . ENDIFs and named PROCEDURES with local variables and parameters.

The resulting programs are structured. Rather than having the messy criss-crossing of program flow inherent in Basic, the resulting style is neat, reliable and quick to process.

The new commands are entered in the same way as ordinary Applesoft commands. The programs are interpreted but the new structures result in a faster execution and a more efficient use of memory. A major feature is the program's ability to access libraries of commonly used procedures stored on disc while the program is running.

Structured Basic resides just below DOS 3.3 on a 48k Apple with a single disc drive. The package costs £30. *Tel: 0983-529744.*

Multicolour plotter

HARDCOPY graphics for business, scientific and educational applications can be created using the Strobe 100 plotter and software package. It is a drum-type plotter which gives high resolution with a step size of 0.004in, an $8\frac{1}{2}$x11in or A4 size paper capacity, and it accepts a wide variety of pens.

Strobe 100 plotter

User controls include two-speed positioning in four directions, pen lift control, and an enter/start command switch which provides co-ordinate input in the digitising mode, or a go-flag to the host computer in the plot mode.

Functions include alphanumeric character generation, variable character sizes, character strings, 90 degree rotation, axis generation, vector plotting and line graphs. Used with the Strobeview software package, the plotter can produce multicolour overhead projection transparencies as well as a variety of charts and curves. Other software available includes a program for interfacing with VisiCalc files.

The plotter, which is available in the UK from Data Efficiency, can be interfaced to the Apple through two parallel 8 bit output ports, and one 8 bit input port. The interface costs £65 and the basic plotter £576. *Tel: 0442-63561.*

Apple Analyst

APPLE has brought out another financial modelling tool, Senior Analyst II. It is not designed to compete with VisiCalc and its lookalikes because, says Apple, it is not a spreadsheet package at all. It can however be used in conjunction with programs such as VisiCalc.

Analyst II is designed for use in a corporate environment by people who perform calculations or make decisions. It allows the user to format reports automatically, to consolidate models across discs, even using different models, to perform data analysis and forecasting and to print out a model while continuing other work with the program.

It is a menu driven system based on a

→

matrix of row and columns. Inbuilt functions include count, average, cyclic amount, lookup, allocate, compound growth rate, cumulative total and linear regression forecasting.

The package costs around £145.

Graphics processor

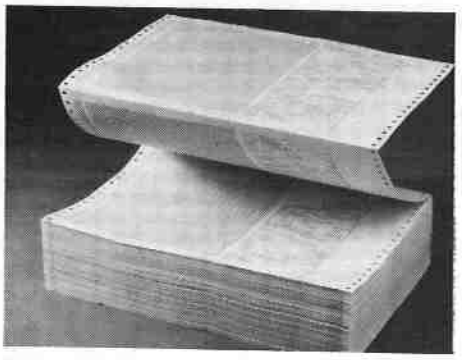
A NEW vector graphics processor peripheral card occupies one Apple II expansion slot and provides a monochrome graphics display of 512 x 512 pixels.

The manufacturers, Digisolve, say an onboard vector graphics processor draws lines and characters at up to 1,500,000 pixels per second freeing the Apple's processor for other tasks.

Their VGP card also has 64k of onboard memory which eliminates the need for large chunks of address space to be reserved in hi-res mode. The VGP also stores two pictures in its onboard memory which may be swapped under software control to create animation effects.

Characters and lines can be mixed freely, characters being chosen from a full upper and lower case Ascii set, and drawn in in variable sizes and orientations with a maximum text density of 85 characters by 57 lines.

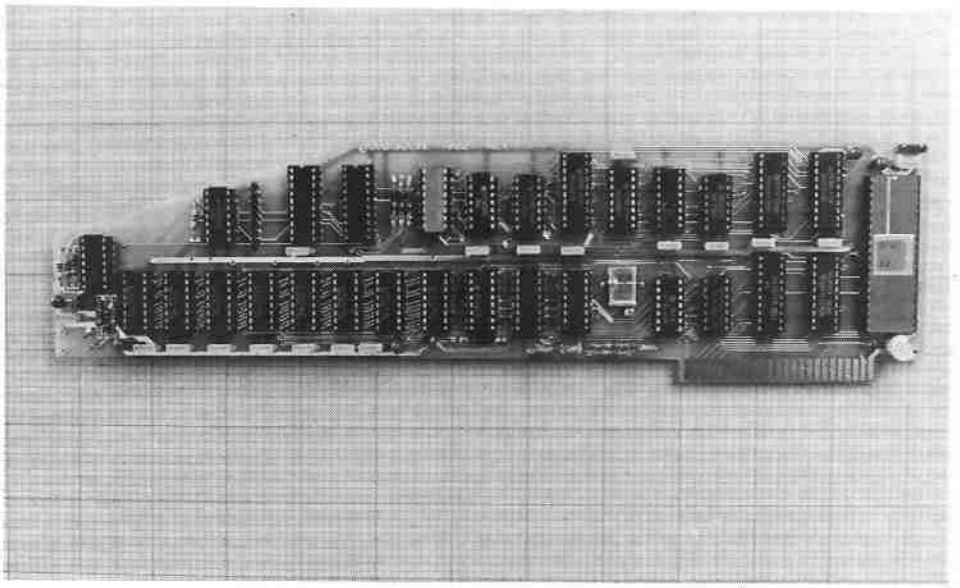
The card, which costs £399, can be used for high resolution CAD and computer draughting as well as word processing and spreadsheet displays. *Tel: 0977-513141.*



Waste not . .

RECYCLED paper for printouts and listings is available from Standard Continuous. It is designed and manufactured to cater for laser printers as well as all types and makes of conventional line printers and comes in four standard sizes – two for lasers and two for impact printers.

The paper is called Greenlist – it is ruled orange on a green background. Its manufacturers say it is totally reliable, able to withstand the high stresses of the fastest printers, and refolds perfectly. It is also said to be tear and temperature resistant. *Tel: 021-745 5141.*



Digisolve's Apple graphics card

Numeric keypad

A NUMERIC keypad for the Apple II, available from QIS Computer Services, can be used to enter volume data into Micromodeller models. It is a VisiCalc-type pad manufactured by the Keyboard Company of California and modified so that the PRINT key simulates a comma. Symbols such as colon, hyphen, semi-colon, dot and slash can also be simulated.

Other keys on the board are numbers, double zero, decimal point, numeric operands (+, –, /, x), brackets, arrow keys, ESC and SPACE. The pad costs £104. No soldering is required and installation is simple. *Tel: 0733-47191.*

Easier entering

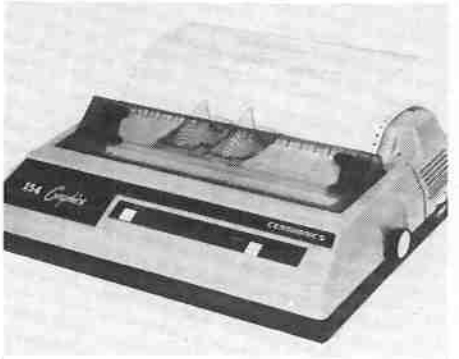
A UTILITY for the Apple II that reduces the time, effort and frustration usually required to enter machine language listings published in various magazines and books has been released by Micro-Sparc of Massachussetts.

Designed to aid both the novice and the experienced user, M.L.E. offers an easy method for entering and editing sequences of hexadecimal numbers from listings. It automatically inserts spaces and carriage returns into entered data, allowing program entry in just one sitting.

Machine language programs are displayed in 8 column format, and the utility's editing features enable the user to insert and delete code as well as correct mistyped or wrong entries.

Included on the same disc are Lamp, a companion utility that provides simple decimal to hexadecimal conversion, parameters of previously BLOADed files, location of in-memory Applesoft lines, as well as Ascii conversion of desired character codes, and Apple CAL, a program for printing calendars for any month of any year, from 1981 to 2000.

The Apple M.L.E. disc requires Applesoft, and runs on a 48k Apple II. It will boot on either a DOS 3.2 or 3.3 system, and files may be MUFFINed to a 16 sector disc. Cost: $29.95.



The tough guy

A HEAVY duty, industrial grade graphics printer is being marketed by Datac, who say that as the machine has a 100 per cent duty cycle on the head it can be operated nonstop with no risk of it overheating. The Centronics 154 is designed to handle a high volume of graphics printouts, but also generates alphanumeric hardcopy.

The 120 cps desk top machine can print text of up to 132 columns at 10 cpi with 11x8 dot matrix on stationery ranging from 3½in to 15in wide. It is bi-directional with logic seeking, and pin addressable graphics make it compatible with many other printers.

The 154-2 model, which uses a Centronics parallel interface, costs £639, and the 154-4, with an RS232 serial interface, comes at £722. *Tel: 061-941 2361.*

Optics for robots

OBJECT recognition systems are being applied to a wide range of manufacturing processes as aids to robots in automated assembly, in quality control, as safety devices and in process control systems.

Digithurst have developed an object recognition and visualisation system (incorporating a camera and interface), with which an object can be scanned and a 128 x 128 bit image stored in the Apple's memory. The sorted image can be operated on using techniques such as boundary tracking or connectivity analysis, and can also be converted into X,Y co-ordinates describing the object's perimeter and displayed on the screen in hi-res graphics.

Once techniques have been proved the system can be transferred to a production environment and integrated with other flexible manufacturing equipment. The system is fully documented and costs from under £2,000. *Tel: 0223-208926.*

New for networking

UP to four Cluster/One network systems can be connected with a new facility developed by Zynar. Use of Gateway increases network distance to more than 4,000 feet and should eliminate the need to maintain multiple files, as users can refer to databases kept on network segments other than their own.

The Gateway software runs on a 64k Apple II and costs £495. An additional network interface card (£350) is needed for each network segment connected. *Tel: 0895-59831.*

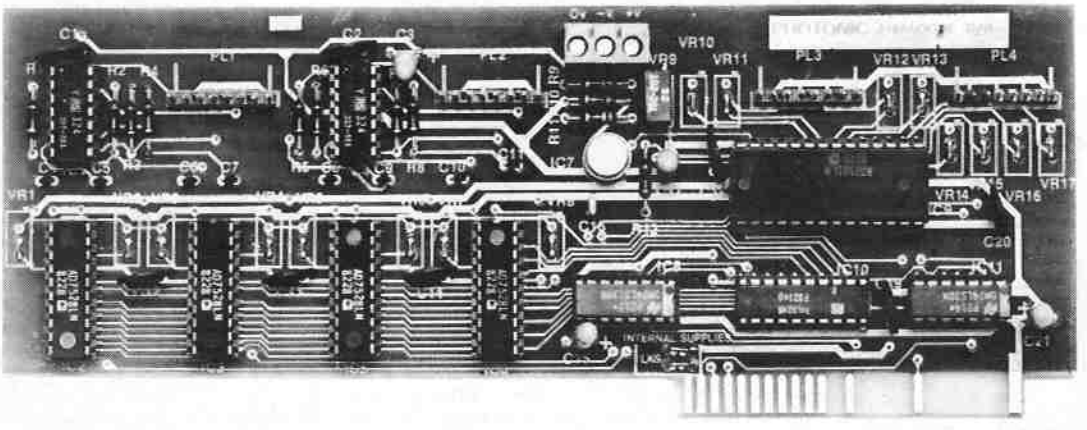
Scrumping discouraged

JUDGING by the proliferation of security devices on the market, Apple systems are becoming prime targets for thieves and office pilferers. Latest offering is an anti-theft device from Data Design Techniques.

The Anchor Pad Security Rack secures the Apple, disc drives and monitor in their normal operating position, using a three stage rack assembly and a metal base plate which is glued to the work surface by an adhesive pad. Special adaptor feet are glued to the base of the Apple, the drives and the monitor and these are bolted to the metal shelves. The shelves are linked in tiers by metal rods which are locked in place.

A swivel feature is built into the base plate, so the system can be rotated fully, and each tier can be easily dismantled by the key-holder for servicing purposes, or when slotting in new interface cards.

One of the joys of the Apple is being able to "get inside it" quickly. Use of the rack slows down this process – but this should be weighed against the effect of not being able to get at your Apple at all if it is stolen. Costs £272. *Tel: 07073-34774.*



THE British designed Analogue 8/8 interface card for the Apple offers eight channel eight bit resolution analogue input and output and operates as though it were eight bytes of RAM. No channel select is required, and the card can be controlled with any language, including machine code and Basic.

Other features include the optional use of an external 15v power supply input and output latch-up proofing and fully buffered data and control lines. The card, made by Phototonic, costs £179. *Tel: 061-973 8367.*

COMPUCOPIA

Winchester plus back up

A NEW hard disc subsystem for the Apple II and III, the WDS 101, combines the British-made Rodime RO 100 Series 5¼in Winchester disc drive with Cipher's Quarterback ¼in cartridge tape streamer.

The Rodime drive provides formatted capacities of 3, 6 12 or 20mbytes. Features include overlap seek, rotary head positioner and integral microprocessor control with on-board diagnostics.

The tape streamer uses standard ¼in 3M-type removable tape cartridges which can store up to 20mbytes of formatted data per cartridge, say the distributors, Independent Computer Engineering. The 90 ips tape speed allows a 6mbyte Winchester disc to be backed up on to tape in a little over a minute and 20mbytes of data in just over four minutes.

Connection to the Apple II is via a single auto-boot interface card which fits into any spare slot except 0. The system runs under DOS 3.3 and appears to the Apple as between 20 and 138 floppy disc drives, depending on Winchester capacity. Other software supported includes CP/M and Pascal and a range of utilities simplifies the transfer of existing programs and datafiles such as VisiCalc from floppy disc to Winchester.

Prices start at £1,350 for a 3mbyte subsystem. *Tel: 07842-47271.*

Graphics tool

THE Tackler, a dual-mode parallel interface for the Apple, is a diagnostic tool for the graphics programmer. With its use HGR 1 and HGR 2 are obtainable in any permutation. Users can emphasise print, darken it at salient points, double the size of shapes and other information to be printed, and print material in inverse.

Tackler also enables the printing of extended bar charts by concatenating screen one with screen two on a 90 degree rotation. It is compatible with programs written in CP/M, Pascal, Forth, Fortran, Cobol, Basic and machine language. The interface costs around £100. *Tel: 0372-68311.*

Speedier Pascal

THE Pascal Super System for the Apple II has been released in the United States by Legend Industries. The system supports the simulation of fast access disc drive units for storage and retrieval of standard Apple Pascal files with the added speed of the 6809 Stellation Mill.

The system comprises a Legend 128kDE RAM card, a Stellation Two 6809 Mill and one Super1 disc.

The Super1 is software designed as a Pascal disc emulator with patch routines to run a 128k emulated disc drive with a 6809 processor card.

Legend claims use of the system gives a 94 per cent speed improvement over normally existing Pascal running conditions. The 6809 or 128kDE can also be used separately.

Both the Legend 128kDE RAM card and the Stellation Two 6809 Mill plug into any I/O port on the Apple II motherboard other than slots 3 and 6.

WDS 101 . . . new hard disc subsystem for Apple II and III

Sam's board

A 16k memory expansion board is being produced and marketed by Pete and Pam Computers. It is called Samram after the company's technical engineer Steve McClean (initials S.A.M.) who designed it. The boards come from Dublin, the components from Hounslow, the cable from Saffron Walden and they are assembled and tested in Rossendale.

The Samram, which costs £65, is installed following standard instructions and is located at E3. It is compatible with Pascal, CP/M, Integer Basic and other currently available software. *Tel: 0706-227011.*

A FLOPPY case for floppy discs is the latest from Kardex. It is a wallet with 20 transparent pockets which fan out when the unit is opened for easy reference and retrieval. Closed, the wallet forms a convenient carrying case. The 5¼in version costs £13.65 and the 8in version £17.77. *Tel: 01-405 3434.*

Lost for a word?

IT took software author Peter Turcan of Turcan Research Systems nearly four years to devise and design computerised Scrabble – and he did it as part of a doctorate thesis on word structures and analysis. Now the program is being marketed for the Apple by Little Genius.

The game, which is identical to the board game version, runs on a 48k Apple with a disc drive and a colour monitor or TV. There is also a mono version for those without colour sets. It can be played by up to four people with options including the Apple playing one or more "sides" or playing itself.

The program incorporates an extensive dictionary and allows four levels of play (at the highest level the Apple averages 300 points a game). Scores are kept automatically and displayed on the screen. The game costs £24.95. *Tel: 01-580 6361.*

All purpose printer

THE Daisy Systems M45 printer is now available in the UK from Peripheral Hardware. It can be used with most computer systems, whether mainframe, mini or micro, by simply changing a plug-in interface unit.

Supplied as standard is interface module INT1, which has switch selectable RS232C, current-loop, Centronics and Data Products interface. Other interfaces available include IEEE-488, HP and IBM Systems 34, 38 and 5200.

The printer features a 'Long-Life' hammer assembly. The hammer's striking intensity is controlled automatically to match different character sizes for optimum uniformity.

The M45 plus the INT1 interface module costs £1,380. *Tel: 021-745 3033.*

sbd Software

Applewriter II RRP £89
U-TERM 80 RRP £165

SPECIAL OFFER
15% Discount
Buy Both above items
for only **£215.00**

SBD Software
15 Jocelyn Road, Richmond,
Surrey TW9 2TJ
Tel. 01-948 0461 Telex 22861

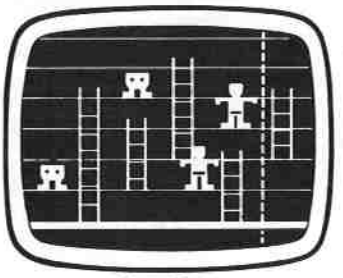
All prices are plus VAT.
P.&P. are free. We accept
Visa, Access & personal cheques.

We sell Apples & all Apple Products. Call or Write for Complete Brochure

(authorised Apple Dealer
and Level 1 Service)

Dealers enquiries welcome

Pegasus II



Beer Run

AUGUST SPECIALS

SOUTHWESTERN DATA SYSTEMS

specializes in innovative software for the Apple II owner. It also has a scheme which allows back-up copies for the original buyer while effectively eliminating piracy.

A.C.E. – £24.95
Applesoft Command Editor combines a large number of useful programming utilities co-resident with the operating system. Simple line editing and many other features.

Apple Doc – £27.95
allows you to change any element throughout the listing.
Utilities XREF, REPLACE, LISTER.

Disk Library – £36.00
maintains a thorough index of all your disk files. (Incl. Pascal & CP/M).

Doubletime Printer – £89.95
now liberates your Apple from being "printer bound"

List Master – £24.95
useful for large scale changes to your programs.
APPLESPEED, SMART RENUMBER, & COMP-LIST.

Merlin – £45.00
is a powerful macro-assembler with a sophisticated editor and other utilities.

Munch-a-bug – £34.95
assists the user in trouble-shooting 6502 assembly language programs.

Printographer – £29.95
prints out your Hi-Res graphics picture. It is designed to support just about any printer or interface.

Speed Star – £75.00
is a full function Applesoft compiler.

The Routine Machine – £39.95
put the power and speed of machine language routines in your own programs.

also available from Southwestern:–

Ascii Express II	£45.00
Ascii Express "The Professional"	£75.00
Assembly Lines (The Book)	£12.95
The Correspondent	£34.95
Z-Term	£59.95
Z-Term "The Professional"	£89.95

AUGUST SPECIALS

SIRIUS SOFTWARE

Autobahn	£17.95
Bandits – ** NEW & FAST !! **	£19.95
Beer Run – don't drink too much	£17.95
Borg – Deranged Grud terrorizes countryside . . .	£17.95
Computer Football – Bar Football.	£17.95
Cyclod – the craziest game yet.	£17.95
Dark Forest – strategy game for one to six players.	£17.95
Epoch – an event in space.	£19.95
Escape from Rungistan – don't take a discount world tour.	£16.95
Fly Wars – Spider-Fighters unite.	£17.95
Gorgon – 'Defender' in the arcade.	£24.95
Hadron – 3-D Space battle game.	£19.95
Jellyfish – Killer jellyfish attacks Nuclear Recovery Sub.	£17.95
Kabul Spy – Salam, Kabul Spy.	£19.95
Lemmings – the lemmings made me do it. AAYYAaaaaa!	£17.95
Minotaur – Flash back to Crete.	£19.95
Snake Byte – are you all wrapped up in yourself?	£17.95
Sneakers – Critics agree sneakers stomps the competition.	£17.95
Twerps – are you a Twerp?	£17.95

also available:–

Both Barrels	£14.95
Cops & Robbers	£19.95
E Z Draw 3.3	£29.95
Gamma Goblins	£17.95
Phantoms Five	£17.95
Pulsar II	£17.95
Orbitron	£17.95
Outpost	£17.95
Space Eggs	£17.95
Star Cruiser	£14.95
The Joyport	£45.00

AUGUST SPECIALS

ONLINE SYSTEMS

The General Manager – £75.00
is a complete, powerful data base. The system offers an APPLESOFT interface for connection to your programs, also selected information can be written to 'text' files for use with your word-processor and other software.

Screenwriter II – £75.00
requires no additions to your Apple II system, yet offers 70 columns on screen, upper & lower case, printer spooling, and a software based buffer.

The Dictionary – £65.00
now you can correct spelling mistakes without ever opening a conventional dictionary!!

LISA 2.5 Assembly Lang. Dev. – £59.95
LISA 2.5 is complete and easy to learn and the assembly is quick (20,000 lines a minute!!)

Speed/Asm – £29.95
is able to simulate common basic Statements and execute them in Assembly lang.

Adventure Games

Time Zone – £49.95
begins today, as you discover a time machine . . . . . you explore through the ages from 400 million BC to 4082 AD.

Mission Asteroid – Adventure	£9.95
Mystery House – Adventure 1	£12.95
Wizard & Princess – Adventure 2	£17.95
Cranston Manor – Adventure 3	£17.95
Ulysees – Adventure 4	£17.95
Soft Porn Adventure – X rated!!	£17.95

Action Games

Cannonball Blitz (Donkey Kong)	£19.95
Crossfire	£17.95
Jawbreaker (Pac Man)	£17.95
Laff Pak **NEW**	£19.95
Mouskattack	£19.95
Missile Defense	£17.95
Pegasus II (Scrambler)	£17.95
Sabotage	£12.95
Threshold	£19.95

Buy any 3 Software Items listed here and get 10% discount!!

SYMBFILE

PROPRIETRY SOFTWARE CURRENTLY AVAILABLE FROM MAJOR SOFTWARE HOUSES

PACKAGE	SUPPLIER
TABS	TABS
ACCESS DATA BASE	SPIDER SOFTWARE
OMNIS	BLYTHE
ESTATE AGENTS	BLYTHE
MICRO PLANNER	DATALINK
MEDICAL	RAM COMPUTERS
PROGRAM PLAN	FARMPLAN
ROSTAR	PEGASUS
MICROFINESSE	P.E. CONSULTING
ACCOUNTING	VEGA
ACCOUNTING	M.B.C.
ADAM ACCOUNTING	C.C.C.
SOLICITORS ACCOUNTING	E.H. COMPUTERS
PROPERTY MANAGEMENT	ESTATE COMPUTERS
PROPERTY MANAGEMENT	FLETCHER DENNYS
VIDEO MANAGEMENT	IMPACT MICRO SYSTEMS
PASTEXT	PROGRAMVARHUSET
MATHEMAGIC	FERRARI SOFTWARE
GRAPHMAGIC	FERRARI SOFTWARE

UNDER DEVELOPMENT

PACKAGE	SUPPLIER
ORBIT ACCOUNTING	VLASAK
SYSTEMATICS ACCOUNTING	SYSTEMATICS
JARMAN ACCOUNTING	JARMAN SYSTEMS
PADMEDE ACCOUNTING	PADMEDE
FORMAT 80	ELITE SOFTWARE
ZARDAX	COMPUTER SOLUTIONS
PFS	SOFTWARE PUBLISHING CORP.
PFS REPORT	SOFTWARE PUBLISHING CORP.
PFS GRAPH	SOFTWARE PUBLISHING CORP.
D. B. MASTER	STONEWARE
D. B. II	ASHTON TATE
VISICALC	VISICORP
VISIDEX	VISICORP
VISIFILE	VISICORP

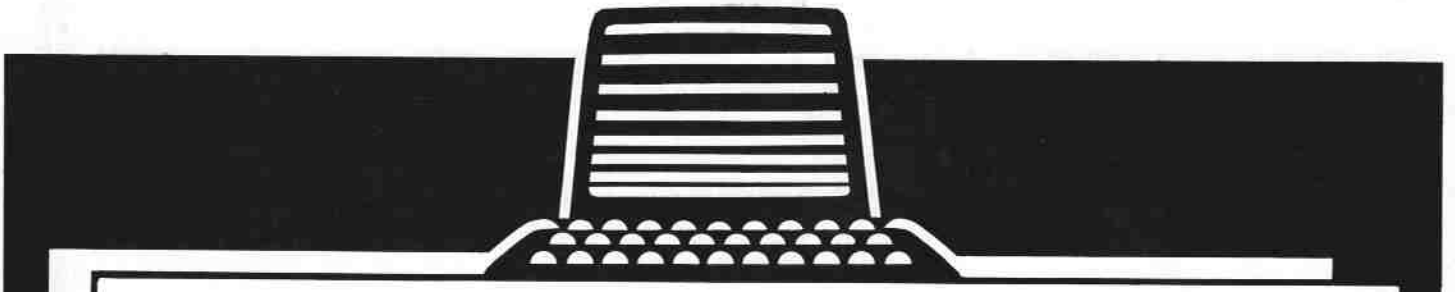
5¼" WINCHESTERS FOR APPLE II®

3, 5, 6, 12, 21 MB DRIVES NOW AVAILABLE
COLD BOOTING FACILITY
1 YEARS FULL WARRANTY

Symbiotic Computer Systems Ltd.

32 Elmwood Road, Croydon, CR9 2TX
Telephone: 01-683 1137/8/9 Telex: 893815

APPLE is a Trade Mark of APPLE COMPUTER INC.



Let us take stock of the situation for you

RADIAN STOCK CONTROL SYSTEM

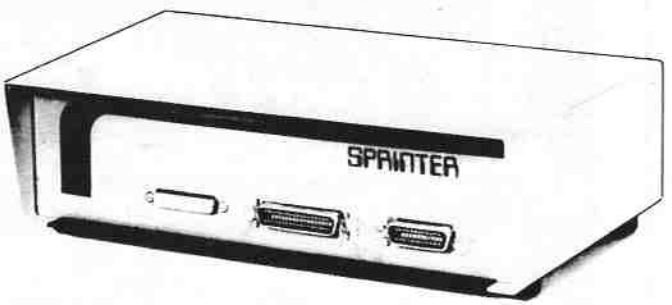
Keeping track of your stock doesn't have to be a task of Herculean proportions. The Radian stock control system is a menu driven programme with a part code of 13 characters allowing you access to all the necessary information as fast as you can key in your requirements. Included in this programme are an automatic calculator for pricing, facility for purchase and sales transactions, provision for stock divisions and a full audit trail. It also provides price lists and extensive management reports
–In fact, it does the job for you!

The Radian stock control system is available on 5¼" and 8" disc systems and is written in PASCAL. For further information contact:-
O.T.H. Electronics Ltd., 111 Lr. Georges St., Dun Laoghaire, Co. Dublin. Phone (01) 803358/802423. Telex 92171 OTH EI

HOW TO USE YOUR PRINTER WITHOUT WASTING COMPUTER TIME:

Your computer is capable of sending data at many thousands of characters per second but the fastest Epson can only print 100 characters per second and most daisywheel printers are even slower.
This means your computer is forced to wait for the printer to finish one line before it can send the next. A costly waste of time.

THE NEW SPRINTER ACCEPTS DATA AS FAST AS YOUR COMPUTER CAN SEND IT.
SPRINTER stores the data in its own memory buffer and then takes control of the printer. This frees your computer for more productive functions.



Problem: Connect a 20 character per second Word Processor serial printer to your computer but don't tie the computer up for 20 minutes during a 25,000 character print.
Answer: SPRINTER

Problem: Attach a letter quality serial printer to a parallel output computer for Word Processing.
Answer: SPRINTER

Problem: Save money by attaching a low cost matrix printer to a serial output computer.
Answer: SPRINTER

Problem: (Insert your interfacing problem here)
Answer: SPRINTER

SPRINTER *COSTS £249.00 including P&P (VAT extra)*

SO WHY WASTE ANY MORE TIME?

CALL US NOW FOR YOUR SPRINTER AND LET YOUR COMPUTER GET ON WITH SOME REAL COMPUTING.

GB COMPUTER PRODUCTS LIMITED, 14 GREENWOOD GROVE, WINNERSH, WOKINGHAM, BERKSHIRE, RG11 5LH
Telephone 0734 786635 or 791678, Telex 847783 GDB CS G

SPRINTER IS A TRADEMARK OF MUTEK.

'make it easy on yourself'

80 COLUMN DISPLAY

Apple 2 compatible

FOR YOUR APPLE

MADE IN ENGLAND

The U-TERM adds an 80 column upper and lower case facility to your Apple compatible with BASIC, PASCAL, and CP/M and applications packages such as Applewriter 2, Wordstar, Financial Controller etc.

for only £165.00

Available from Apple Dealers worldwide or direct from U-Microcomputers.

Prices do not include VAT or p. & p. (£1.00 per board)

U-Microcomputers Limited,
Winstanley Industrial Estate,
Long Lane, Warrington,
Cheshire, WA2 8PR, England.
Telephone: 0925 54117/8
Telex: 668920 U-ONE

U-MICROCOMPUTERS

a range of quality peripheral cards to enhance your Apple

We now make more Apple cards than Apple!

Reliability means Power Core

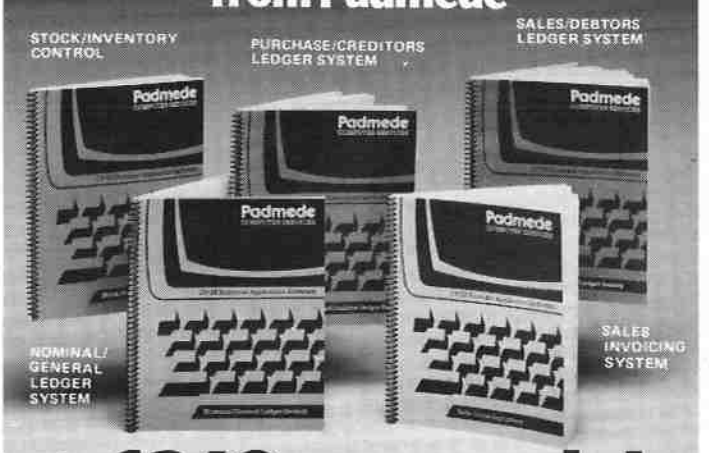
designed to fit on your apple

Switches Switches
Cools Cools
Filters Filters

For more details contact **Avitek** PO Box 14 Twyford Reading Berks RG10 0LL U.K. Telephone Reading (0734) 343020

NEW!

Fast CP/M Business Application Software from Padmede



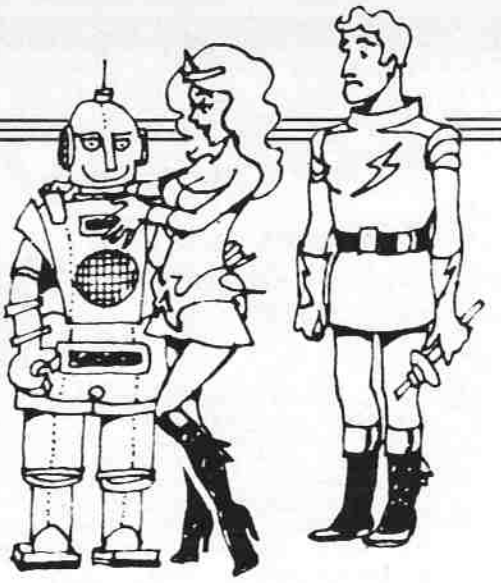
at £249 per module

Send for details of the Dealer Demonstration Pack

Padmede

COMPUTER SERVICES

351 Fleet Road, Fleet, Hampshire
Telephone: Fleet (02514) 21892/3
Telex: FLETEL 858893



It takes a lot to beat that good old Wizardry..

By DON TURNBULL

LIKE its predecessor, "The Proving Grounds of the Mad Overlord," the first Wizardry scenario, Knight of Diamonds (KoD for short) is an extensive affair with which it is not possible to gain more than superficial familiarity in a few hours. Hence a problem for a reviewer – spend a few hours trying to get the feel of the scenario and write a review on that basis, knowing full well this cannot be exhaustive, or spend so long learning various intricacies that the detailed review, when it eventually appears, is hopelessly out of date in publication terms.

I have adopted the former policy so will be the first to admit the possibility that, given further experience and play testing, some of my initial observations may become modified or even reversed. You will simply have to bear with me.

Basic data first. Wizardry itself is an attempt to put a fantasy role-playing game onto a computer, in this case an Apple II 48k, preferably with two disc drives and colour monitor. Though there are reasons why no computer game can possibly embrace the almost limitless spectrum of a real fantasy role-playing game, it is a good attempt within fairly obvious constraints.

A diversity of elements is included – experience points and character progression, character differentiation by expertise (Priest, Fighter, Mage, etc), use of magical spells and artifacts, a considerable miscellany of monsters both mild and malign, traps and tricks.

Given the limitations – it is a one-player game, and no computer can possibly emulate a human Dungeon Master – it is a very enjoyable and entertaining game which can provide many many hours of pleasure mixed with a bit of frustration.

The first scenario contains a 10-level dungeon and requires the player to fulfill a specific quest. In order to complete this quest, he must develop relatively experienced characters. I would not dream of penetrating level 10 of the first scenario without a well-balanced party of characters of at least 13th experience level and well equipped with magical gear, so it is quite a long haul to develop the fledgling characters which one generates at the beginning to the point at which it becomes safe for them to venture pretty well anywhere in the dungeon.

However there does come a point when the quest can be completed, and after this there is little point in continuing to play the first scenario except simply to gather additional magical items and build up additional experience levels.

At that point the player needs a greater challenge for his characters and this should be represented by the second scenario, KoD. It is important to note that KoD is of no use whatsoever if one does not already own the first scenario. Characters cannot be generated in KoD – first level characters simply would not survive even the mildest dangers in the scenario.

Indeed, the scenario comes without the basic rule book found in the box containing the first scenario. All you get is a double-sided disc and very brief instructions – there are no new spells and no obvious changes in the game rules, though there are in fact some changes embedded in the scenario itself when one comes to play it, and I will mention those I have spotted later.

KoD is a six-level dungeon. The quest within the scenario is to recover a very powerful magical artifact, the Staff of Gnilda. In order to recover the Staff, one has first to explore the entire dungeon because it soon becomes apparent that other materials must be found before the recovery of the staff can even be attempted.

Therefore, as in the first scenario but for different reasons, one must explore the levels of this dungeon progressively since – I can't say this for sure because I haven't completed the quest yet, but is seems a reasonable supposition – only detailed exploration of each level will yield the necessary equipment required to complete the quest.

The quality of the play of KoD is, if anything, superior to that of scenario 1. For instance the monster graphics have been improved in a variety of respects. In addition a number of inconsistencies present in the first scenario have now been ironed out and I will mention specifically a few of the important ones.

The element of surprise in the first scenario was a very important one. If your party surprised a group of monsters, even the strongest opponents were relatively easy meat since they could only stand and watch while friendly spell-casters annihilated them or at least reduced their potency very considerably. Similarly a group of monsters surprising a party, particularly if those monsters contained spell-casters and/or breathers, could probably annihilate that party before it had a chance to respond.

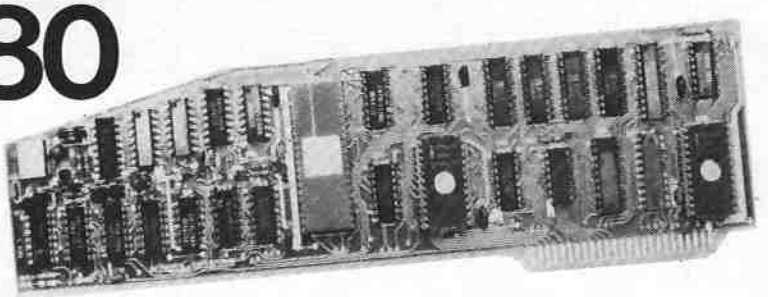
This problem is overcome in KoD. If surprise exists, the party achieving surprise is not allowed to use spells in the attack. This is a very welcome improvement. The monsters are of course, more powerful in that they can't be killed off piecemeal without being able to defend themselves. But the change removes an element which was something of an unpredictable irritant in the first scenario.

Experience points gained for killing certain monsters have been re-evaluated in a more sensible way. For example the Fire Giant is quite a powerful opponent but the experience point reward for killing one in the first scenario was tiny. This inconsistency and others like it have now been removed, though I still think the experience point reward for killing power-

→

VISION-80

80 column card for Apple II Computer
R.R.P. **£195** + VAT



The Vision-80 has achieved world renowned success with the major magazines rating it superior to all its competitors. It features a superb 9 x 11 dot character set with 3 dot descenders, and no mechanical switches are needed. Unlike other 80-column cards, the Vision-80 fully supports the Applesoft commands HOME, GR, HGR, HGR2, TEXT, TAB, VTAB, HTAB, INVERSE, NORMAL, and the text window is fully supported to Apple's conventions. In Pascal and CP/M, HIGHLIGHT, LOWLIGHT, FLUSH, function KEYPRESS, and the type ahead buffer are all supported. In addition, the VISION-80 works with all languages available for Apple II and such software products as ZARDAX, SANDY'S and WORDSTAR (CP/M) word processors, and it also has a unique and powerful communications facility present in hardware on the board . . . **RRP £195 + VAT.**

80-COLUMN VISICALC

VISION-80 VC This is a utility that works with all versions of VISICALC 3.3 to provide 80 columns with the Vision-80. It allows entry of upper/lower case, inverse and normal, and has an extremely clean display (unlike the competition!) . . . **RRP £35 + VAT.**

ROSETTA A DOS/Pascal utility. This superb Australian program is written in Pascal, and allows movement of any sort of DOS or Pascal program in any direction. A library unit called Quasidos is included for the user to link to other Pascal programs so that Pascal can read and write to DOS discs . . . **RRP £35 + VAT.**

COMING SOON . . . Memory expansion for the VISION-80 VC. Modification for Apple Writer II to work with VISION-80.

Dealer enquiries invited

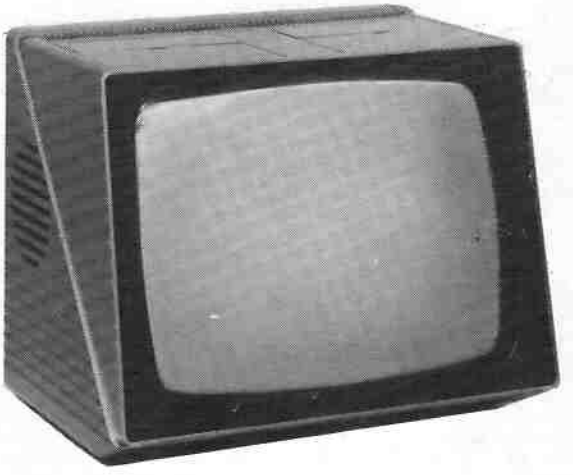
Distributor in UK:
PYNWON COMPUTER SERVICES
Laurie and Elizabeth Boshell, 17 Watermill Lane, Edmonton, London N18 1SU. (01) 884 0879

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: 240x172mm. 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

Knight of Diamonds **£23**
Supplied by Woodland Software, 103 Oxford Gardens, London, W10 6NF (tel: 01-960 4877)
Pig Pen **£17.95**
Supplied by SBD Software, 15 Jocelyn Road, Richmond, Surrey TW9 2TJ (tel: 01-948 0461)

ful enemy spell-casters is proportionately too low.

Devices which progressively heal wounds now operate much more quickly than in the first scenario, where their effects were sluggish. On the other hand the effects of debilitating measures such as poison operate more quickly in the reverse direction.

Alignments appear to play a more major role in this scenario. I cannot say for sure what this means or exactly what changes have been made since I haven't quite worked out what is going on yet. But keep an eye on your party's alignments and when you spot a change, as almost inevitably you will, try to relate it to the events which took place immediately before that change.

There are still one or two irritations which existed in the first scenario and which have not been ironed out in this one. For instance, it has always been annoying that a Bishop could not identify an unknown item without going down into the dungeon to do so – there seems no reason why he should not be able to identify it in the town. This makes identification of treasure troves from a particular trip a long and time-consuming process which could have been abbreviated. In general however, the designers seem to have made an attempt to remove the most obvious inconsistencies of the first scenario.

The number of items which can be found in treasure has apparently increased. The first scenario had a roster of about 100 different items, but I have so far found at least 20 new ones and others may be lurking in the depths as yet undiscovered.

A slight problem arises from this – in scenario 1 the new item was usually tried out on a first level character on the grounds that, if it killed him, the loss was not insufferable. In KoD there are no first level characters — though one could create some in scenario 1 and transfer them over specifically for this purpose – and this makes the testing of new items quite a risky business.

There are also a number of new monsters, and another change seems to have appeared in this context. Whereas in the first scenario one's reaction was to thump any and every monster, it seems that in this there are a few monsters which one cannot attack since this appears to have an adverse effect on alignments. Again I don't know the full story but I would advise caution in dealing with new unknown beings.

One very major irritant has crept in with a new monster I won't name. This thing has the habit of appearing in very considerable quantities. Four groups of nine in each group is not uncommon. They appear competely impervious to spell and have immense breeding properties, so it takes a very long time indeed to kill them.

They are not particulary dangerous in terms of killing one's characters, fortunately. The resulting experience point award – after anything up to 30 minutes real time fighting – is often in single figures and never more than 15 per character. This is quite amusing the first time round, but the joke very soon begins to pall.

I am pleased to see, though, that trolls now have a significant regenerative capacity which makes them more like the "proper" monster.

In summary I have to say that KoD is not as tough as it was purported to be, or at least so it seems to me. Maybe my characters were over-developed in scenario 1 before I transferred them (ever the cautious adventurer!). However there may be a more subtle explanation which derives from the fact that the designers are not particulary experienced in normal role-playing games. Those who are so experienced know certain fundamental tenets of survival – low armour class, high hit points and good magical spell capacity.

The monsters in KoD do not have a particulary higher spell capacity than did their counterparts in the first scenario. Although I have been on occasion to the sixth level of KoD, I have never come across human-type opponents of more than about 12th or 13th level.

On my side of the fence, my characters are tough and heavily protected and are all at least 20th level – I deliberately developed them to that extent because of the rumours about KoD before it was published. So there results an imbalance which makes me believe it will not take me anything like so long to exhaust scenario 2 as it did to exhaust scenario 1. But this will only become a disappointment if scenario 3 is long-delayed in publication.

I think the designers have made a fair attempt to improve on what was already a very entertaining game in this scenario. Inevitably some problems remain and I hope consumer feedback will be considered carefully by the designers before they finalise the third scenario. In entertainment terms, KoD should provide as much as scenario 1, at least in proportion to the lower price.

Postscript: Much to my surprise, and while the foregoing was being typed and edited, I have all of a sudden completed the quest! I can now verify what I previously surmised – KoD is not as tough as it was purported to be, nor as tough as it should be. The final hurdle is neither fearsome nor particularly difficult. (A clue: Americans are not normally familiar with the cryptic crossword, as we are in the UK.) I emerge with a feeling of faint dissatisfaction tinged with the devout hope that scenario 3 is just round the corner.

KoD is still good entertainment compared with the vast majority of computer games, but it's just not as good as was its predecessor, and that's a pity. Wizardry is, after all, exceptional.

Pig with a touch of the Pacmans

Pig Pen is an arcade game in the same style as Pacman. It consists of a maze that you run round being chased by pigs. There can be any number between one and eight pigs in the maze – the number being set by you at the start of each game.

You lose a life each time a pig catches you. As you go round the maze certain places change things round so that you can kill the pigs. You can progress to higher levels once the level you are on has been fully explored.

The instructions say that you use either keyboard or joystick, but on my copy the joystick only allowed three of the four directions to be used. With this, you're always on a loser. Whether mine was a bad copy, or it's a bug in the program, is uncertain. With the keyboard option, you can set whatever keys you wish for the four directions. It's a nice touch, but means your success is a function of manual dexterity.

To me it appeared to be a version of Pacman with greatly improved graphics. I wasn't overly impressed, but it should appeal to anybody who likes maze chases. The graphic display of the pig's head is really very good.

T.N. Thompson

village computer services

WORD PROCESSORS

Applewriter II	£85.00
Super-Text II	£85.00
Videx/Applewriter II Boot Disk	£15.00
Applewriter II	£75.00
Magic Window	£60.00
Basic Mailer	£40.00
Superscribe	£80.00
Letter Perfect	£100.00
Dan Paymar LCA2	£39.00
Zardax	£150.00
Wordstar	£145.00
Mailmerge	£65.00
Pie Writer	£87.00

BUSINESS/UTILITIES

Visischedule	£195.00
Ormbeta Database	£200.00
Videx/VisiCalc 80 Column Disk	£35.00
VisiCalc	£120.00
Visidex	£120.00
Visifile	£120.00
Visiterm	£78.00
Visiplot/Visitrend	£140.00
D.B. Master	£125.00
D.B. Master Utility	£62.00
Data Factory	£98.00
Ramex 16K Card	£75.00
32K Saturn Ram Card	£130.00
Locksmith 4.1	£65.00
The Inspector	£35.00
Accu-Shapes	£24.95
Expediter II	£75.00
Zoom Grafix	£24.95
U-Z80 Card	£85.00
Master Diagnostics	£30.00
Tasc Compiler	£100.00
Videx Videoterm	£180.00
Dos 3.3 Toolkit	£40.00
MatheMagic	£55.00
T G Joystick	£33.00
Super Disk Copy III	£20.00
Visischedule	£190.00
Versaform	£210.00
Systematics International Ledger Systems	P.O.A.
Vlasak 'Orbit' Ledger Systems	P.O.A.

GAMES

Choplifter	£18.00
Bug Attack	£14.95
Wizardry I	£26.00
Wizardry 2 (needs 1)	£22.00
Time Zone	£54.00
Ultima	£21.00
Wizard & Princess	£17.50
Zork II	£22.00
Gorgon	£21.00
Raster Blaster	£16.00
Flight Simulator	£21.00
Apple Panic	£15.50
Space Eggs	£15.50
Kabul Spy	£19.00
Epoch	£19.00
Hadron	£19.00
Beer Run	£15.50
Autobahn	£15.50
The Prisoner	£15.50
Castle Wolfenstein	£15.20
Pursuit of the Graf Spee	£31.00
Cyber Strike	£20.00
Snack Attack	£15.50
Sargon II	£20.00
Firebird	£15.20
Alien Typhoon	£14.00
Olympic Decathlon	£15.50
Tawala's Last Redoubt	£15.50
Sneakers	£17.00
Russki Duck	£18.00
Pegasus II	£14.95
Tigers in the Snow	£22.00
Threshold	£20.00
OO-Topos	£15.50
Genetic Drift	£15.50
Horizons V	£19.00
Adventure to Atlantis	£24.00

MONITORS

Philips 12" Amber Monitor	£130.00
BMC 12" Green Monitor	£120.00
Zenith 12" Green Monitor	£105.00

PRINTERS

IDS Prism 80	£650.00
IDS Prism 132	£840.00
Epson MX80 III FT	£375.00
Epson MX100 FT	£475.00
Olivetti ET121	£730.00
Centronics	P.O.A.
Plus Interface Cards and Buffer Cards	
Oki	P.O.A.

Postage and packing FREE – please add 15% VAT to your order.

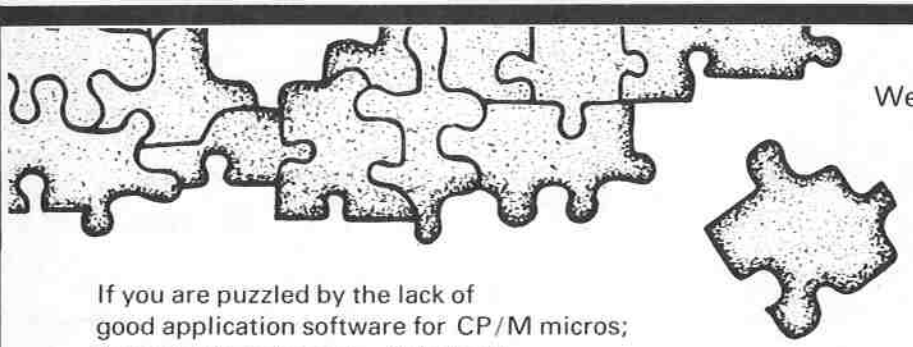
We stock the full range of Apple related books.

This is just a small sample of what we nave in stock – please ring or write for price list and further details. We also sell Apple II carrying/flight case.

We are Consultants for small businesses.

Dealer enquiries welcome

The West London Microcentre, 6 Pavilion Parade, Wood Lane, London W12 0HQ. Tel: (01)-743 9000



If you are puzzled by the lack of good application software for CP/M micros; then puzzle no longer. - Ask about

We are exclusive distributors for UK of SERENDIPITY SYSTEMS packages for Apple & CP/M; of MAGSAM index sequential access routines for CBASIC and IFO-Information File Organiser - the best data base package available for use with Apple.

our GANG OF FOUR

BASKAM

BASic Keyed Access Method routines are merged into your MBASIC programs to provide simple but efficient **INDEX-SEQUENTIAL** file handling : Multiple indexes : re-organisation : speeds processing : cuts desk use : cuts programming time by 60%. R.R.P. £95

MINIMODEL

Financial Modelling system for CP/M : Very easy to use : Flexible report layouts : consolidation : can handle large models simply and practically. Designed by business consultants for use by real businessmen. R.P.P. £399.00

DATAFLOW

The easy-to-use, fast and flexible Database management and information retrieval package for CP/M systems. If you can file it manually; then you can file it faster and better with DATAFLOW. R.P.P. £99.95

BILLFLOW

Client Billing for "Professional" business - Accountant, Consultant, Engineer, Surveyor : Invoicing, Sales Ledger, Work-in-progress, Analysis Contribution by Fee- earner : With Nominal Ledger forms complete system from Time Sheet to Balance Sheet. R.R.P. £375.00

Also ask about; Inter-Stat, Advanced Maths and Video Message packages for Apple
Ask for leaflet on; Serendipity Ledgers and Stock Control for CP/M
All CP/M packages NOW AVAILABLE for **APPLE II** and **SHARP MZ80B**

MEMBER CRA COMPUTER RETAILERS ASSOCIATION

GREAT NORTHERN Computer Services Limited

116 Low Lane, Horsforth, Leeds LS18 5PX. Telephone (0532) 589980

THINK TANK

One of the splendid spin-offs of a magazine such as Windfall is the theorising and argument generated by the programs and articles appearing in its columns. As consequent discussion tends to overload our letters pages, Think Tank is now offered as a platform for those wishing to comment on or generally discuss specific articles in Windfall. Write to: Think Tank, Windfall, Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY.

Lower case on power – up

ANYONE who would like to use lowercase on the Apple but prefers not to risk terminating their guarantee might be interested in this follow-up to Stephen Alsop's article in the July issue of Windfall, *writes J.P. Lewis.*

The particular point of interest in the article was his explanation of how to replace the F8 ROM with a 2716 EPROM riding on an adaptor.

When I saw this, I decided to change the Apple monitor itself to look at the CTRL and SHIFT keys rather than doing the usual trick of altering the KSW pointer to jump to a piece of RAM code.

With my Apple configured so that the CTRL and SHIFT keys were polled via the game controls (see below), my code simply had to check if game control 3 ($C067) was positive to decide whether CTRL was down; likewise for game control 2 ($C066) for the shift key.

The actual program was very simple and quite short (46 bytes). The only problem was finding space to put it. After a little careful study I finally squeezed out a few little bits of monitor, changed the odd byte here and there and deleted just one (decorative, but not useful) routine and came up with the following list of gaps:

FD1B 20 bytes (the original KEYIN routine)
FEC2 8 bytes (junk left from STEP and TRACE)
FBB3 14 bytes (NOPs)
FB60 15 bytes (boot routine to write "Apple II")
FB09 8 bytes (the data for the above)

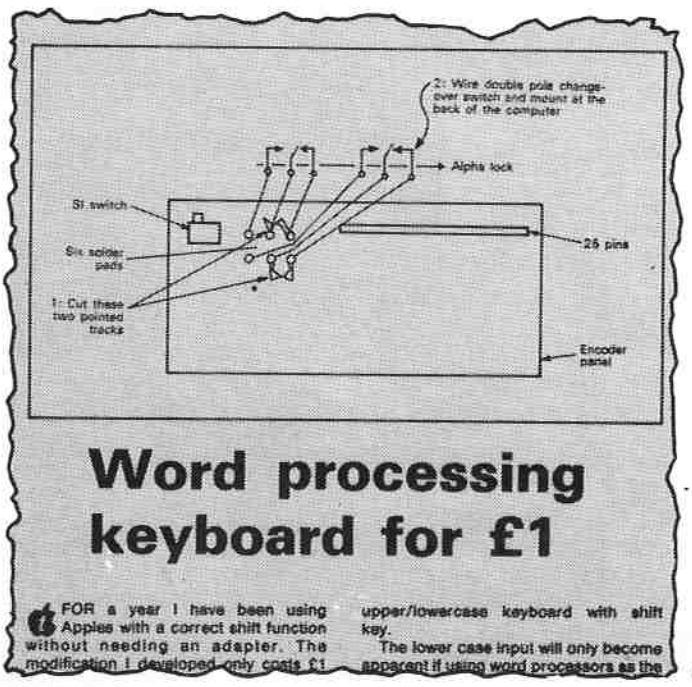
Having found some space, I then had to rewrite my routine in little chunks and add a few patches to make sure that the monitor would go from one bit to the next and not waste my efforts by turning all my lowercase back into capitals. The final annotated, assembled version of the program – plus a couple of interesting tips – is shown below.

Note particularly that, by careful manipulation of the pieces, the routine can be entered through the normal KEYIN address ($FD1B) so any existing software will not need to be altered to use this program.

In its ultimate form, the code assembles into eight separate portions, so by far the easiest way of getting it onto your machine is to enter the monitor, copy the monitor to $4800 say, then use the addresses from the first column (suitably adjusted) to type the HEX codes in directly. Finally BSAVE the new monitor to disc and get ready with your EPROM burner.

For those of you with 16k RAM cards an even easier trick is to write-enable the card (C081 . . C081 . .), move Applesoft to it (D000<D000.FFFFM), copy the data as it stands, write protect and read-enable the card (C080 . .) and Bsave. Note that if you have an Apple language card you need to replace its ROM, not the motherboard ROM. In this case you have two alternatives:

→



Word processing keyboard for £1

FOR a year I have been using Apples with a correct shift function without needing an adapter. The modification I developed only costs £1

upper/lowercase keyboard with shift key.

The lower case input will only become apparent if using word processors as the

Flashback to Stephen Alsop's July Appletip

- You can follow the method of Stephen Alsop but note the September letter "Disabler Disabled."
- There are two pairs of pads (the first to cut and the second to connect) marked on the board which make it possible to insert a 2716 as is.

Since it is always possible to find faults with even the best of software, I'll pre-empt any criticism by telling you the key fault with this piece. When you do shift-number (e.g.,$) you end up in lowercase, which can cause endless aggravation when you are trying to BSAVE some machine code, etc.

This fault is easy to rectify but the cost is another eight bytes of code, which can't easily be fitted in. So, for my own machine, I have blown an EPROM which, by dropping the tape-read/write routines (which I never use), has a more sophisticated version that handles this problem as well as supplying a "CAPS LOCK/UNLOCK" option. This improvement is left as an exercise to the interested reader.

The necessary hardware modification is implemented by running two short pieces of wire from the CTRL and SHIFT keys to a 16 pin DIP header which plugs into the IC 558 socket.

These wires may be connected to the wire-wrap pins which connect the encoder card to the keyboard proper by (well-insulated) mini croc-clips.

CAUTION: Before proceeding, switch off power and disconnect power cable.

Remove the lid of the Apple. Facing, and leaning over, the keyboard, look inside. The keyboard encoder pins are found underneath the keyboard at the right, and they are numbered 1 to 25 from left to right.

Obtain a 16-pin DIP socket and a 16-pin header. Attach the socket to the header (socket on top) by soldering all pins on the socket to all the short pins on top of the header except connections 8 and 9 – the two at the back.

Now attach the SHIFT line (encoder card pin 24) to short pin 8 on the header and attach the CTRL line (encoder card pin 3) to short pin 9 on the header.

Carefully remove the IC 558 from position H13 on the motherboard and plug in to the same location the device you have just constructed. Then plug the IC 558 into the socket on the top of your device.

Be very careful to get the orientation of the devices right.

Note that with this mod in place devices that use paddle inputs 2 and 3, such as joysticks, are disconnected and will not function.

You will also need some method of producing lowercase output on your Apple. In my case it is a 2716 EPROM containing l/c in place of the Apple character generator.

```
0000:                1 ;
0000:                2 ; Upper/Lower-case-input.
0000:                3 ; ========================
0000:                4 ;
0000:                5 ;    Converts the Apple keyboard into a true
0000:                6 ;typewriter shift/shift-lock(on CTRL) keyboard.
0000:                7 ;
0000:                8 ;    Hardware requirements:  558 chip must
0000:                9 ;be wired to keyboard encoder to poll the
0000:               10 ;CTRL and SHIFT keys.
0000:               11 ;    You need a method of producing lowercase output
0000:               12 ;built into your Apple (eg a 2716 with l/c instead
0000:               13 ;of the Apple character generator.)
0000:               14 ;
0000:               15 ;    The binary output of this program must be
0000:               16 ;superimposed onto a copy of the normal Monitor,
0000:               17 ;and the resulting code blown into a 2716 EPROM
0000:               18 ;
00F3:               19 MASK     EQU  $F3        ;Used by Applesoft in INVERSE etc.
0000:               20 ;  NB If you fancy a program printed out in lowercase
0000:               21 ;  (without any modification to your Apple)
0000:               22 ;  try POKE 243,32 before you  LIST to printer.
004E:               23 RNDL     EQU  $4E
004F:               24 RNDH     EQU  $4F
0028:               25 BASL     EQU  $28
C000:               26 KBD      EQU  $C000
C010:               27 KBDSTRB  EQU  $C010
FD84:               28 ADDINP   EQU  $FD84      ;Monitor address following 'CAPSTEST'
FC58:               29 CLRSCR   EQU  $FC58
FD3C:               30 RTS1     EQU  $FD3C      ;This is just a convenient nearby RTS
0000:               31 ;
----- NEXT OBJECT FILE NAME IS LOWERCASE MONITOR.OBJ0
FB09:               32          ORG  $FB09
FB09:48             33 START    PHA
FB0A:2C 67 C0       34          BIT  $C067      ;Checks game controller 3, ie CTRL
FB0D:10 59          35          BPL  SETCTL+1
FB0F:30 4F          36          BMI  NEXT
FB11:               37 ;
----- NEXT OBJECT FILE NAME IS LOWERCASE MONITOR.OBJ1
FB60:               38          ORG  $FB60
FB60:2C 66 C0       39 NEXT     BIT  $C066      ;Checks game controller 2, ie SHIFT
FB63:30 07          40          BMI  NOSHFT
FB65:A9 20          41          LDA  £$20       ;Slot appropriate value into mask,
FB67:2C A9 00       42 SETCTL   BIT  START-START+$A9
FB6A:               43 ;  NB Two tricks;  The BIT instruction has no effect if
FB6A:               44 ;  entered via the command above it;  but entering
FB6A:               45 ;  at SETCTL+1 produces the command LDA £0.
FB6A:               46 ;  The START-START+A9 forces EDASM to turn $A9 into
FB6A:               47 ;  a 2-byte address (default is zero-page)
FB6A:               48 ;
FB6A:85 F3          49          STA  MASK
FB6C:4C B3 FB       50 NOSHFT   JMP  NEXT1
FB6F:               51 ;
----- NEXT OBJECT FILE NAME IS LOWERCASE MONITOR.OBJ2
FBB3:               52          ORG  $FBB3
FBB3:68             53 NEXT1    PLA             ;This is the usual random seed routine
FBB4:E6 4E          54          INC  RNDL
FBB6:D0 02          55          BNE  SKIP
FBB8:E6 4F          56          INC  RNDH
FBBA:2C 00 C0       57 SKIP     BIT  KBD        ;Checks to see if key pressed.
FBBD:4C 1E FD       58          JMP  NEXT2      ;detected by negative (>127) value.
FBC0:               59 ;
FBC0:               60 ;
FBC0:               61 ;  NB The order in which the next instruction are done ensure
s
FBC0:               62 ;that, even with the changes in, any programs using
FBC0:               63 ;FD1B as the KEYIN address will not need to be altered.
FBC0:               64 ;
----- NEXT OBJECT FILE NAME IS LOWERCASE MONITOR.OBJ3
FD1B:               65          ORG  $FD1B
FD1B:4C 09 FB       66 NOKEY    JMP  START      ;If so, handle it;
FD1E:10 FB          67 NEXT2    BPL  NOKEY      ;otherwise go round again.
FD20:91 28          68          STA  (BASL),Y
FD22:AD 00 C0       69          LDA  KBD        ;Get the character, and
FD25:2C 10 C0       70          BIT  KBDSTRB    ;clear the keyboard (strobe)
FD28:C9 C1          71          CMP  £$C1       ;Checks for non-alphabetic
FD2A:30 10          72          BMI  RTS1       ;and, if so, exits by convenient RTS
FD2C:4C C2 FE       73          JMP  NEXT3
FD2F:               74 ;
----- NEXT OBJECT FILE NAME IS LOWERCASE MONITOR.OBJ4
FEC2:               75          ORG  $FEC2
FEC2:2C 66 C0       76 NEXT3    BIT  $C066      ;checks if SHIFT is held down.
FEC5:10 02          77          BPL  NSHFT1     ;If so don't mask to l/c
FEC7:05 F3          78          ORA  MASK       ;otherwise apply current mask value.
FEC9:60             79 NSHFT1   RTS             ;The code assumes you won't get your
FECA:               80 ;  finger off the shift key fast enough to stop it
FECA:               81 ;  converting to lower-case on the next pass.
FECA:               82 ;  This is probably safe unless you type faster
FECA:               83 ;  than approximately  2000 w.p.m !
FECA:               84 ;
----- NEXT OBJECT FILE NAME IS LOWERCASE MONITOR.OBJ5
FAA6:               85          ORG  $FAA6      ;Do this instead of TITLE routine,
FAA6:20 58 FC       86          JSR  CLRSCR     ;since that space is now used up.
FAA9:               87 ;
----- NEXT OBJECT FILE NAME IS LOWERCASE MONITOR.OBJ6
FD7A:               88          ORG  $FD7A      ;This code overwrites the monitor's
FD7A:F0 06          89          BEQ  ADDINP-2   ;CAPSTST routine, which would
FD7C:D0 06          90          BNE  ADDINP     ; normally mask out any l/c input.
FD7E:EA             91          NOP
FD7F:EA             92          NOP
FD80:EA             93          NOP
FD81:EA             94          NOP
FD82:B1 28          95          LDA  (BASL),Y
FD84:               96 ;
----- NEXT OBJECT FILE NAME IS LOWERCASE MONITOR.OBJ7
FFE9:               97          ORG  $FFE9
FFE9:C9             98          DFB  $C9        ;Tidy up an Apple 'error' which
FFEA:               99 ;  shows up only when the area indicated by the
FFEA:              100 ;  old 'STEP' pointer is used for something else.

*** SUCCESSFUL ASSEMBLY: NO ERRORS
```

Keep track of your free disc space

Windfall, May '82

ROUTINES which help a user keep track of available disc space have generated considerable interest among Windfall readers.

An Appletip from M.F. Sheppard (Windfall, May) noted that ordinary routines for directly counting free sectors are unsuitable as they have to be called up whenever they are required, and they use space in RAM. For a solution, he looked for a DOS command.

G.A.M. Cross (Windfall, July) said Mr Sheppard's was the "most universally useful routine" he had derived from Windfall. Unfortunately, he added, the program worked in all respects except that it outputted only the true value of free sectors if the result was less than 256. So he described two modifications to the original program to improve it.

Since then Barry Hallam has written to say that Messrs Cross and Shepherd deserve credit for first solving the problem with an assembly language routine, and then taking the trouble to write a Basic program to POKE it in.

However he describes their method as being a bit like steering a car with a spanner on the track rod, and suggests that CATALOG gives all that is required. "As Mr Cross rightly states," says Mr Hallam, "an INIT disc with a two sector HELLO leaves 494 sectors free. Deduct the aggregated usage from CATALOG and that's that . . . or maybe I just missed the spirit of the matter.

"So often we use our machines to do the easy bits, and struggle like mad finding answers for the computer to use. Unfortunately, because the sci-fi type of computer does not yet exist, the likes of Messrs Sheppard and Cross will have to continue to take their machines apart in order to find the questions!"

(Windfall editors are limited to 10 fingers each and prefer to let the computer do the work rather than grapple with Mr Hallam's CATALOG calculations.)

And now Derek Mills has sent us this program "to make your disc always show the amount of free space available". He told us: "I got so mad at the program, which admitted that it did not give free space with only a small amount of files on disc that I decided you needed this program."

```
5  TEXT : HOME
7  VTAB 7: INVERSE : PRINT "PROGR
     AM TO MAKE YOUR DISC ALWAYS
     SHOW AMOUNT OF FREE SPACE AV
     AILABLE TO YOU.": NORMAL
8  REM   WILL WORK ON DISCS WHICH
      HAVE BEEN MODIFIED TO RUN C
     ATALOG WITH JUST THE 'C' COM
     MAND  -  SEE EARLIER WINDFAL
     L MAGAZINES
10  REM  DOS 3.3 FREE SPACE PATCH
      WHICH WORKS WITHOUT HARM TO
      YOUR COMPUTER
50  VTAB 12: HTAB 6: INVERSE : PRINT
     "THIS WILL TAKE JUST 6 SECON
     DS!": NORMAL
80  PRINT : PRINT : PRINT : PRINT
     : INVERSE : HTAB 14: PRINT "
      SO PLEASE WAIT.": NORMAL
100 HEX$ = "BA69:A9 0C 85 24 48 2
     0 48 F9 68 85 24 A9 00 85 40
      85 41 A0 C8 18 B9 F3 B3 F0
     0E 0A 90 FB 48 E6 40 D0 02 E
     6 41 68 18 90 F0 4C DF BC"
105 HEX$ = HEX$ + "N BCDF:88 D0 1
     9 A6 40 A541 AC 00 E0 C0 20
     D0 07 20 1B E5 20 2F AE 60 2
     0 24 ED 20 2F AE 60 4C 7C BA
      N D7D2G": GOSUB 120: CALL  -
     144
110 HEX$ = "B3AF:BD C5 C3 C1 D0 D
     3 A0 C5 C5 D2 C6 A0 N ADC3:2
     0 69 BA N D7D2G": GOSUB 120:
      CALL  - 144: GOTO 130
120  FOR I = 1 TO  LEN (HEX$): POKE
     511 + I, ASC ( MID$ (HEX$,I,
     1)) + 128: NEXT : POKE 72,0:
      RETURN
130  REM
135  ONERR  GOTO 150
140  HOME
145 D$ =  CHR$ (4): PRINT D$"C"
148  GOTO 180
150  PRINT D$"CATALOG"
180  INVERSE : PRINT "FREE SPACE
     IS SHOWN AT HEAD OF CATALOG.
     ": NORMAL
190  PRINT : PRINT : INVERSE : PRINT
     "IF ANY DISC IS NOW INITIALI
     SED IT WILL ALWAYS SHOW AMOU
     NT OF FREE SPACE INSTEAD OF
     THE VOLUME NUMBER. RUN THIS
     ONCE ONLY": NORMAL
200  REM  ANY QUESTIONS TO DEREK
     MILLS 2 HIGH PARK ROAD, NATI
     ONAL MUSIC FOR THE BLIND, SO
     UTHPORT, MERSEYSIDE-0704 280
     10
```

Having got the shape, now to fill it in

By ED PEACH

IN this article I will be showing how the routines we developed last month can be used to fill in shapes on the screen.

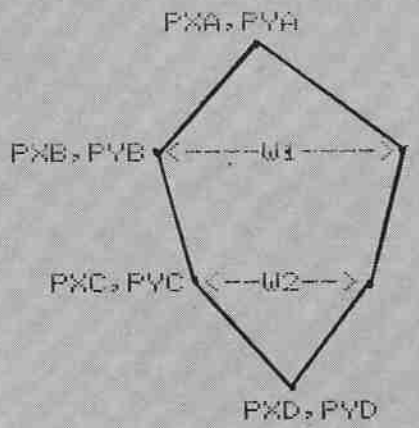
Subroutine DLINE will, you remember, draw a line parallel with the X axis from a given starting co-ordinate for a specified length. One way to fill in a shape would be to take all of the lefthand side co-ordinates together with the corresponding widths. Another way, for shapes having straight edges, is to take the points at the extremities and let the Apple do the rest.

Subroutine INTPLTE does just that. If two X,Y co-ordinate pairs are given to this routine, the corresponding X value, for any Y value between these points, will be calculated. It could be argued that the expression used could be simplified to:-

$$X=XA+K*(YPOINT-YA)$$

where K is given by (XB–XA)/(YB–YA) and need only be calculated once at the beginning of the routine. This could be a way of making the routine considerably faster. If anyone does succeed in speeding up this part of the program I for one would be very interested. Additional savings could then be obtained by integrating into subroutine WCALC.

These two routines are then put to use in a generalised block drawing routine GENBLK. This routine in fact draws a hexagon, as I needed this shape to draw any quadrilateral (given that the shape had to be defined by lines drawn parallel to the X axis). The general form of the hexagon is shown below:-



● *Next month we will be developing routines to interface the machine code with Basic. In addition we will be adding procedures to draw both horizontal and vertical lines, as well as triangles, squares, quadrilaterals and last, but not least, coloured discs.*

```
0C43:          437 ********************************
0C43:          438 *      SUBROUTINE INTPLTE      *
0C43:          439 *      THIS ROUTINE INTERPOLATES*
0C43:          440 *      AND FINDS XPOINT GIVEN  *
0C43:          441 *      THE RELATIONSHIP THAT:- *
0C43:          442 *      X=XA+(XB-XA)*(YPOINT-YA) *
0C43:          443 *                ------------- *
0C43:          444 *                  (YB-YA)     *
0C43:          445 ********************************
0C43:          446 SIGN1   DS   $1
0C44:          447 SIGN2   DS   $1
0C45:          448 SIGN3   DS   $1
0C46:A9 00     449 INTPLTE LDA  #$00
0C48:8D 43 0C  450         STA  SIGN1     ;INITIALISE SIGNS
0C4B:8D 44 0C  451         STA  SIGN2
0C4E:8D 45 0C  452         STA  SIGN3
0C51:85 A8     453         STA  Q         ;FINAL QUOTIENT
0C53:A5 9D     454         LDA  XB
0C55:C5 9C     455         CMP  XA        ;CHECK FIRST BRACKET
0C57:90 08     456         BLT  CSML      ;SIGN
0C59:38        457         SEC
0C5A:E5 9C     458         SBC  XA        ;POSITIVE RESULT
0C5C:85 A2     459         STA  MC
0C5E:4C 6D 0C  460         JMP  MPL
0C61:A9 01     461 CSML    LDA  #$1
0C63:8D 43 0C  462         STA  SIGN1
0C66:A5 9C     463         LDA  XA        ;NEGATIVE RESULT
0C68:38        464         SEC
0C69:E5 9D     465         SBC  XB
0C6B:85 A2     466         STA  MC
0C6D:A5 A4     467 MPL     LDA  YPOINT    ;CHECK 2ND BRACKET
0C6F:C5 9E     468         CMP  YA
0C71:90 29     469         BLT  DISML
0C73:38        470         SEC             ;POSITIVE
0C74:E5 9E     471         SBC  YA        ;VALUES
0C76:85 A0     472         STA  MD
0C78:4C 87 0C  473         JMP  DIVS
0C7B:A9 01     474         LDA  #$1
0C7D:8D 44 0C  475         STA  SIGN2     ;NEGATIVE RESULT
0C80:A5 9E     476         LDA  YA
0C82:38        477         SEC
0C83:E5 A4     478         SBC  YPOINT
0C85:85 A0     479         STA  MD
```

```
0C87:A5 9F     481 DIVS    LDA  YB        ;CHECK DIVISOR
0C89:C5 9E     482         CMP  YA        ;SIGN
0C8B:D0 05     483         BNE  DCHECK
0C8D:A5 9D     484         LDA  XB
0C8F:85 A3     485         STA  XPOINT
0C91:60        486         RTS
0C92:90 08     487 DCHECK  BLT  DISML
0C94:38        488         SEC             ;POSITIVE
0C95:E5 9E     489         SBC  YA
0C97:85 A1     490         STA  DD        ;DIVISOR
0C99:4C AB 0C  491         JMP  MULT
0C9C:A9 01     492 DISML   LDA  #$1
0C9E:8D 45 0C  493         STA  SIGN3
0CA1:A5 9E     494         LDA  YA        ;NEGATIVE
0CA3:38        495         SEC
0CA4:E5 9F     496         SBC  YB
0CA6:85 A1     497         STA  DD        ;DIVISOR
0CA8:A2 08     498 MULT    LDX  #$8       ;X IS SHIFT COUNTER
0CAA:A9 00     499         LDA  #$00
0CAC:85 A9     500         STA  MB
```

```
0CAE:46 A2     501 MLOOP  LSR  MC       ;SHIFT MPR
0CB0:90 03     502        BCC  NOADD
0CB2:18        503        CLC           ;CARRY SET -CLEAR IT
0CB3:65 A0     504        ADC  MD       ;A=A+MPD
0CB5:6A        505 NOADD  RORA          ;SHIFT RESULT
0CB6:66 A9     506        ROR  MB       ;CATCH IN B
0CB8:CA        507        DEX           ;DECREMENT COUNTER
0CB9:D0 F3     508        BNE  MLOOP    ;LAST SHIFT
0CBB:A0 08     509        LDY  #$8      ;INITIALISE
0CBD:38        510        SEC
0CBE:E5 A1     511        SBC  DD       ;SUBTRACT DIVISOR
0CC0:08        512 DLOOP  PHP           ;SAVE CARRY BIT
0CC1:26 A8     513        ROL  Q        ;GET QUOTIENT
0CC3:06 A9     514        ASL  MB       ;MOVE TO NEXT PLACE
0CC5:2A        515        ROLA          ;GET LOBIT
0CC6:28        516        PLP           ;GET CARRY BACK
0CC7:90 05     517        BCC  DADD
0CC9:E5 A1     518        SBC  DD       ;DIVIDE LOBIT
0CCB:4C D0 0C  519        JMP  DNXT
0CCE:65 A1     520 DADD   ADC  DD
0CD0:88        521 DNXT   DEY           ;REPEAT UNTIL Y=0
0CD1:D0 ED     522        BNE  DLOOP
0CD3:B0 03     523        BCS  DLAST
0CD5:65 A1     524        ADC  DD
0CD7:18        525        CLC
0CD8:26 A8     526 DLAST  ROL  Q
0CDA:AD 43 0C  527        LDA  SIGN1    ;CHECK IF ALL SIGNS SAME
0CDD:CD 44 0C  528        CMP  SIGN2    ;THEN +VE
0CE0:D0 0D     529        BNE  SUBIT
0CE2:CD 45 0C  530        CMP  SIGN3
0CE5:D0 08     531        BNE  SUBIT
0CE7:A5 9C     532        LDA  XA       ;YES ALL THE SAME
0CE9:18        533        CLC           ;ADD RESULT TO XA
0CEA:65 A8     534        ADC  Q
0CEC:85 A3     535        STA  XPOINT
0CEE:60        536        RTS
0CEF:A5 9C     537 SUBIT  LDA  XA       ;NO-RESULT -VE
0CF1:38        538        SEC           ;SUBTRACT RESULT FROM XA
0CF2:E5 A8     539        SBC  Q
0CF4:85 A3     540        STA  XPOINT
0CF6:60        541        RTS
```

```
0CF7:          543 ********************************
0CF7:          544 *      SUBROUTINE WCALC        *
0CF7:          545 *  INTERPOLATES WIDTH USING    *
0CF7:          546 *      SUBRUUTINE INTPLTE      *
0CF7:          547 ********************************
0CF7:          548 WI1    DS   $1
0CF8:          549 WI2    DS   $1
0CF9:A5 9C     550 WCALC  LDA  XA       ;SAVE DATAPOINTS
0CFB:48        551        PHA
0CFC:A5 9D     552        LDA  XB
0CFE:48        553        PHA
0CFF:AD F7 0C  554        LDA  WI1      ;GET FIRST WIDTH VALUE
0D02:85 9C     555        STA  XA       ;PUT IT WHERE INTPLTE CAN USE IT
0D04:AD F8 0C  556        LDA  WI2      ;AND AGAIN
0D07:85 9D     557        STA  XB
0D09:20 46 0C  558        JSR  INTPLTE  ;INTERPOLATE
0D0C:68        559        PLA
0D0D:85 9D     560        STA  XB
0D0F:68        561        PLA
0D10:85 9C     562        STA  XA
0D12:A5 A3     563        LDA  XPOINT
0D14:85 FF     564        STA  WIDTH    ;STORE WIDTH VALUE
0D16:60        565        RTS
```

```
0D17:          567 ********************************
0D17:          568 *      SUBROUTINE GENBLK       *
0D17:          569 *  GENERALISED BLOCK DRAWING   *
0D17:          570 *      ROUTINE                 *
0D17:          571 ********************************
0D17:          572 PXA    DS   $1
0D18:          573 PYA    DS   $1
0D19:          574 PXB    DS   $1
0D1A:          575 PYB    DS   $1
0D1B:          576 PXC    DS   $1
0D1C:          577 PYC    DS   $1
0D1D:          578 PXD    DS   $1
0D1E:          579 PYD    DS   $1
0D1F:          580 W1     DS   $1
0D20:          581 W2     DS   $1
0D21:AD 18 0D  582 GENBLK  LDA  PYA      ;GET FIRST COORDINATE VALUE
0D24:85 9A     583        STA  YPOS     ;INITIALISE DRAWING POINT
0D26:85 A4     584        STA  YPOINT   ;AND INTERPOLATION POINT
```

```
0D28:85 9E     585        STA  YA       ;AND TOP POSITION
0D2A:CD 1A 0D  586        CMP  PYB      ;FLAT TOP?
0D2D:F0 32     587        BEQ  D2       ;YES SKIP DRAWING
0D2F:AD 17 0D  588        LDA  PXA      ;PUT IN THE OTHER POINTS
0D32:85 9C     589        STA  XA
0D34:AD 1A 0D  590        LDA  PYB
0D37:85 9F     591        STA  YB
0D39:AD 19 0D  592        LDA  PXB
0D3C:85 9D     593        STA  XB
0D3E:A9 00     594        LDA  #$0
0D40:8D F7 0C  595        STA  WI1      ;POINT AT TOP OF FIGURE
0D43:AD 1F 0D  596        LDA  W1       ;GET FIRST WIDTH VALUE
0D46:8D F8 0C  597        STA  WI2      ;STORE IT
0D49:20 46 0C  598 DRAW   JSR  INTPLTE
0D4C:85 99     599        STA  XPOS
0D4E:20 F9 0C  600        JSR  WCALC    ;FIND WIDTH
0D51:20 B0 0A  601        JSR  DLINE    ;DRAW LINE
0D54:A5 9A     602        LDA  YPOS     ;GET Y POSITION
0D56:18        603        CLC           ;INCREASE IT
0D57:69 01     604        ADC  #$1
0D59:85 9A     605        STA  YPOS
0D5B:85 A4     606        STA  YPOINT
0D5D:C5 9F     607        CMP  YB       ;ALL DONE?
0D5F:90 E8     608        BLT  DRAW     ;NO
0D61:AD 1A 0D  609 D2     LDA  PYB
0D64:85 9A     610        STA  YPOS
0D66:85 A4     611        STA  YPOINT   ;PUT IN DATA FOR NEXT SECTION
0D68:85 9E     612        STA  YA
0D6A:CD 1C 0D  613        CMP  PYC      ;NOTHING TO DRAW?
0D6D:F0 33     614        BEQ  D3       ;IF SO JUMP
0D6F:AD 19 0D  615        LDA  PXB
0D72:85 9C     616        STA  XA
0D74:AD 1C 0D  617        LDA  PYC
0D77:85 9F     618        STA  YB
0D79:AD 1B 0D  619        LDA  PXC
0D7C:85 9D     620        STA  XB
0D7E:AD 1F 0D  621        LDA  W1
0D81:8D F7 0C  622        STA  WI1
0D84:AD 20 0D  623        LDA  W2
0D87:8D F8 0C  624        STA  WI2
0D8A:20 46 0C  625 DRAW2  JSR  INTPLTE  ;FIND X VALUE
0D8D:85 99     626        STA  XPOS
0D8F:20 F9 0C  627        JSR  WCALC    ;FIND WIDTH
0D92:20 B0 0A  628        JSR  DLINE    ;AND DRAW LINE
0D95:A5 9A     629        LDA  YPOS
0D97:18        630        CLC
0D98:69 01     631        ADC  #$1      ;ADD ONE
0D9A:85 9A     632        STA  YPOS
0D9C:85 A4     633        STA  YPOINT
0D9E:C5 9F     634        CMP  YB       ;ALL DONE?
0DA0:90 EB     635        BLT  DRAW2    ;NO!
0DA2:AD 1C 0D  636 D3     LDA  PYC      ;SET UP DATA POINTS
0DA5:85 9A     637        STA  YPOS
0DA7:85 A4     638        STA  YPOINT
0DA9:85 9E     639        STA  YA
0DAB:CD 1E 0D  640        CMP  PYD      ;NOTHING TO DRAW?
0DAE:D0 01     641        BNE  D4       ;YES CARRY ON
0DB0:60        642        RTS
0DB1:AD 1B 0D  643 D4     LDA  PXC
0DB4:85 9C     644        STA  XA
0DB6:AD 1E 0D  645        LDA  PYD
0DB9:85 9F     646        STA  YB
```

```
0DBB:AD 1D 0D  647        LDA  PXD
0DBE:85 9D     648        STA  XB
0DC0:AD 20 0D  649        LDA  W2
0DC3:8D F7 0C  650        STA  WI1
0DC6:A9 00     651        LDA  #$0      ;POINT AT BOTTOM
0DC8:8D F8 0C  652        STA  WI2
0DCB:20 46 0C  653 DRAW3  JSR  INTPLTE  ;FIND X
0DCE:85 99     654        STA  XPOS
0DD0:20 F9 0C  655        JSR  WCALC    ;FIND WIDTH
0DD3:20 B0 0A  656        JSR  DLINE    ;DRAW LINE
0DD6:A5 9A     657        LDA  YPOS
0DD8:18        658        CLC
0DD9:69 01     659        ADC  #$1      ;INCREASE BY 1
0DDB:85 9A     660        STA  YPOS
0DDD:85 A4     661        STA  YPOINT
0DDF:C5 9F     662        CMP  YB
0DE1:90 E8     663        BLT  DRAW3
0DE3:60        664        RTS           ;ALL DONE
```

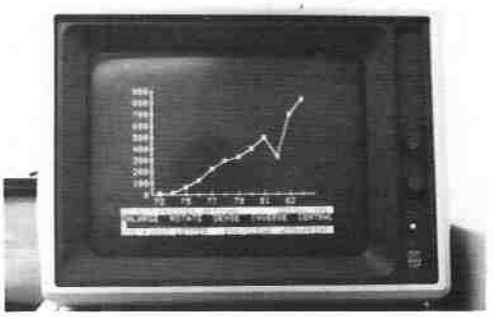
lower case chip + SHIFT KEY MOD

- Adds the full lower case set to your APPLE II
- Complete with clip-on SHIFT KEY modification
- Lower case letters have true descenders
- Compatible with most word processing packages
- Available in most European languages
- Comprehensive documentation covers installation & software

Requires Revision 7 (and upward) APPLE II
PRICE £34.00 + V.A.T.

Visiplot Driver Routines

If you have Visiplot, a graphics printer and one of the following – Grappler, Digitek Printmaster, Pkaso, then our intelligent printer and Driver Routine is a must.



- Send direct from Screen to graphics printer – allowing image to be enlarged, rotated, printed black/white, white/black, centralised etc.
- Simple menu selection enables you to send graphics screen image directly to printer.

Our Visiplot intelligent driver routines allows you to take full advantage of your printer card capabilities.

£19.95 + V.A.T.

VISICALC UTILITIES

VisiCalc Utilities Apple computer program:

Enables you to list out on your printer or VDU all the worksheet formulae.
Allows you to display or print those formulae too wide for the VisiCalc display area.
Find command lets you trace column/row references in the worksheet.
Re-format the printout of your worksheets with variable column widths, additional text headings, dates, page control and numberings.
If you have a clock card the date and time are automatically included in your printout.
Visiprint format files can be saved to disc for future use.

Retail Price £34.95 + VAT

- Improves VisiCalc significantly as regards the Apple II.
- A useful audit tool.
- Enables one to do things with VisiCalc that are otherwise impossible.
- *Accountancy May 1982.*

Send for reprint of above review and VisiCalc Utilities fact sheet.

LEICESTER
computer centre limited
67 Regent Road, Leicester LE1 6YF. Tel: 0533 556268

apple computer
Sales and Service

INTERFACE AND UTILITY CARDS FOR apple

ANALOGUE 8/8
8 Channel input plus 8 Channel output. Optional 10v. or 5v. F.S; 8 bit resolution.
ANALOGUE 8/8 ..... £179 + VAT

ANALOGUE 12/12
12 bit analogue input converts in 20uS. 10v. or +–5v. F.S. plus 12 bit analogue output and 16 bit parallel I/O and timers.
ANALOGUE 12/12 ..... £195 + VAT

UNIPROM
Programmes 2516/2716, 2532/2732, 2764 EPROMS. It also doubles as a 32 bit parallel I/O port.
UNIPROM ..... £145 + VAT

ACT Sirius 1 SYSTEMS FROM £2395

EDC PHOTONIC LTD.
Tector House, 103 Washway Road, Sale, Cheshire. Tel: 061-973-8367
DEALER ENQUIRIES WELCOME

FINANCIAL MODELLING COURSES

'Hands On' Practical Microcomputer Modelling

1 DAY VISICALC
1 DAY ADVANCED VISICALC
3 DAY 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

Professional assembler is just right for amateurs, too

By MAX PARROTT

AFTER working at Basic many people who are interested in programming on micros will decide to try their hand at machine code. They soon learn that a good assembler is a must, and that it's as important to buy a good assembler as it is to buy a good micro.

The manual provided with Lisa describes it as a professional assembly language development system, but don't let this put you off if you are not a professional. This is a very good assembler for both the professional and amateur. It is powerful, easy to use, comes with a good manual and lots of helpful routines and comments on disc.

Several good assemblers are available for the Apple, not the least of which have been the several versions of Lisa. This latest version's minimum hardware requirement is 48k of RAM and a disc drive, but it is much happier with a 64k Apple (ie with a 16k language card present in the machine).

Lisa is provided – together with a host of other files, about which more later – on a DOS 3.2 disc which can be MUFFIN'ed to DOS 3.3. On booting a Lisa disc (or more accurately when running the Lisa programs) DOS is modified so that if you want to return to Basic it is necessary to re-boot with another disc.

The most obvious effect of the modification of DOS is seen when CATALOGing a disc under Lisa's DOS. The source files are labelled with an L rather than B as they would appear under a normal DOS CATALOG. These source files are stored, not as TEXT files as with many assemblers, but as an image of the file as held in memory where op-codes are tokenised and other memory-saving devices are used. Lisa takes up a lot of memory because, unlike the Apple assembler it stores the operating system, editor and assembler in memory and writes the assembled code to memory rather than to disc.

Both systems have their strengths and weaknesses. The co-resident system as here is fast, but generally demands that code is asembled in a particular area of memory ($800-1800) because $300-360 is used by Lisa as is $1800-7FFF (for the source file), $8000-94FF (for the symbol table), $9500-95FF (an I/O buffer) and $D000-F7FF (for Lisa). All locations assume a 64k Apple. These address boundaries can be changed by the user, but generally this seems unnecessary as the ratio of text to code space seems good, and source files from disc may be chained together with the use of suitable op-codes. In much the same way code may be written back to disc in chunks, albeit with some loss of speed of assembly, and in fact with long source files this has to be done.

Actually it is perfectly possible to assemble code into the text area, for example, if it is short and doesn't interfere with the text, but this is a risky business and quite unnecessary since with Lisa it is very easy to handle DOS. This is done by issuing the usual DOS commands preceded by a CNTRL-D.

The source file may also be written out as a TEXT file and, of course, TEXT files may be read in so that files assembled under other assembly systems may be dealt with. Don't imagine, however, that this is entirely an altruistic act on the part of the author. There is a good reason for it. I'm sure that the option to write out the file as a TEXT file is given to make up for some of the shortcomings of the editor. This criticism sounds harsher than is the case, the editor generally is not that bad. It is easy to list the source file or part of it and to stop/start the listing by using the space bar.

It deals sensibly with the deletion of unwanted lines. A block of lines is lost simply by following the deletion command by the range of lines – contrast that with the Apple assembler where it is necessary to work from the bottom upwards because deletion changes the number of the lines and the editor (and the operator) become confused.

Lines are also easily modified (cursor movements on the screen are catered for, but unfortunately not by the same I,J,K,M, keys as in the monitor) and are also easily inserted. All commands are brought about by typing one or more letters (with or without an accompanying line number or range of line numbers where appropriate). Incidentally, it is necessary to separate a command and a line number by a space – a thing difficult to get used to on the Apple, which is generally so forgiving over such matters.

Using the FIND command it is easy to find a label in the label field, but you cannot find it in another field. This is the one major shortcoming of Lisa. To find and replace a string or label it is necessary to write out the file as a TEXT file, to boot up with normal DOS and to employ another text editor. I used the Apple assembler editor for this job, but the manual recommends the use of the Apple PIE text editor.

Disc or tape files may be appended to a file or may be EXECed into the middle of a file already in memory so favourite routines or messages may be easily incorporated.

Constants may be defined in hexadecimal, decimal and binary.

Address expressions are extensive, supporting addition, subtraction, multiplication, division, ANDing, ORing, EORing, equality and inequality.

Generally the opcodes are standard MOS syntax but there are some differences. Immediate addressing uses # for the low order byte and / for the high order byte rather than > and <. These two symbols are used instead for dictating the direction of branching (forwards or backwards) to local labels which are defined by" followed by a digit. The first one found which matches is then used by the assembler as the address. Other opcodes which differ from MOS syntax are ASL, ROL, LSR, ROR which do not require to be followed by an A when referring to the accumulator addressing mode. This is similar to the mini-assembler. Other similarites are the use of ! as the command level prompt and the checking of syntax as the line is entered, which must cut down assembly time. In any in-

→

dexed addressing Lisa will use zero page addresses where possible or necessary.

Many pseudo opcodes are available in Lisa, which makes the process of assembly very easy and Lisa a very powerful tool. They range from those you would expect such as ORG, OBJ, HEX, ASC, EQU to EPZ which will define a zero page address and on to a wide range of others. ASC may be used with single quotes to define high bit off and double quotes to define high bit on. DCI is like ASC but the last character has the high bit set opposite to the rest. INV will output inverted characters and BLK flashing characters. STR will output a series of characters just like ASC but with a length byte preceeding them so string handling routines may be more easily incorporated.

Other commands which define bytes include ADR, which stores two bytes in standard low, high byte order. Multiple address expressions can be used as operand and so it is particularly useful for setting up jump tables and storing constants. DBY is similar except that the data generated is in the order high byte, low byte. HBY stores only the high order byte of an address expression, which when used with BYT to store only the low order byte is useful for loading the index registers. DFS reserves a range of memory as defined by the operand and also can initialise it to a set value. .DA is a hybrid pseudo opcode combining the effect of ADR BYT and HBY.

Conditional assembly may be initialised with the .IF pseudo opcode, this is used in conjunction with .FI (endif) and .EL (else).

Code may be assembled for a different address within the body of a program by using the PHS pseudo opcode and DPH to signal the end of this section. The main program has to move the inner section of code to its correct address.

Other pseudo opcodes dictate the process of assembly, listings may be switched in or out or shortened, titles may be put into listings which may be continuous or paged, pauses may be incorporated into the assembly process for debugging purposes, a further file may be chained into the assembly process so that long files can be split and assembled in one, and DOS commands can be issued from within the listing at the last stage of assembly so that the generated code may be SAVED to disc in chunks or printers can be switched on or off and a disc text file listing of the assembled program can be generated. The user can even define his own pseudo opcode if wished.

Lisa also incorporates extended opcodes. Thus as well as BCC, BCS, BNE etc there are commands such as BLT-branch if less than (same as BCC); BGE-branch if greater than or equal to (same as BCS) and others less useful like BTR (branch if true), BFL (branch if false).

The mnemonics introduced for the Sweet 16 assembler are also incorporated into Lisa, with a few changes, therefore enabling that much under-used Apple facility to be easily utilised.

I hope that I have indicated just how powerful Lisa is as an assembler so that your interest will be aroused enough to see it for itself, before I briefly mention the other goodies that come on the disc. These range from a couple of programs to enable the source files generated by the Microproducts Assembler and the SC Assembler II version 3.2 to be read into Lisa – and of course any standard Apple TEXT file may be EXECed into Lisa – through to an extensive set of hi-res routines for plotting, erasing and calculating (or creating) points, lines, shapes and Ascii characters to the screen. Pictures may be ORed and EORed to the screen and "collisions" may be readily detected.

Variable sorting and cross-reference programs are included on the disc, together with a pretty powerful disassembler. Unfortunately it is here that the lack of an editor search/replace command is really felt, because the generated labels need to be replaced by something more comprehensible to the user. There are also files of software utilities, ranging from general I/O and disc I/O to arithmetic and character checking and comparison routines.

Part of the source listing of Lisa is also given to enable the user to patch in his own routines. Incidentally, these are well worth listing to see the style of Randy Hyde, who must be somewhat idiosyncratic. His style is also evident in the manual, which starts by telling the reader how to pronounce Lisa (not Le sa but Li za).

I said at the beginning that the manual is good, and so it is, but it is not without faults. There are the usual typographical errors plus one or two informational ones. The worst of these is that the section describing how to get Lisa up and running says that the file MXFLS may be BRUN. This file doesn't exist, you actually have to BRUN LISA V2.5.

To sum up, I believe that Lisa is a very good assembler, possibly the best on the market. It comes with some routines which may prove useful to both professional and amateur programmer and it should work well for both. Incidentally, if you want to learn assembly language programming then this assembler together with a book, "Using 6502 Assembly Language or How Anyone Can Program The Apple II" (Datamost), written by Randy Hyde will turn out to be a good combination.

Appletip

Imagine that you've written a program which is going to be used by other people. It may be for a demonstration or for use by children. It is very user friendly with plenty of guidance and all data entry is done using **GET** statements. All user entered data is carefully validated so the program is pretty well bomb proof.

But let's suppose that the user gets stuck and decides to start again. He looks at the keyboard and sees a key marked **RESET**. Need I say more? Alternatively one of the users knows about computers and wants to list your program, so while the computer is working away between **GET** statements he presses **CTRL-C**.

The following subroutines for Apple owners with Autostart ROM get around these problems by causing the program to be rerun on **RESET** or CTRL-C. The first subroutine (60000) resets the soft entry vector to 0300 where you have poked in a little machine code consisting of a JSR to a subroutine vectored at 03EA (reconnect DOS) followed by a jump to the subroutine at D566 (**RUN**). You must of course remember to restore **RESET** to normal at the end of your program using the subroutine provided (60030).

The subroutine to intercept **CTRL-C** is easy as this generates an error code (255) so the **ONERR** statement can be used to catch it. Of course if your program already uses the **ONERR** statement then the whole of subroutine (60060) is not neccessary, just incorporate line 60080 in your program at the appropriate point.

```
59999  REM  ALTER RESET TO RUN
60000  POKE 768,32: POKE 769,234:
       POKE 770,3: POKE 771,76: POKE
       772,102: POKE 773,213: POKE
       1010,0: POKE 1011,3: POKE 10
       12,166
60020  RETURN
60027 :
60029  REM  RESTORE RESET
60030  POKE 1010,191: POKE 1011,1
       57: POKE 1012,56
60040  RETURN
60057 :
60059  REM  ALTER CTRL-C TO RUN
60060  ONERR  GOTO 60080
60070  GOTO 60100
60080  IF  PEEK (222) = 255 THEN
       RUN
60090  POKE 216,0: RESUME
60100  RETURN
```

Colin J. Davies

● The reset vectors are explained on pages 36/37 of the Apple reference manual.

MICROCOMPUTER PRODUCTS INTERNATIONAL LTD.

MPI

ROOM WF. 9-10a CAMBRIDGE HOUSE. CAMBRIDGE ROAD. BARKING. ESSEX IG11 8NT. ENGLAND
Telephone: 01-591 6511 Telex: 892395

Europe's largest selection of Microcomputer Books, Magazines and Software for the Hobbyist, Educationalist, Professional, Retailer and Businessman.

Software is now available in Apple 13 and 16 Sector formats

Retailer and OEM terms available

MAIL ORDER
TELE-PHONE
CREDIT CARD ORDER
• VISIT •

FREE Full descriptive Catalogue available

Trade Enquiries Welcome

ANTHONY ASHPITEL

TYPING MASTER	
BASIC VERSION	£50
BUSINESS VERSION	£125

BYROM

BSTAM—UTILITY TO LINK ONE MICROCOMPUTER TO ANOTHER	£110
BSTMS—UTILITY TO LINK A MICRO TO A MINI OR A MAIN FRAME	£110

CP/M USERS LIBRARY

51 VOLUMES (1 VOLUME PER 2 DISKS)	£10.00	£7.00
INDEX	£2.00	

DIGITAL RESEARCH

C BASIC	£75	£16
CB 80	£306	£20
XLT 86	£92	£8
Z SID	£64	£16
MAC	£61	£16
TEX	£64	£16
PL/1 80	£309	£31
BT 80	£162	£23

FOX & GELLER

QUICKSCREEN FOR BASIC II	£101	£14
QUICKSCREEN FOR C BASIC/CB80	£101	£14
QUICKSCREEN FOR M BASIC	£101	£14
QUICKCODE FOR D BASE II	£179	£21

GRAM BUSINESS SYSTEMS LTD.

DISK REV	£65	£13
DISKLENE	£40	£6
DISKORG	£50	£6
DISKED — II	£20	£8
DISKTOOLS — I (DISKREV DISKORG)	£90	£15
DISKTOOLS — II (DISKREV, DISKORG, DISKED)	£145	£19

INFORMATION UNLIMITED

WHATSIT	£80

MICRO-AP

SELECTOR V	£318	£29

MICROFOCUS

CIS COBOL	£425	£25
FORMS 2	£100	£10
ANIMATOR	£225	£25

MICROLOGY

FT NUMB (FORTRAN-80 RENUMBER AND REFORMATTER)	£50

MICROPRO

WORDSTAR	£217	£43
MAILMERGE	£73	£12
SPELLSTAR	£113	£12
DATASTAR	£171	£29
SUPERSORT	£116	£25
CALCSTAR	£113	£29

MICROSOFT

BASIC 80	£214
BASIC COMPILER	£237
FORTRAN 80	£301
COBOL 80	£439
M/SORT	£87
MACRO 80	£121
EDIT 80	£75
MULISP	£121
MUMATH	£151

MPI LTD.

MATHS PACK	£120
STATS PACK	£120

MT. MICROSYSTEMS

PASCAL MT+	£202	£29
SPEED PROGRAMMING PACKAGE	£145	£29
LIBRARY SOURCES	£127	
PASCAL MT+ WITH SPP	£292	£58

PHEONIX SOFTWARE ASSOCIATES

PLINK	£83	£17
PASM	£83	£17
P.EDIT	£83	£17
BUG	£83	£17
P.DEVELOP	£323	£38
P.LINK	£214	£17

SOME OF OUR BOOKS FOR THE APPLE

WORDSTAR Made Easy	£11.95
Programming with PL/1	£17.50
Best of Micro Vol. 2	£5.50
Programming the 6502	£10.75
Microcomputer Programming — the 6502	£7.25
6502 Applications	£10.25
APPLE II Users Guide	£16.95
6502 Assembly Language Programming	£11.95
Science & Engineering Programs for the APPLE II	£11.60
Introduction to Low Resolution Graphics	£6.00
6502 Games	£10.25

ALL OUR SOFTWARE FOR THE APPLE MUST RUN UNDER THE CP/M CARD.

Due to fluctuations in the dollar exchange rate, we are now bringing out a new price list each month. Make sure you have the current price details when ordering. Tel: 01-591 6511

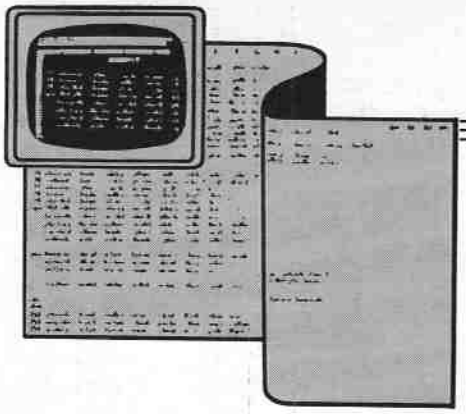
ORDER INFORMATION

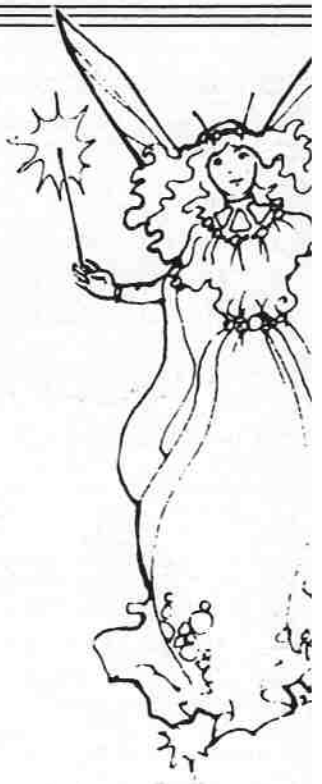
All this Software runs under CP/M. Most software and books are available from stock and goods are therefore despatched by return of post — so long as payment has been received. Access and Barclaycard orders are accepted by telephone. All other orders must be in writing (Telex or telegram messages accepted).

Postage on software is £3.75 per item plus 15% VAT.
Postage on books is £1.00 per item, up to three items — then £0.25 for each extra book, plus 15% VAT.
VAT is 15% on all software. VAT is 0% on all books, or manuals when manuals are purchased separately from disc.

* Showroom available * Dealer/OEM Terms available *

Microcomputer Products International Ltd., Room WF. 9-10a Cambridge House. Cambridge Road. Barking. ESSEX IG11 8NT. UK
Telephone 01-591 6511 Telex 892395





Technique with a touch of magic

By NICK LEVY
Principal,
Interface Management

ONE of the main problems in writing a VisiCalc column is to decide whether your prime concern is to make it appeal to newcomers to VisiCalc or to benefit the more advanced users of the program. Fortunately this month we are going to deal with a technique which is unique in that it will appeal both to beginners and advanced users alike.

Beginners will enjoy the neatness and the simplicity with which a relatively complicated VisiCalc program is being executed, while the more advanced can revel in the mind-boggling possibilities offered by a little known, magical VisiCalc technique.

The object of the exercise we shall perform is to show how VisiCalc can keep cumulative totals in one cell every time new data is entered in another cell to which it is linked. For example, suppose you enter the figure 5 in two cells – in A1 and in B1. Now you overwrite the figure in cell A1 by keying in a 7. How can you get cell B1 to show 12 (ie 5+7) simultaneously with entering the 7 in cell A1? This problem is often encountered by users who run VisiCalc models which require regular updating of one column and the maintenance of cumulative totals in another.

The model that we shall use to demonstrate the technique is a condensed earning statement for bank branch (Exhibit I). You don't have to be a bank manager before you concern yourself with this particular model. The principles involved in structuring and manipulating that model concerns every VisiCalc user who has to prepare periodic budgets (or similar accounting statements), analyse the variances, and keep cumulative totals of the budget figures, as well as the cumulative totals of the actual results and the variances.

It is of utmost importance that you copy the layout of Exhibit I exactly as shown, without making any layout modifications of your own. Provided you keep to the same layout you can change the model's wordings or figures to your heart's delight. Note that the only formulae that are used in this exhibit appear in columns E and H and in rows 11, 20 and 22. After copying it, save the model under (say) BBB (Bank Branch Budget). Having saved the model you can now clear the screen with /CY.

We are now going to do something that perhaps most VisiCalc users never thought possible! We are going to write on VisiCalc a program using the commands and functions which are peculiar to VisiCalc. We are then going to save the strange looking program as a VisiCalc file, and use it later to manipulate other VisiCalc models. In other words, instead of you carrying out a series of operations on a VisiCalc model, you load the VisiCalc file containing the strange looking program, and it does the work for you. (If at first this sounds incredible don't rush to look up your VisiCalc manual, you will find no hint there about this unique technique).

Starting with a clear screen, begin by keying /GFR/GC20 RETURN. This will ensure that all your entries are right justified. It also assumes that none of your entries in any one cell are longer than 20 characters.

Next copy Exhibit II. Note that, with the exception of the title, every entry shown in that exhibit must start with either " or Q followed by ESC. (VisiCalc will just refuse to accept > as the first character in a cell unless you first type " or Q ESC). These odd looking entries are known as

	A	B	C	D	E	F	G	H
1			A CONDENSED EARNING STATEMENT FOR A BANK					
2			(IN '000)					
3								
4	MONTH--->JAN'82							
5	BUDGET COMPARISON		<------THIS MONTH------>			<-CUMMULATIVE TO DATE-->		
6			BUDGET	ACTUAL	VARIANCE	BUDGET	ACTUAL	VARIANCE
7	INCOME:							
8	INTEREST RECEIVED		327	316	-11	327	316	-11
9	PROV.OF SERVICES		87	89	2	87	89	2
10								
11	GROSS INCOME		414	405	-9	414	405	-9
12	EXPENSES:							
13	SALARIES		125	125	0	125	125	0
14	EMPLOYEE BENEFITS		25	26	1	25	26	1
15	RENT AND RATES		45	47	2	45	47	2
16	SERVICE FROM H.O.		104	103	-1	104	103	-1
17	OVERHEADS		19	16	-3	19	16	-3
18	INTRST.ON DEPOSIT		19	19	0	19	19	0
19								
20	GROSS EXPENSES		337	336	-1	337	336	-1
21								
22	EARN.BEFORE TAX		77	69	-8	77	69	-8
23								

Exhibit I

```
1          DRIVE FOR
2          BBB MODEL
3
4      >B4:"........
5
6              >C8:0
7              >C9:0
8             >C13:0
9             >C14:0
10            >C15:0
11            >C16:0
12            >C17:0
13            >C18:0
14
15             >D8:0
16             >D9:0
17            >D13:0
18            >D14:0
19            >D15:0
20            >D16:0
21            >D17:0
22            >D18:0
23
24           >F8:#+C8
25           >F9:#+C9
26          >F13:#+C13
27          >F14:#+C14
28          >F15:#+C15
29          >F16:#+C16
30          >F17:#+C17
31          >F18:#+C18
32
33           >G8:#+D8
34           >G9:#+D9
35          >G13:#+D13
36          >G14:#+D14
37          >G15:#+D15
38          >G16:#+D16
39          >G17:#+D17
40          >G18:#+D18
41
42             /X>A1:
43               >B4:
```

Exhibit II

```
          A        B        C        D        E        F        G        H
1                        A CONDENSED EARNING STATEMENT FOR A BANK
2                                  (IN '000)
3                        ----------------------------------------
4      MONTH--->.........
5      BUDGET COMPARISON    <------THIS MONTH------>   <-CUMMULATIVE TO DATE-->
6      -----------------    BUDGET   ACTUAL VARIANCE   BUDGET   ACTUAL VARIANCE
7      INCOME:              ----------------------------------------------------
8       INTEREST RECEIVED        0        0        0      327      316      -11
9       PROV.OF SERVICES         0        0        0       87       89        2
10                          ----------------------------------------------------
11     GROSS INCOME             0        0        0      414      405       -9
12     EXPENSES:            ====================================================
13      SALARIES                0        0        0      125      125        0
14      EMPLOYEE BENEFITS       0        0        0       25       26        1
15      RENT AND RATES          0        0        0       45       47        2
16      SERVICE FROM H.O.       0        0        0      104      103       -1
17      OVERHEADS               0        0        0       19       16       -3
18      INTRST.ON DEPOSIT       0        0        0       19       19        0
19                          ----------------------------------------------------
20     GROSS EXPENSES           0        0        0      337      336       -1
21                          ----------------------------------------------------
22     EARN.BEFORE TAX          0        0        0       77       69       -8
23                          ====================================================
```

Exhibit III

```
          A        B        C        D        E        F        G        H
1                        A CONDENSED EARNING STATEMENT FOR A BANK
2                                  (IN '000)
3                        ----------------------------------------
4      MONTH--->FEB'82
5      BUDGET COMPARISON    <------THIS MONTH------>   <-CUMMULATIVE TO DATE-->
6      -----------------    BUDGET   ACTUAL VARIANCE   BUDGET   ACTUAL VARIANCE
7      INCOME:              ----------------------------------------------------
8       INTEREST RECEIVED      409      412        3      736      728       -8
9       PROV.OF SERVICES        98      101        3      185      190        5
10                          ----------------------------------------------------
11     GROSS INCOME            507      513        6      921      918       -3
12     EXPENSES:            ====================================================
13      SALARIES               130      130        0      255      255        0
14      EMPLOYEE BENEFITS       31       31        0       56       57        1
15      RENT AND RATES          45       45        0       90       92        2
16      SERVICE FROM H.O.      115      120        5      219      223        4
17      OVERHEADS               18       17       -1       37       33       -4
18      INTRST.ON DEPOSIT       30       33        3       49       52        3
19                          ----------------------------------------------------
20     GROSS EXPENSES          369      376        7      706      712        6
21                          ----------------------------------------------------
22     EARN.BEFORE TAX         138      137       -1      215      206       -9
23                          ====================================================
```

Exhibit IV

datagrams, and as you will appreciate you must be careful not to make any mistakes when writing or copying datagrams.

Now save the program (Exhibit II) in two separate files and call the first file DRIVE BBB SS. This will be saved the way you normally save a file with /SS. Next save the program in print format (see page 3-47 in the VisiCalc manual, Edition 5/81). To do this place the cursor on the cell showing >B:" . . . then type /PF. You are then asked to give the file a name, so let's call it DRIVE BBB PF and press RETURN. Finally point the cursor to the cell containing the entry >B4: (line 43 in Exhibit II) and press RETURN. You have now reached the stage where you can see the magic of VisiCalc in action! Note that if you made an error in your list after saving it with the /PF command, make your correction on the list saved with the /SS command and then overwrite your /PF file. (You cannot make direct changes in a file saved with /PF).

First clear your screen (/CY) and load the Bank's Earning Statement (/SLBBB RETURN). After a few seconds you should see Exhibit I appearing on your screen. With Exhibit I on your screen, load the file DRIVE BBB PF using the commands /SLDRIVE BBB PF. Exhibit I will mo-

mentarily disappear from your screen and reappear in a modified form as shown in Exhibit III. The cursor rests on cell B4, and all the values in columns C, D and E have been turned back to zero. (Note that a VC file saved in print format (/PF) cannot be loaded on your screen the way you originally saved it, but it can be made to work wonders on anything that is already on your screen.)

Enter FEB'82 in B4 (where the cursor comes to rest automatically, every time you /SLDRIVE BBB PF) and update the budget by making the following entries in the cells which were turned back to zero. (You can later make up your own figures):

C8: 409
C9: 98
C13: 130
C14: 31
C15: 45
C16: 115
C17: 18
C18 ~~C30~~: 30
D8: 412
D9: 101
D13: 130
D14: 31
D15: 45
D16: 120
D17: 17
D18: 33

Your screen should look like Exhibit IV. With Exhibit IV on your screen, once more load the file DRIVE BBB PF and see how your screen turns into Exhibit V. Columns F, G and H contain the cumulative totals for Jan, and Feb. '82, while columns C, D and E have again been turned back to zero, ready to accept the entries for Mar '82.

Doesn't the whole operation work like magic, and can you imagine what you would have had to do if you had to perform the same exercise on VC manually? (To begin with if you tried to zero cells C8, C9, D8 and D9 then all the values in cells F8, F9, G8 and G9 would automatically be reduced – just the thing you wanted to avoid).

As promised in earlier issues, a disc will shortly be available to the readers of Windfall containing all the VisiCalc models discussed so far in this column. More details on this next month.

Finally, you might be interested to know that the creators of VisiCalc have recently announced VisiCalc Advanced version, which as the name implies is a Super VisiCalc. It will initially be available for Apple III only, but will later be made available for other machines. (Apple II?) VisiCalc AV has many features which are available in SuperCalc (but are not available on the current 16 sector version of VC) plus features which are not yet available on SuperCalc.

Problems like formatting figures to show three decimal places, entering labels so that they are automatically centred in the middle of a cell, protecting a key cell from being overwritten, % and $ signs appearing in a value cell adjacent to a numerical value, all these and many other feats can be performed with VisiCalc AV. I wonder what the creators of SuperCalc will think of next when they come up with SuperCalc Advanced Version?

	A	B	C	D	E	F	G	H
1			A CONDENSED EARNING STATEMENT FOR A BANK					
2			(IN '000)					
3								
4	MONTH--->.....							
5	BUDGET COMPARISON		<------THIS MONTH------>			<-CUMMULATIVE TO DATE-->		
6	----------		BUDGET	ACTUAL	VARIANCE	BUDGET	ACTUAL	VARIANCE
7	INCOME:							
8	INTEREST RECEIVED		0	0	0	736	728	-8
9	PROV.OF SERVICES		0	0	0	185	190	5
10								
11	GROSS INCOME		0	0	0	921	918	-3
12	EXPENSES:							
13	SALARIES		0	0	0	255	255	0
14	EMPLOYEE BENEFITS		0	0	0	56	57	1
15	RENT AND RATES		0	0	0	90	92	2
16	SERVICE FROM H.O.		0	0	0	219	223	4
17	OVERHEADS		0	0	0	37	33	-4
18	INTRST.ON DEPOSIT		0	0	0	49	52	3
19								
20	GROSS EXPENSES		0	0	0	706	712	6
21								
22	EARN.BEFORE TAX		0	0	0	215	206	-9
23								

Exhibit V

BFM... speedy way to harness power

By J.J. RAMSDEN

A NATURAL application for VisiCalc is the preparation of financial forecasts. Now from VisiCorp comes a package offering pre-written VisiCalc data sheets for the basic forecasting, modelling and financial reports used in business planning. Called VisiCalc Business Forecasting Model, the package provides seven interrelated VisiCalc application worksheets. These are related to each other utilising VisiCalc's Data Interchange Format (DIF) which allows the transfer of blocks of data from one worksheet to another.

A 48k Apple and one disc drive plus VisiCalc version 202 or higher is required to run BFM, and for printing out data sheets a printer capable of at least 132 columns is recommended.

Documentation follows the standard VisiCorp format of providing a comprehensive tutorial plus a reference section. A detailed introduction briefs the user on the financial features used by the worksheets (referred to as templates) together with hints on using the package. The manual assumes the user is already familiar with the VisiCalc program, and if this is not the case, completing the VC manual's lessons prior to attempting the BFM tutorial is recommended.

The seven application worksheets are provided on a single disc which is not copy protected in any way and so back-up copies may be made from which the appropriate templates can be called up for modification/use and subsequent storage on a working disc. The tutorial follows the familiar VisiCorp style of teaching the user with the aid of a model simulating a real application.

In BFM's case a profit plan is generated for a company called the ABC Corp (a detailed background to this business having been given in the manual's introduction). Each template is covered by a lesson which discusses the layout of the template, the financial assumptions and takes the user through the various stages of entering data. A pity though that suggestions and examples for different circumstances are not provided as well. Step by step "key stroke" instructions are given for inputting data and a narrative carries the reader through the back-

ground to ABC's financial situation to support the assumptions and variables which the user must enter. The lessons are liberally illustrated with completed worksheets for reference and can be comfortably completed in a few hours.

I found that having finished the tutorial I was confident of the package's potential but less sure how to fully exploit it. The reference section however provides detailed explanation of how each series of calculations is generated and the assumptions/accounting practices being used. Actual formula are listed though they are not always easy to follow, the use of bolder type in the manual for these would be useful. It would be helpful too if printouts were provided showing the formula on each template as tracing down the sheets to find location 022 or K19 etc proved tedious.

I found the documentation good as it provides the user with a clear picture of how the templates are constructed and how they operate. Thus decisions on what needs to be modified, deleted or introduced can be based on a sound knowledge of what the basic package provides. The manual's detail of formula used also proved useful in deciding how to create new calculations for modifications, in particular the extensive use of the @IF command by BFM provided valuable tips for developing new calculations.

The package was evaluated by using it to prepare a series of profit plans for a current business situation. The ABC Corp model used in the tutorial is a manufacturing company, as such the layout, formulas and labels built into the templates are tailored to that particular situation. Clearly another company such as a consultancy business or a retail outlet would have very different requirements. Because of BFM's flexibility the user can tailor the layout, formulas and labels to produce a model of his/her business or profit area.

At least 48k of RAM is necessary to operate the package and if 64k is available then it is possible to load the income statement and the balance sheet as one VisiCalc page. An eighth template comprising this consolidation is included on the master disc.

An iterative process is required which involves transfering interest data between the balance sheet and the income statement templates several times in order to get stable figures. The procedure of saving a DIF file for the interest values, calling up the income statement, entering the DIF interest values, saving a DIF file for net income, reloading the balance sheet and inserting this new value as yearly income to date, to generate a new set of interest values etc is extremely laborious being necessary five or six times. By having the two templates on one VisiCalc work sheet it is only necessary to force a manual recalculation five or six times to achieve this stabilisation.

The format of the templates is well laid out with columns for assumptions set to the right hand side of the data. These can be printed if required or left out to produce a standard reporting format. Small touches such as writing the lower left coordinate of each data sheet at position A1, but beyond the displayed column width so it only appears on the edit line, are very useful when printing out sheets.

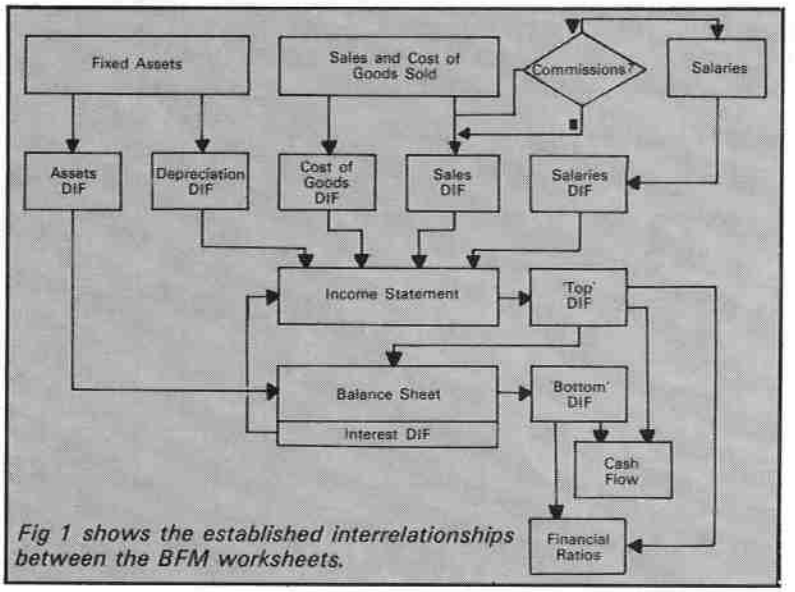


Fig 1 shows the established interrelationships between the BFM worksheets.

The manual notes that each BFM template is at least 14 8-character VisiCalc columns wide, and several are 16 columns wide. The writer used an IDS Prism 132C machine and found that by selecting the smallest character size (16.8 characters per inch) all the templates could be comfortably accommodated with room to spare for adding operating notes.

The package is written for the American market and some financial terminology in the manual differs from that used in the UK. This is particularly true of the financial ratios template generated by comparing certain balance sheet and income statement figures to each other and used to determine the relative operating performance of the company in its market place. Nick Levy explained this:

British accounting practices are different to those used in the United States, especially when it comes to analysing accounts, and it is important to remember this when using American models. One of the main differences is in the layout and presentation of balance sheets.

A British balance sheet refers to "total capital" or "total assets" when describing fixed and current assets net of current liabilities. However the Americans describe such a total as "net assets" or "net capital" and their concept of "total assets" involves fixed assets added to current assets without the deduction of current liabilities.

As a result of this any ratio analysis such as "return on capital employed" or "trading profits over capital employed", will provide different answers depending on whether the American or British formats of ratio analysis is used.

With BFM it is possible to delete unwanted rows, create new columns and rows for inputting assumptions and values not catered for, alter formula to generate data in a manner appropriate to the business in question rather than the demonstration format used for ABC Corp, create new supporting templates to simplify the standard templates and permit certain input sources to have greater detail, e.g. separate templates for direct expenses and overheads. In other words it is possible to tailor the basic model to suit one's precise requirements.

Being part of the VisiCorp family and utilising the DIF means that information generated by BFM may be loaded into the VisiTrend/VisiPlot program to create graphical illustrations of data and perform trend analysis.

Overall I found BFM an excellent starting package for using VisiCalc for financial planning. Writing one's own templates with BFM's degree of sophistication and documentation would be a daunting task. BFM allows you to get straight down to work and its flexibility makes it adaptable to most business situations.

Being able to generate supporting templates to suit one's own requirements the full power of VisiCalc becomes available for undertaking "What if" analysis, and of course labels, formula or format can be altered at any time so that models can be fine tuned.

Financial managers, accountants and businessmen who have or intend to use VisiCalc will find BFM a fast way of harnessing its power without having to become a VisiCalc wizard. Similarly business users of VisiCalc who wish to undertake financial modelling but are not accounting experts will find the package an invaluable tool.

BFM is available from Pete and Pam Computers for £65.

DISC DRIVE FREE

With every 48K Apple II at £812 and Apple Disc Drive and Controller at £397 we are giving away Free a second Apple Disc Drive worth £311.

With a 128K Apple III system at £2,418 we are giving away over £300 of software in the form of VisiCalc III and Applewriter III.

IN COMPANY TRAINING

From as little as £15 per person per day on subjects such as **Introduction to Micros, VisiCalc, Financial Modelling, Micros for Managers, Word Processing, etc.**

Add 15% VAT – P&P FREE

Phone anytime, callers by appointment only please.

QUODPORT LTD.

290 Brooklands Road, Manchester M23.
Tel: 061-969 8729
Level 1 Sales and Service

ELECTRA

16K Language card for Apple II

A high quality printed circuit board with solder mask and gold plated connectors. It is compatable with VisiCalc and Apple Pascal, etc.
Price: £55 sterling

A/D card + Temperature measuring probe + disc of programs + booklet.
This card is an 8 bit analogue to digital converter with a range 0 to 5 volts and includes a thermister probe and software for various types of temperature measuring.
Price: £40 sterling

No VAT is necessary on the above prices as this is an export order.
Payment in Sterling by bank draught or cheque with cheque card number written on the back.
One year guarantee on all of our products.
(Cash refund if you are not satisfied and return product within one week)

Electra,
The Tavern, Calary, Enniskerry,
Co. Wicklow, Ireland.
Telephone: 819351

ESP — ESTUARY SOFTWARE PRODUCTS

ESTUARY SOFTWARE PRODUCTS E.S.P.

A NEW NAME IN apple SOFTWARE

Our list is too large to display here in its entirety and new items are arriving all the time, but here's an example

★ ★ ★ Special ★ ★ ★

One blank disk FREE for every 3 disks purchased

GAMES ON DISK	EX. VAT	INC. VAT	P. & P.
Wizadry	24.05	27.65	FREE
Knights of Diamonds	19.95	22.95	"
Oranstan Manor	17.55	20.20	"
Wizard and Princess	17.55	20.20	"
Time Zone	45.00	51.75	"
Cyborg	16.75	19.25	"
Zork I	20.45	23.50	"
Zork II	20.45	23.50	"
Crush, Crumble and Chomp	15.62	18.00	"
Falcons	15.50	17.80	"
Threshold	19.50	22.45	"
Bug Attack	15.62	18.00	"
Trick Shot	20.15	23.20	"
Anti Ballistic Missile	12.50	14.40	"
Missile Defence	15.95	18.34	"
Crossfire	16.25	18.70	"
Epoch	16.95	19.50	"
Snake Byte	14.55	16.75	"
Apple Panic	14.35	16.50	"
Olympic Decathlon	14.55	16.75	"
Galactic Empire	12.17	14.00	"
Galactic Trader	12.17	14.00	"
Galactic Revolution	12.17	14.00	"
Tawala's Last Reboubt	15.50	17.80	"
Warp Factor	20.75	23.85	"
Torpedo Fire	29.57	34.00	"
Tigers in the Snow	20.75	23.85	"
Dog Fight II	15.50	17.80	"
Robot Tank	P.O.A.	P.O.A.	"
Space Adventure	P.O.A.	P.O.A.	"
New Shuffleboard	15.50	17.80	"
Beer Run	16.95	19.50	"
Raster Blaster	15.50	17.80	"
Hitch Hikers Guide to the Galexy	14.74	16.95	"
HARDWARE			
Euroapple II plus	599.00	688.85	P.O.A.
Disk II with controller	335.00	408.25	P.O.A.
Disk II no controller	275.00	316.25	P.O.A.
Box 10 disks — BASF	18.25	20.99	0.50

All prices correct at time of going to press.

VISA

761 VICTORIA AVE SOUTHEND ON SEA ESSEX
CREDIT CARD HOLDERS MAY PHONE IN THEIR ORDERS
(0702) 43568

Faster·Further·AND CHEAPER

Fibre optic communication systems carry FURTHER, up to 2 miles without repeaters.
Fibre optic is FASTER, up to 400 MBIT per sec.
Fibre optic is CHEAPER, using lightweight cable.
For Apple Local Networks, these advantages are a major breakthrough. But that's not all . . .
Fibre optic is immune to electrical noise, ideal for factory environment, and is also ominet compatible, its all available now!
And only from:

CATEL COMPUTER SYSTEMS LTD.
(Computer and TELecommunications)
Mercer House, 8, Bower Road, Harrogate.
Tel: (0423) 65165

DEALERS WELCOME

DO YOU USE AN APPLE SYSTEM IN YOUR BUSINESS?

LOOKING AFTER IT IS OURS

Telephone for a quotation on your system.

- ★ COMPLETE SYSTEM COVER
- ★ FAST RESPONSE
- ★ COMPETITIVE RATES
- ★ FULLY TRAINED PERSONNEL
- ★ OVER 1,000 SATISFIED CUSTOMERS
- ★ BACK UP SYSTEMS
- ★ DISCOUNTS FOR EQUIPMENT IN WARRANTY

C.D.S **COMMERCIAL DATA SYSTEMS LTD.**

"ON-SITE" MAINTENANCE SERVICES

Specialists in the maintenance of Apple Computer Systems. Including: ***Corvus, Eicon, Vlasak, Qume, Anadex, Paper Tiger, Epson, Centronics, Dec, Oki, Nec.***

SOUTHERN AREA SALES
TELEPHONE: 0268 710292
Downham Road, Ramsden Heath,
Billericay, Essex CM11 1PU.

NORTHERN AREA SALES
TELEPHONE: 0706 216090
Bacup Road, Rawtenstall,
Lancashire BB4 7PA.

apple computer
Sales and Service

EDUCATION DEALER

Apple Networking?
Use the EXPERTS
USE DATA SUPPLIES

The Apple dealers worth a second thought

ROS APPLE Network System
Connects up 127 Apples STARTER KIT
for 3 Apples **£425**

DATA SUPPLIES
Specialists in Micro Computer Sales, Consultancy and Training

Braids House
Templewood Lane
Farnham Common
Slough
Bucks SL2 3HH
Tel: (02814) 2359

Shellsort keeps track of variables

By R.A. MOULD

ONE of the problems of modifying large programs is that of knowing just which variables are already in use and where they are used.

Faced with this problem, I wrote an Applesoft program which dismantles a text version of a program, extracts all the variable names, matches them with the line numbers in which they appear, sorts the line number/variable pairs and prints a paginated cross reference listing.

I'd already written a program which produces a paginated listing of a program so I knew it was easy to produce a text file and to read this text file by means of another program. The knotty problem, however, was how a variable could be identified.

String variables can be identified by the $ and integer variables by the %, but floating point variables have no identifying character. In the end I settled for the approach of using characters such as blank, comma, colon, etc, as string delimiters and then of applying a series of tests to the string.

Successful completion of all the tests means that the string must be a variable. (If you can't solve a problem by finesse, then overwhelm it!)

In a successful attempt to speed up the whole analysis I counted the number of times each testing subroutine caught a string and rejected it as not being a variable name. This information is displayed on the screen after printing is complete to allow you to tune the program to suit your programming style.

The information allowed me to identify inefficient parts of the program, to reduce five subroutines to three and to re-arrange the sequence of those three into a reasonably efficient sequence. You can re-arrange them again to suit your programming style if you wish.

The sorting method (shellsort) is the fastest I know of, and sorting time is approximately directly proportional to the number of elements being sorted.

My cross reference listing program took 16 minutes to produce a cross reference listing of its own 200 lines – not exactly greased lightning, but then who cares?

How to use it

WRAP 'FILER' round the program you wish to list and/or for which you want a cross-reference listing, then RUN the resulting program. This will drop a text version of your program onto disc, as a file named 'WORK'.

You will be asked to type the program name and date, both of which will be printed at the top of each page.

To produce a paginated listing of your program, run 'LISTER'.

To produce a cross reference listing of all the variables used and the line numbers of the statements in which they appear, run 'XREFER'.

'FILER' may be wrapped round your program by LOADing the program, then putting it on hold by using the HOLD (&H) facility of the renumbering utility supplied with DOS 3.3. 'FILER' is then loaded and merged with the program on hold using the MERGE (&M) feature of the same utility.

RUN the resulting program to create the text file (named 'WORK') from which the listings are produced.

FILER

```
0  GOTO 63000
63000  INPUT "FILE NAME ? ";FILE$

63010  INPUT "DATE ? ";D9$
63020  PRINT  CHR$ (4)"OPEN WORK"
     : PRINT  CHR$ (4)"DELETE WOR
     K"
63030  PRINT  CHR$ (4);"OPEN WORK
     ": PRINT  CHR$ (4)"WRITE WOR
     K"
63040  PRINT FILE$: PRINT D9$
63050  LIST 1 - 62999
63060  PRINT  CHR$ (4)"CLOSE WORK
     ": END
```

LISTER

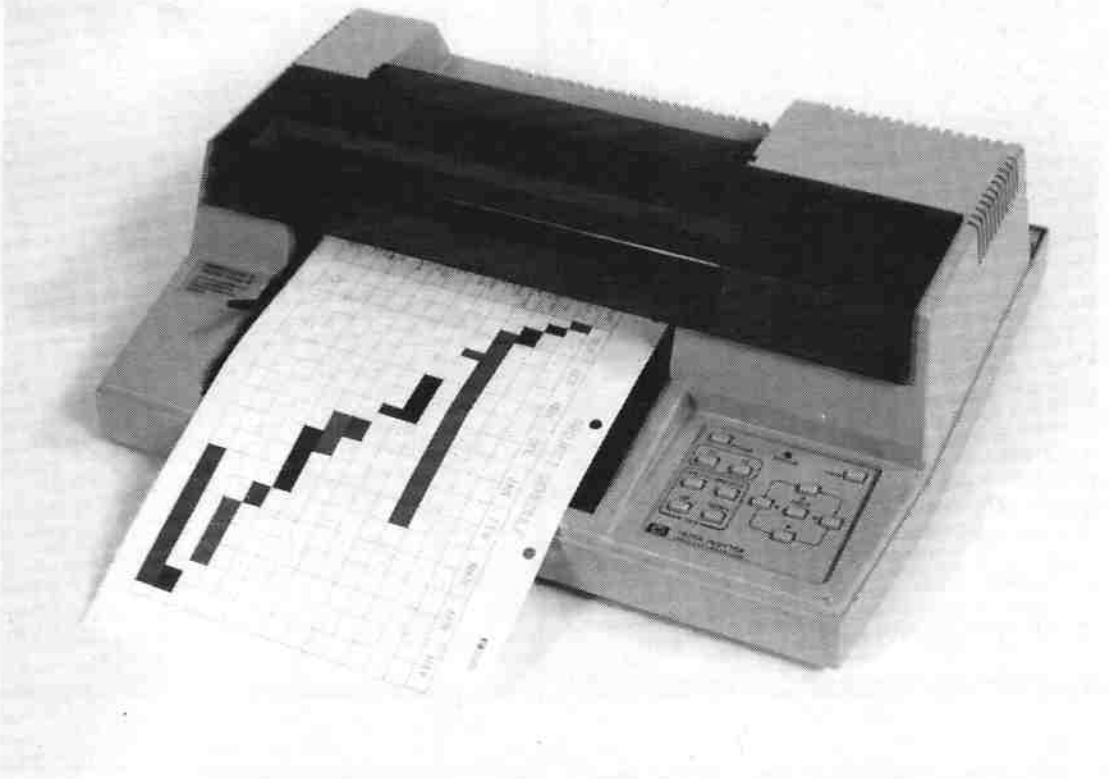
```
10  REM  PAGINATED LISTING
20  REM  ==================
30  REM  R.A.MOULD  6 Mar 82
40  REM  ------------------
50  POKE 33,40: HOME
60  VTAB 2: HTAB 12: PRINT "FORMA
    TTED LISTING"
70  PRINT  CHR$ (4)"OPEN WORK"
80  PRINT  CHR$ (4)"READ WORK"
90  ONERR  GOTO 330
100  INPUT FILE$
110  INPUT D9$
120  VTAB 5: HTAB 11: PRINT "PROG
    RAM : "FILE$
130  VTAB 7: HTAB 14: PRINT "DATE
     : "D9$
140 L9 = 120
150 N9 = 56
160 P9 = 66
170 P = 0
180 L = 99
190 M$ = "
200  GET C$
210 ST =  PEEK (49385): REM  KEEP
     DRIVE MOTOR ON
220  IF C$ =  CHR$ (13) THEN 270
230  IF C$ =  CHR$ (10) THEN 270
240 L$ = L$ + C$
250  IF  LEN (L$) < L9 THEN 200
260 OVERFLOW = 1
270  GOSUB 400: REM  PRINT MODULE

280 L$ = M$
290  IF OVERFLOW <  > 1 THEN 190
300 L$ = "                    "
310 OVERFLOW = 0
320  GOTO 200
330  REM  END OF FILE TEST
340  IF  PEEK (222) <  > 5 THEN 4
     70
350  PRE 1: PRINT  CHR$ (9)"132N"

360  FOR J = L + 1 TO P9: PRINT  CHR$
     (10): NEXT J
370  PRE 0: HOME
380 ST =  PEEK (49384): REM  SWI
     TCH OFF MOTOR
390  END
400  REM  PRINTING ROUTINE
410  PRE 1: PRINT  CHR$ (9)"132N"
      CHR$ (29) CHR$ (27) CHR$ (5
     4) CHR$ (27) CHR$ (65): REM
        SET UP MICROLINE PRINTER

420  IF L < N9 THEN 520
430  IF P = 0 THEN 450
440  FOR J = L + 1 TO P9: PRINT  CHR$
     (10): NEXT J
450 P = P + 1
460  PRE 1: PRINT  CHR$ (9)"40N" CHR$
     (31)
470  PRINT "PAGE "P"  " + FILE$ +
     "  " + D9$
480  PRINT  CHR$ (10)
490 L = 2
500  PRE 1: PRINT  CHR$ (9)"132N"
      CHR$ (29) CHR$ (27) CHR$ (5
     4) CHR$ (27) CHR$ (65)
510  IF L$ = "" THEN 540
520  PRINT L$: PRE 0
530 L = L + 1
540  RETURN
```

HP's NEW LOW COST COLOUR PLOTTER



- FAST PLOTTING
- HIGH RESOLUTION
- HIGH QUALITY
- NATION-WIDE SERVICE
- MULTICOLOUR
- A4

- COMMODORE-COMPATIBLE
  (SPECIAL MANUAL + *DISC AT £35.00*)
- APPLE-COMPATIBLE
- UNDER £1060
- RS 232 AND HP1B INTERFACES

MAIN DISTRIBUTOR

DEALER, O.E.M AND CONTRACT ENQUIRIES WELCOME

THE HOLDENE GROUP

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

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

82A Water Lane,
Wilmslow, Cheshire,
SK9 5BB.
Tel: 0625 529486.

ozwise expands

BIGGER PREMISES
At 236 Imperial Drive, Harrow
Just 150 yards from Rayners lane tube
(Piccadilly and Metropolitan Lines)

BIGGER STOCKS
Apple II and Apple ///
Colour Monitors
Business software, education, games, books, discs, printer ribbons, special stationery etc.

BIGGER RANGE
Choose from our wide range of the VERY LATEST products eg:
40 different printers, 12 different monitors
Over 200 business programs, utilities and language systems
Over 300 education and games programs.
All either in stock or available at short notice.

BIGGER DISCOUNTS
Epson MX80 F/T new Type 3 only £329
Epson MX100 new Type 3 only £429
Apple VisiCalc only £85
12" Green Screen Monitors from £89
Apple Videx 80 Column Card only £159
Oki Microline 80 only £269
TEC Starwriter Model 40 (40cps) Daisywheel only £1299
Paperax 2000 Paper Shredder only £399

Please add VAT – credit card holders telephone your order.
Call for latest special offers

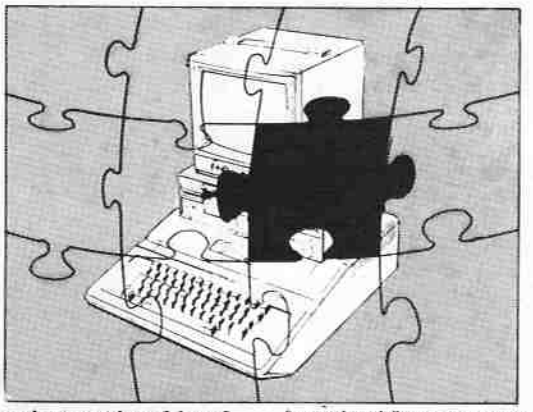
AND WE STILL PROVIDE THE SAME EXCELLENT SERVICE!

DON'T FORGET WE ARE STILL THE ONLY ACCREDITED TABS DEALER IN MIDDLESEX.
Drop in and see us or write/call for our full catalogue.
BUSINESS USERS call for an appointment with one of our consultants.

01-429 1060

VISA

Who holds the missing pieces?

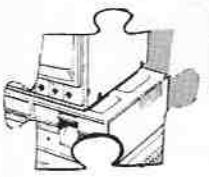


Are you buying with confidence? Be sure. Many so called bargains haven't the ability to grow with your future. Before you sign, we suggest you take a serious look at MASS MICROS' demonstration suite. We can open outside office hours – weekends too!

Come and see the range of business utilities your competitors are using. We have the full TABS integrated accounting system Nominal, Sales, Purchase Ledgers, Payroll, Stock Control, etc, Video Training films, word-processing, automated filing and financial modelling systems *ready to help you.* We are **Authorised Dealers** for several micros and are in business to sell you a solution rather than one manufacturer's specific hardware.

For example a typical business system comprising say, an Apple II, a disk drive, monitor, printer and Visicalc can be installed on your desk and working for you next week for less than £12.00 per week ex VAT and all deductible!

Naturally, we provide full support and after-sales service of the highest level . . . after all we do hold the missing pieces.



MASS MICROS

Wellson House Brownfields,
Welwyn Garden City, Herts.
Tel Welwyn Garden (07073)-31436/7
Telex 298641

SCOTBYTE COMPUTERS LIMITED

We have the full range of

apple II
apple III

hardware, software and services available for our customers.

EPSON DISTRIBUTORS FOR SCOTLAND

Please phone or call for further information

226 Queensferry Road, Edinburgh EH4 2DQ.
Tel: 031-343 1005

Blantyre Industrial Estate, Blantyre, Glasgow G72 0UP.
Tel: 0698 823486

SELL YOUR SOFTWARE

ADVERTISE IN THE LAMA SOFTWARE DIRECTORY

The LAMA Software Directory is a high quality inexpensive way for both large software companies and single APPLE users to advertise their application and system software for the APPLE Computer. A listing in the LAMA Software Directory includes:

Program Name
Program Description
APPLE Configuration
Prices and
Ordering Information

and costs just $15.00 for ONE FULL YEAR. In addition, orders of two listings or more receive a 33% discount, lowering your cost to just $10.00 per listing.

The LAMA Software Directory will be available at all participating APPLE dealers and bookstores beginning in January, 1983. In order to be included in the first issue we must receive your order by November 30, 1982. New issues will follow every four to six months.

For more information send your name and address to:

The LAMA Software Directory
P.O. Box 201
Bloomingdale, IL USA 60108

APPLE is a trademark of Apple Computer, Inc.

XREFER

```
10  REM  CROSS REFERENCE LISTING
     GENERATOR
20  REM  ************************
     *********
30  REM R.A.HOULD - 2 Mar 82
40  REM ---------------------
50  POKE 33,40
60  HOME : HTAB 8: PRINT "CROSS R
    EFERENCE LISTING"
70  GOSUB 2000: REM    READ IN KE
    YWORDS
80  PRINT  CHR$ (4)"OPEN WORK"
90  PRINT  CHR$ (4)"READ WORK"
100  ONERR  GOTO 1000
110  INPUT FILE$
120  INPUT D9$
130  VTAB 4: HTAB 11: PRINT "PROG
    RAM : " + FILE$
140  VTAB 6: HTAB 14: PRINT "DATE
     : " + D9$
150  VTAB (10): HTAB (14): PRINT
    "READING FILE"
160  DIM S$(1000,2),I(1000)
170  REM  OBTAIN A LINE
180  GET C$
190  IF C$ = " " THEN 220
200 N$ = N$ + C$
210  GOTO 180
220 L =  VAL (N$)
230  VTAB 12: HTAB 16: PRINT " LI
    NE "L"      "
240 N$ = ""
250 S$ = ""
260  GET C$
270  REM  LOOK FOR DELIMITERS
280  IF C$ = " " OR C$ = "," OR C
    $ = ":" OR C$ = "(" OR C$ =
    ")" THEN 260
290  IF C$ =  CHR$ (13) THEN 390
300  IF C$ = ":" AND S$ <  > "HIM
    EM" AND S$ <  > "LOMEM" THEN
    390
310  IF C$ <  > CHR$ (34) THEN 3
    50: REM  IGNORE STRING LITER
    ALS
320  GET C$
330  IF C$ <  > CHR$ (34) THEN 3
    20
340  GOTO 390
350 S$ = S$ + C$
360  GET C$
370  IF C$ = " " OR C$ = "," OR C
    $ = ":" OR C$ = "(" OR C$ =
    ")" THEN 390
380  GOTO 290
390  GOSUB 3000: REM  CHECK IF VA
    RIABLE NAME.
400  IF C$ =  CHR$ (13) THEN 180
410  IF C$ = ":" THEN 250
420  GOTO 250
1000  IF  PEEK (222) <  > 5 THEN
     5000: REM  ERROR 5 MEANS END
     OF FILE
1010  PRINT  CHR$ (4)"CLOSE WORK"

1020  GOSUB 4000: REM  SORT VARIA
    BLES & LINE NOS.
1030  HOME : VTAB 10: HTAB 15: PRINT
    "   PRINTING   "
1040 MA$ = "          "
1050 N9 = 56:P9 = 66:P = 0
1060 L = 99
1070  GOSUB 1500
1080  FOR J = 1 TO N
1090  IF S$(I(J),1) = S$(I(J - 1)
    ,1) THEN 1150
1100  GOSUB 1500
1110 K = 0
1120  PRINT  CHR$ (13) CHR$ (10)
1130  PRINT MA$ + S$(I(J),1); SPC(
    18 -  LEN (S$(I(J),1)));
1140 L = L + 2
1150  IF K < 15 THEN 1210
1160  PRINT  CHR$ (13)
1170  GOSUB 1500
1180  PRINT MA$; SPC( 18);
1190 L = L + 1
1200 K = 0
1210  PRINT S$(I(J),2);
1220 K = K + 1
1230  NEXT J
1240  PRINT  CHR$ (13)
1250  FOR J = L + 1 TO P9: PRINT
     CHR$ (10);: NEXT J
1260  PRE 0
1270  HOME
1280  VTAB 2: HTAB 11: PRINT "TUN
    ING INFORMATION"
1290  VTAB 5: HTAB 15: PRINT "S/R
     ACTIVITY"
1300  FOR J = 1 TO 3
1310  VTAB (6 + J): HTAB 16: PRINT
    J; SPC( 9 -  LEN ( STR$ (N(J
    ))));N(J)
1320  NEXT J
1330  VTAB (8 + J): HTAB 11: PRINT
    "NO.OCCURENCES ";N
1340  END
1500  REM PAGE HEADING ROUTINE
1510  REM ---------------------
1520  IF L < N9 THEN 1620
1530  FOR K = L TO P9: PRINT  CHR$
    (10);: NEXT K
1540 P = P + 1
1550  PRE 1: PRINT  CHR$ (9)"40N"
     CHR$ (31) CHR$ (27) CHR$ (5
    4) CHR$ (27) CHR$ (65)
1560  PRINT "PAGE "P"  " + FILE$ +
    " - XREF" + "  " + D9$
1570  PRINT  CHR$ (10)
1580  PRINT  CHR$ (9)"132N" CHR$
    (29)
1590  PRINT MA$ + "VARIABLE NAME"
     +"      LINE NUMBERS"
1600  PRINT MA$ + "-------------"
     +"      ----------"
1610 L = 4
1620  RETURN
2000  REM READ RESERVED WORDS
2010  REM ---------------------
2020  DIM K$(100)
2030 K = 0
2040 K = K + 1
2050  READ K$(K)
2060  IF K$(K) = "LAST" THEN 2080

2070  GOTO 2040
2080 N = K - 1
2089  DATA  ANS$,CHR$,LEFT$,MID$,
    RIGHT$,STR$
2090  DATA    ABS,AND,ASC,ATN,
    CALL,CLEAR,COLOR,CONT,COS
2100  DATA  DEF,DEL,DIM,DRAW,END,
    EXP
2110  DATA  FLASH,FN,FOR,FRE,GET,
    GOSUB,GOTO,GR
2120  DATA  HCOLOR,HGR,HGR2,HIMEM
    ,HLIN,HOME,HPLOT,HTAB
2130  DATA  IF,INC,INPUT,INT,INVE
    RSE
2140  DATA  LEN,LET,LIST,LOAD,LOG
    ,LOMEM,NEW,NEXT,NORMAL,NOT,N
    OTRACE
2150  DATA  ON,ONERR,OR,POKE,PEEK,
    PLOT,POKE,POP,POS,PRINT,PRE
2160  DATA  READ,RECALL,RESTORE,R
    ESUME,RETURN,RND,ROT,RUN
2170  DATA  SCALE,SCRN,SGN,SHLOAD
    ,SIN,SPC,SPEED,SQR,STEP,STOP
    ,STORE
2180  DATA  TAB,TAN,TEXT,THEN,TO,
    TRACE,USR,VAL,VLIN,VTAB
2190  DATA  WAIT,XPLOT,XDRAW
2200  DATA  LAST
2210  RETURN
3000  REM CHECK IF STRING IS VARI
    ABLE NAME.
3010  REM ************************
    ***********
3020  IF  LEN (S$) = 0 THEN  RETURN

3030  REM DISCARD KEY (RESERVED)
    WORDS (S/R 1)
3040  REM   IGNORE REMARK AND DAT
    A STATEMENTS
3050  IF S$ <  > "REM" AND S$ <  >
    "DATA" THEN 3090
3060  GET C$
3070  IF C$ <  > ":" AND C$ <  >
     CHR$ (13) THEN 3060
3080  GOTO 3140
3090  FOR K = 1 TO N
3100  IF S$ = K$(K) THEN 3130
3110  NEXT K
3120  GOTO 3150
3130 S$ = ""
3140 N(1) = N(1) + 1: RETURN
3150  REM DISCARD OPERATORS & PUN
    CTUATION MARKS (S/R 1)
3160  IF S$ = "=" OR S$ = "+" OR
    S$ = "-" OR S$ = "*" OR S$ =
    "/" OR S$ = " " OR S$ = "(" OR
    S$ = ")" OR S$ = "," OR S$ =
    ";" THEN 3180
3170  GOTO 3200
3180 S$ = ""
3190 N(2) = N(2) + 1: RETURN
3200  REM DISCARD NUMBERS (S/R 3)

3210  IF  LEFT$ (S$,1) <  > "." THEN
     3230: REM  STRIP OFF LEADING
     DECIMAL POINT
3220 S$ =  RIGHT$ (S$, LEN (S$) -
    1)
3230  IF  ASC ( LEFT$ (S$,1)) <  4
    8 OR  ASC ( LEFT$ (S$,1)) >
    57 THEN 3250
3240  GOTO 3260
3250  IF  STR$ ( VAL (S$)) <  > S
    $ THEN 3280
3260 S$ = ""
3270 N(3) = N(3) + 1: RETURN
3280  REM  CHECK IF ARRAY VARIABL
    E
3290  IF C$      "(" THEN 3310
3300 S$ = S$ + "()"
3310 J% = J% + 1:S$(J%,1) = S$:I(
    J%) = J%
3320 S2$ =  STR$ (L)
3330  FOR K2 = 1 TO 6 -  LEN (S2$
    ):S2$ = " " + S2$: NEXT K2
3340 S$(J%,2) = S2$
3350 S$ = ""
3360  RETURN
4000  REM SORT VARIABLES INTO ALP
    HABETIC LIST
4010  REM ************************
    ************
4020  VTAB 10: HTAB 14: PRINT "
    SORTING   "
4030 NKEYS = 2: REM  NO OF SORT K
    EYS
4040 KEY(1) = 1: REM  SENIOR KEY
4050 KEY(2) = 2: REM  JUNIOR KEY
4060 N = J%
4070 I = 1
4080 I = 2 * I
4090  IF I <  = N THEN 4080
4100 U = I - 1
4110 D = (U - 1) / 2
4120  VTAB 12: HTAB 16: PRINT "U
    = "U;"   "
4130  VTAB 14: PRINT "    (U REDU
    CES AS SORTING PROCEEDS)"
4140  IF D = 0 THEN 4290
4150  FOR J = 1 TO N - U
4160  FOR I = J TO 1 STEP  - U
4170 L = I + U
4180  FOR S = 1 TO NKEYS
4190 K = KEY(S)
4200  IF S$(I(L),K) > S$(I(I),K) THEN
     4270
4210  IF S$(I(L),K) < S$(I(I),K) THEN
     4230
4220  NEXT S
4230 W = I(I)
4240 I(I) = I(L)
4250 I(L) = W
4260  NEXT I
4270  NEXT J
4280  GOTO 4110
4290  RETURN
5000  REM ERROR ROUTINE
5010  REM --------------
5020  PRINT "ERROR CODE "; PEEK (
    222)
5030  PRINT  CHR$ (7)
5040  PRINT "IN LINE    "; PEEK (
    218) +  PEEK (219) * 256
5050  END
```

If you use a CASHBOOK read on:-

CCS CASH=£175 +VAT

The answer for all cash based businesses.
-full 18 column analysed cash book
+running bank balances
+instant VAT returns.
(available on Apple II)
DEALER ENQUIRIES WELCOME

CROESO COMPUTER SERVICES
576 MUMBLES ROAD, MUMBLES, SWANSEA.
TEL: (0792) 61555/61556.

Don't forget our other Apple systems:-

PUBSTOCK :-pub & hotel stocktaking

PACCS :-petrol station credit control.

CLASS. :-finance company accounting.

Two way REMOTE CONTROL
Without the need for wiring
The IPTC range

The Stripeland IPTC system has been developed to provide an extremely flexible remotely located control and logging system capable of full two-way communication over existing A.C. mains lines; twisted pair or balanced feeder; or any other inplant wiring where, for reasons of cost or inconvenience, a dedicated multiple wiring system would be unsuitable.

The IPTC equipment comprises two models of Remote Location Units (TC 105 and TC 115 Super) and a computer communications interface for central control.

The IPTC equipment, when interfaced with a computer/micro processor, has a very large range of applications. If one considers that they can control and switch any electrical appliance, as well as collecting and storing data, you can get some idea of its range. The IPTC remote units will not only act as interpreters of the central control computer's programmes, but will also act as a stand alone device in control and logging applications.

TC 105 Basic Remote Controller

The TC 105 basic remote controller is a processor based transceiver unit developed to receive and transmit data over A.C. mains cables or balanced line feeder.

The basic principle of the transceiver is a frequency modulated carrier. This carrier is passed onto the mains as a low level signal and received at either the remote location or the central controller. The information is removed from the carrier by the receiver, the dedicated processor enables the transceiver to make intelligent decisions on the received signal at a high speed and low error rate.

Features:-

* Two analogue inputs
* Two analogue outputs
* Two on/off high priority inputs
* Total 44 input/output lines
* Microprocessor control with watchdog timer for software protection
* 4K Eprom operating firmware
* 1 or 2K Ram for onboard data storage (expandable)
* Functions as stand alone controller and data logger or slave in multiple system with central control
* Two-way communications with central control via existing A.C. lines without the need for dedicated cabling
* Alternative communication via balanced line feeder (Bus)
* Ideally suited to installations in control and data logging where, for reasons of expense or inconvenience, dedicated multiple cabling is unsuitable.

TC 115 Super

The TC 115 remote controller has all the features of the 105 with the following addition:-

* Processor has additional Ram for data storage
* Real time clock facility

STRIPELAND LTD.,
111 Liverpool Road, Formby, Merseyside L37 6BR. Tel: (07048) 78062

Please send me details of the IPTC & RMC Systems
Name .....
Address .....

Spider Software

BUSINESS SOFTWARE

ACCESS – THE ULTIMATE DATABASE MANAGEMENT PACKAGE (See our other ad)	£199.95
SCREENWRITER II (See our other ad)	£73.95
The Dictionary **	£39.95
Zardax	£169.95
Word Handler	£149.95
Apple Writer II	£85.95
Visicalc 3.3	£119.95
Visiplot	£112.95
Visitrend/Plot	£149.95
Visidex	£119.95
Visifile	£149.95
Visischedule	£149.95
DB Master	£139.95

UTILITIES/PROGRAMMING LANGUAGES

EXPEDITER II **	£44.95
Bag of Tricks	£23.95
LISA 2.5 **	£34.95
The Director Manager **	£12.95
LOCKSMITH 4.1 **	£54.95
APEX/XPLO	£189.95

GRAPHICS SOFTWARE

SubLogic 3-D Graphics Package	£74.95
Complete Graphics System	£39.95
Special Effects	£23.95
Graphics Magician	£34.95
E-Z Draw	£29.95
Hi-Res Secrets	£72.95

ADVENTURES

Cranston Manor	£19.95
Wizard and the Princess	£18.95
Deadly Secrets	£19.95
Time Zone	£54.95
Ulysses and the Golden Fleece	£19.95
Kabul Spy	£19.95
Copts & Robbers	£19.95
Minotaur	£19.95
Escape from Rungistan	£17.95
Wizardry	£28.95
Knight of Diamonds	£21.95

ARCADE GAMES

Labyrinth	£17.95
Duelling Digits	£17.95
Serpentine	£19.95
Neptune	£17.95
Lazer Silk	£17.95
Zenith	£19.95
Phaser Fire	£17.95
Mouskattack **	£16.95
Marauder	£19.95
Threshold	£21.95
Cannonball Blitz	£19.95
Quadrant 6112	£19.95
Borg	£17.95
Fly Wars	£17.95
Cyclod	£17.95
Jellyfish	£17.95
Bandits	£19.95
Lemmings	£17.95
Epoch	£19.95
Hadron	£19.95
Beer Run	£17.95
Twerps	£17.95
Snake Byte	£17.95
A2-PB1 Pinball	£18.95
A2-FS1 Flight Simulator	£21.95
The Arcade Machine	£25.95
Ceiling Zero	£17.95
Pool 1.5	£19.95
Track Attack	£17.95
Suicide	£17.95

**** Denotes Special Offer while stocks last.**

Prices include VAT at 15%. Add 50p p&p for orders under £30 totally.

Please write or telephone for your free copy of our up-to-date price list.

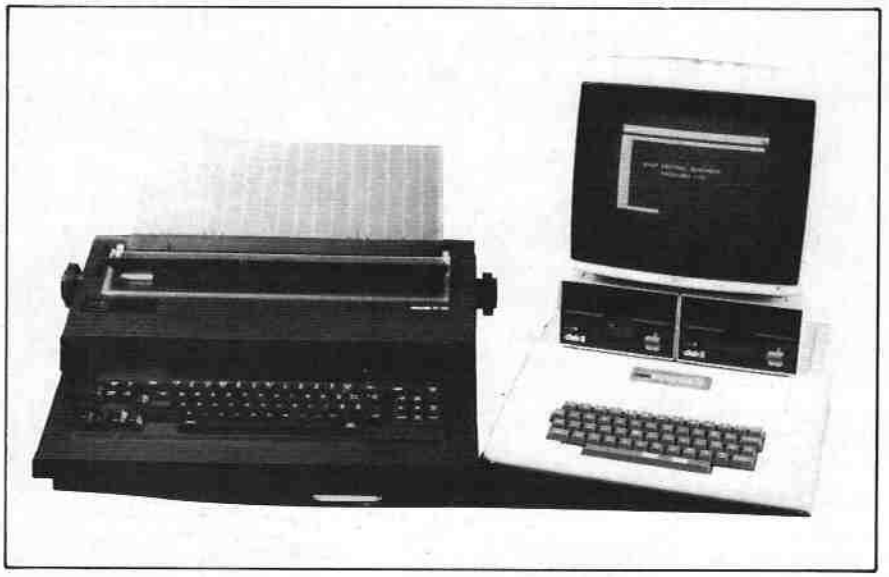
DEALER INQUIRIES INVITED.
PERSONAL CALLERS BY APPOINTMENT ONLY PLEASE.

Spider Software

98, AVONDALE ROAD, SOUTH CROYDON, SURREY.
Telephone: 01-680 0267 (24 hours a day – 7 days a week)

DAISY WHEEL TYPEWRITER / PRINTERS

E.C.B.M. can supply from stock:



OLIVETTI ET221

OLIVETTI ET121

OLIVETTI PORTABLE PRAXIS

Interfaced for use as better quality printers with microcomputers and word processors with the added benefit of use as standard electronic typewriter.

Contract: David Milan for special prices to Apple Users and Dealers

East Central (Business Machines) Ltd.,

EAST CENTRAL HOUSE, 139/147 MILE END ROAD, LONDON E1 4LN. TEL: 01-790 9991

A. P SYSTEMS LIMITED

THE TEC FP1500 – 25P

A. P SYSTEMS LIMITED

A superior quality daisywheel printer which runs at 25 cps has been superceded by the FT10-40 and FT10-55, resulting in a quantity of the TEC 1500's being available at a greatly reduced price.
This printer compares very favourably with the price of lower quality daisywheel printers, without being a modified typewriter. It is ideal for incorporation with a word processing package.

This is being offered at the giveaway price of **£750.00** (Parallel) or **£810.00** (Serial) + Carriage and VAT.

Dealer Enquiries Welcome

For full details please write to:

Tony Williams, AP Systems
90-100 Brighton Road, Surbiton, Surrey
or telephone 01-399 1257

Synthesiser with a good line in chat

By MAX PARROTT

SPEECH synthesis has come a long way in the last few years. I have a friend whose Apple welcomes you verbally when it is switched on. This is accomplished entirely in software, but in general better tonal qualities are gained using dedicated hardware. Four or five years ago a speech synthesiser capable of uttering phonemes cost about £350, whereas this can now be achieved by a £35 chip with some discrete components around it.

Such a chip (I believe it is the Votrax SC-01-A) is at the heart of Apple-Vox from Mutek which costs about £63. The card is plated both sides, but not apparently through the board. The 'fingers' of the connectors are gold plated, obviously taking 5V and 12V for power (there is an on-board amplifier), plus the data lines, ground, I/O select and R/W. The latter, pin 18, was rather wide and bridged lines 18 and 19.

This worried me when I noticed it before plugging the board in my Apple so I consulted the reference manual and found that in slots 0 to 6 pin 19 is not connected. Therefore no harm would be done and I went ahead and put the card in place. I feel that this point rather sums up the quality of the card; although neat and nicely laid out the soldering was untidy in places and I spotted a number of solder splashes.

After plugging the card in the Apple, I connected the internal Apple speaker to it and switched on. An irritating buzz issued forth, continuing until I ran the demonstration disc's spoken example. I subsequently discovered that this would always happen until the synthesiser had been fed with data, which is a problem because it means that if the card is to stay in the Apple every HELLO program will have to quieten the beast. Once past this point however, programming is simplicity itself, although some hard but enjoyable work is required in finding the correct data.

There are three major techniques used in voice synthesis: In the first, called waveform digitisation, the characteristics of vocal waveforms are compressed, digitised, and stored in ROM. When a code is received part of the store is expanded and output. The effect is very good quality speech but only for a limited number of words and only with the programmed accent. The second (linear-predictive coding) and third (phoneme synthesis) methods use bands of resonant frequencies to model the vocal tract but vary in the rate at which data is required. Phoneme synthesis as used here requires the lower rate, typically 100 bits per second, and is thus admirably controlled by Basic and no sophisticated machine language driver program is required.

A phoneme is a basic sound unit of a human language and it is the combination of these which creates a word. There are 64 phonemes on the Apple-Vox including the termination and two pause phonemes. There are 25 'consonants' and 36 'vowels'. Each of these is produced by a byte of data and will last somewhere between 40 and 200 msec. The 64 phonemes are coded in 6 bits, bits 6 and 7 being used to add three levels of stress to the utterance. Hence in decimal, values 0 to 63 produce an utterance and any one of these codes plus 64, or 128 or 192 will produce the same utterance but with more stress. With these phonemes any English word can theoretically be produced, although the effect is machine-like. Careful use of the pauses and stress values makes the overall sound more lifelike, even to the extent of creating different accents, although the true origin of the sound cannot be disguised.

The card is provided with onboard volume and pitch controls via screwdriver adjusted potentiometers. The pitch will always give a "male" rather than a "female" voice and once adjusted to please one's ears it is best left alone. The volume has quite a range and should be left low after use because of the loud, initial hum referred to above. To this end it is probably best to fit an external speaker and volume control. This is easily done and Mutek will sell such an adequately boxed set-up for about £14.

The unit came with a nine page manual and a disc containing one program. The manual offers little more than a phoneme coding chart, which seems inadequate until you have a look at the demonstration program, try a few things out yourself and realise just how easy it is. By the way, if you ever hear Apple-Vox demonstrated please do not judge it by the spoken example on the disc. I couldn't understand it at first hearing, but my initial attempt at playing with it produced a much more intelligible account.

To produce sound one merely has to calculate the base address of the card ($C000 + $100*n where n is the slot number) and POKE this with the data. The data can be READ from DATA statements or can come from arrays or strings. Arrays offer the most convenience for manipulating speech – I had a lot of fun encoding sentences and then playing them backwards to see if anyone could understand them – but speech is more easily first defined using DATA statements.

To this end a good Basic line editor which supports easy insertion and deletion is almost a necessity because the judicious placing of pauses makes a big difference to the quality of speech and it is almost by trial and error that the best combinations are discovered. For example, I found that a short pause at the end of a word often improved the sound of a final consonant. However, when a well sounding phrase has been found it is no bother to save it and build up a vocabulary.

The program on the disc not only offers instructions in the use of the card and two examples of encoding techniques but also high resolution pictures of simple hardware modifications which you may care to make to the card. This is novel to me and was equally as good as the photographs which sometimes accompany such instructions in manuals. One of the encoding techniques called Textalker allows the user to type in a phrase which is then disassembled into the required data form and output as speech. The program is slightly untidy in that errors are not correctable with the left-arrow key, but it is designed for repeated attempts at phrases which can be built up piecemeal. Studying it should give the user lots of ideas for other programs.

A simple example of a program to 'fuel' Apple-Vox is this:

```
10 S = 12*16*256 + 2*256: REM FOR SLOT 2
20 INPUT A$ ,
30 FOR I = 1 TO LEN(A$)
40 POKE S, ASC(MID$(A$,I,1))
50 FOR K = 1 TO 75:NEXT
60 NEXT
70 POKE S,63
80 GOTO 20
```

In this each character of A$ provides the code for one phoneme, POKEing S with 63 switches the card off and line 50 provides a pause between phonemes. Using this very simple program then gave hours of amusement trying to find a combination of letters which happened to sound like it looked.

I enjoyed the Apple-Vox very much and was sorry to see it go back. I had fun manipulating English sentences and succeeded in producing foreign (French, Spanish and German) phrases.

Island Computer System offer for Apple users their STRUCTURED BASIC program

This takes Applesoft halfway towards the advantages of Pascal without the difficulties and extra cost of learning yet another language.

This system improves the flow of program control preventing criss-crossing of loops making line numbering obsolete. The programs you write thus become more reliable and faster making programming easier and more fun.

The structured programs are interpreted and the whole system is oblivious to the user – new commands being entered and listed just like standard Applesoft reserved words. STRUCTURED BASIC resides just below DOS 3.3 on any 48K Apple with single disc drive.

This system provides 27 new commands and 14 new error messages, and an advanced operating system including disc-based libraries of procedures, accessible at any time to a running program.

STRUCTURED BASIC is ideal for home, business, scientific or educational use and is available from Island Computer Systems

Price £30.00

Plus £1.50 postage and packing. (VAT not included).

ISLAND Computer SYSTEMS LIMITED

34 The Mall · Carisbrooke Road · Newport · I.O.W. PO30 1BW
Tel: 529744

BARGAIN APPLE KIT AUTUMN SALE

Price exclusive of VAT and carriage

Apple II 48K	£580.00
Disc Drive with Controller	£310.00
Disc Drive without Controller	£240.00
Epson MX80 F/T Graphics	£345.00
Printer Graphics Card (Grappler)	£95.00
12" Green Screen Monitor	£85.00
RGB 14" Colour Monitor	£273.00
RGB Colour Card	£80.00
Prestex 100-position Keypad (including Disc software)	£84.00

Educational Software: 'O' Level Aids to Computer Studies (10 Programs on 5 Discs) £60.00
Staff Record Storage Program (up to 200 Records) £59.00

PEDAGOG COMPUTER SERVICES
11 Fairbridge Road, London N19 3EW. Tel: (0485) 40604

WANTED

British Publishing Company requires software authors of innovative programs for business and Professional use.

Outline details to:

Jean Marsh: Suite 1, 147 All Staints Road, Newmarket. CB8 8HH.

THE WILDCARD

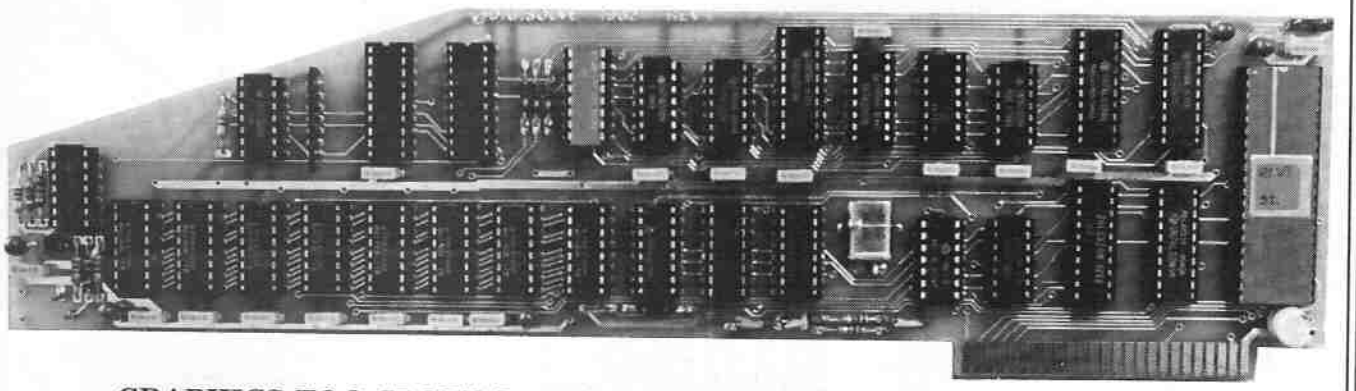
PLUGS INTO ANY SLOT AND COPIES THE PROGRAM IN CORE ONTO A STANDARD DOS DISK

- ★ **Copies any 48K core resident program**
- ★ **No parameter list needed**
- ★ **Copies most programs requiring RAM Card**
- ★ **Copies made with the WILDCARD can be copied with standard copy programs**
- ★ **Copies even the bit copiers**
- ★ **Programs copied are saved as standard binary files**
- ★ **Works with any RAM card – plugs into any slot**
- ★ **System requirements:-**
  48K + RAM card
  Disk drive
- ★ **Price £99.00 + VAT (£113.85)**
- ★ **Available from your local dealer or contact:**

  ELITE SOFTWARE COMPANY
  2 Almorah Road
  Heston
  MIDDLESEX
  TW5 9AD
  01-572 0453

- ★ **16K RAM cards at £70.00+VAT (£80.50)**
- ★ **Dealer enquiries welcome**

512 × 512 GRAPHICS FOR APPLE II



GRAPHICS TOO SLOW? Digisolve's Apple II high resolution graphics card can draw up to 1,500,000 pixels per second. A hardware vector generator frees the Apple's processor from drawing lines. Simply send start co-ordinates and direction to our card and it does the rest.

NOT ENOUGH MEMORY? Digisolve's high resolution graphics card has it's own 64K bytes of memory to store two 512 x 512 pictures. Now there is no need to reserve large chunks of the Apple's memory in Hi-Res Mode.

RESOLUTION TOO LOW? Digisolve's high resolution graphics card gives 4 times the resolution of the Apple's HI-RES mode and with two picture buffers.

NEED CHARACTERS WITH GRAPHICS? Digisolve's high resolution graphics card has its own character generator which can draw in variable size and orientation. With a maximum density of 85 characters by 57 lines you can display a large worksheet and keep a second picture buffered at the same time.

PROGRAM WRITTEN IN ASSEMBLER? Digisolve's high resolution card is easy to use with assembler, integer basic and Applesoft. We supply programs that show you how.

CAN'T AFFORD A GRAPHICS TERMINAL FROM: TEKTRONIX, HEWLETT-PACKARD ETC.? Digisolve's high resolution graphics card costs £399 + P.P. & V.A.T. and turns your Apple into a powerful graphics machine. Compare the performance, what machine can have the resolution 512 x 512 (a 32K byte picture) with a 1:1 aspect ratio?

NEED A MONITOR? Digisolve have high resolution green screen 15″ monitors carefully styled to match the Apple, and are built to comply with office equipment standards for £160 + P.P. & V.A.t.

COMING SOON: 512 x 512 with 2 picture buffers and 64 colours with interfaces to all popular micro/mini computers.. 512 x 512 monochrome standalone terminal board.

Digisolve

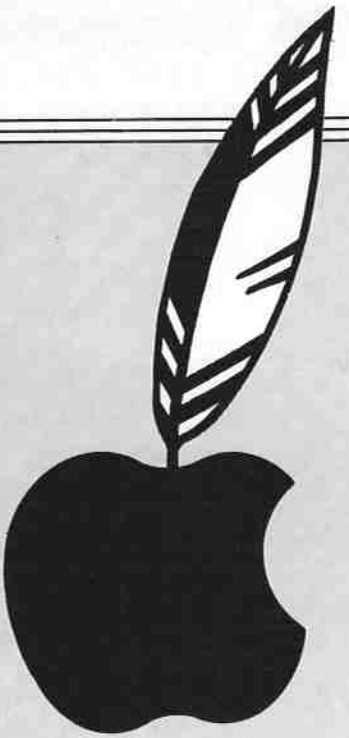
DIGISOLVE LTD · LAMBSON GROUP Telephone: (0977) 513141
Aire & Calder Works · Cinder Lane
Castleford · West Yorks · WF10 1LU

ABOUT DIGISOLVE: We aim to make computers friendlier with better displays of information. Contact us about your special problem – we have probably solved something like it already.

DEALERS AND SOFTWARE HOUSES: Enquiries welcome

Access VISA

Apple II and Applesoft are Trademarks of Apple Computer Inc.



Beginner's guide to machine language

I AM a complete beginner with regard to all aspects of machine language for the Apple. The Apple manuals indicate how to load and use machine code but not how to make up your own programs in machine code.

Can you recommend an easy to understand beginner's guide to machine language for the Apple II which would explain how to write programs in machine code? – **I.G. Dalgleish, Largs, Ayrshire.**

● The Apple uses a 6502 microprocessor and there are many books that deal with this processor's language. Three which stand out are "6502 Assembly Language Programming," by Levathal (Osborne), "6502 Software Design," by Scanlon (Sams), and "Programming the 6502" by Zaks (Sybex). I prefer the latter, but it is much harder to start with than the other two.

There is, of course, more to programming the Apple than manipulating the 6502. You have to know something of the I/O and the memory addresses used by the operating systems. Two excellent books which introduce 6502 programming specifically for the Apple are "Apple Machine Language," by Don Inman and Kurt Inman (Reston Publishing Co. – Prentice-Hall) and "Using 6502 Assembly Language," by Randy Hyde (Datamost).

The first starts with a Basic/machine language interface and progresses to use of the mini-assembler. (I hope you have either an integer card or a language card.) The second is more involved with assembly language and refers to Randy Hyde's own assembler Lisa, which is reviewed elsewhere in this issue of Windfall. – **Max Parrott.**

Loading Earth Defence

I HAVE faithfully loaded the game Earth Defence (July Windfall), partly to play it and partly to learn how it is done, and have encountered insuperable difficulties.

On running the (untitled) loader program, the main program is loaded but before it starts to run it is aborted with the message "SYNTAX ERROR IN 20". The command 'LIST' produces the main program, which does not have a line 20, although the loader program does.

Worse, the main program loses a chunk of lines at the end. The listing stops at around line 3500. Not only that, but the actual disc seems to be corrupted because on switching off and booting up again, when that program is loaded it shows no lines beyond that at which loading stopped before. This is particularly frustrating as it means typing a mass of lines in again (though fortunately I had a back-up of most of the program the first time it happened).

Clearly the loader program is not loading the main program into the right place. How please do I load it correctly, and avoid truncating the discfiles? – **Anthony Guter, London.**

● Several other readers have enquired about this game, all with the same problem. The loader program should be

```
10  POKE 103,1: POKE 104,64
20  POKE 16384,0
30  PRINT  CHR$ (4)"RUN EARTH DEF
    ENCE"
```

The Basic interpreter expects each line of Basic to be sandwiched between two zero value bytes. However the loader program as given in our July issue doesn't ensure this – it is a matter of luck, dependent on what was in the appropriate byte before running the loader.

The loading program (above) ensures the correct situation. – **Max Parrott.**

Bloop!

THE apology in the feedback section of the September Windfall, under the headline "Bleep", contains its own misprint. You really must try harder. – **David Turner, London SW5.**

More listings wanted

I SPOTTED your advert in Nibble, and I am happy to say that I am pleased with my 12 back issues of Windfall, beginning with Vol 1, No 1. I guess I must be one of your first readers to be writing in from the Far East.

I specifically appreciate the numerous bits in your section on Appletips. I would, however, very much enjoy it if you could provide more program listings for utility programs and games. – **Dr Lim Su Min, Mt. Elizabeth, Singapore.**

● A "games special" is planned for our December issue, which will include listings of "home grown games."

Graphics utilities

ON page 66 of Windfall August 1982 you describe a utility program called Tridee and also mention Turtlegraphics. Where may I get more information about these?

Is there available a graphics package which would let two block outlines be set up to scale on a grid-like ground or field so that lines may be drawn between two points, one on each block? The object is to check the line of sight between an operator at one point and work at the second.

A useful feature would be the ability to display the scene which the operator sees and to change the position of the operator in order to optimise the arrangement and avoid obstructions to vision. We seek a

primitive kind of CAD on which we might spend micro-money compared with the k£50 or so that a useful system normally needs. We do not need a perspective projection. An orthographic view, of which isometric is one example, would be fine. – **K. Fraser, Scoforr Engineering Ltd.**

● The original Turtlegraphics was a teaching system to introduce graphical ideas to children, especially polar graphing, rather than the more familiar cartesian system. UCSD Pascal, as on the Apple, programmed a similar graphing system to handle graphic displays and retained the original name.

Many 3-D packages are available, although none encompass all the facilities a user might require. We suggest you ask your dealer to lend you a selection of utilities so that you can choose the package which best suits your needs. It is a reflection on the friendly nature of the Apple world that a majority of dealers are very cooperative in this respect.

The Bit Stick (to be reviewed in Windfall soon) and the graphics tablet are also worth consideration. – **Peter Brameld.**

And so to press

WHO sub-edits my reviews? Whoever it is, please tell them to stop altering my English into non-English. For example, sentences do not start with "And" (September issue, Page 35, line 12).

This kind of grammatical butchery has happened several times, and I'd hate readers to think I wrote like that! – **Cliff McKnight, Crawley Down, West Sussex.**

● Ungrammatical, yes. But colloquial and adding impact, as many magazines and most newspapers will readily demonstrate. And that's a fact!

More Pascal?

YOUR magazine has greatly improved during its first year and it is likely that it will improve yet further. Perhaps a regular Pascal column would be a good idea.

I must comment on the article written by Robert J. Beynon in the August issue. First BSAVEing and subsequently BLOADing screen 1 of the Apple in the way suggested sooner or later leads to a horrible system crash. This happens much sooner if between runs the cards are changed or the program is run on another machine with a different configuration.

Secondly, BLOADing destroys the screen already displayed and thus the 'help pages' can only be used when nothing important is on the screen. The best way to display 'help' pages is to use the second Apple screen and flick the screen switch. – **John Pennell, Norwich.**

Fruitful investment

IT seems that we computer dealers bear the brunt of blame for most of the problems of our industry. An example is the amusing reply to a letter I wrote to a sales lead some time ago:

"I am somewhat puzzled by your letter. It is true that I am currently considering the possibility of installing a computer to assist me in general office management, bookkeeping etc., but I do not recall having spoken to a firm concerning the computer for apples. I grow approximately threequarters of an acre of orchard behind my house and there would have to be a considerable improvement in the apple price before I could contemplate buying a computer, and even then threequarters of an acre does not prove a problem!" – **John R. Davidson, QIS Computer Services Ltd.**

Middlesbrough move

WE are shortly moving to larger premises in Middlesbrough and envisage starting an Apple users club. We can accommodate up to 50 people and have a number of Apple II and Apple III computers for hands on experience for those who haven't their own machine.

We can also offer programming instruction in Basic and Pascal along with technical information and servicing. Those interested in an around the Cleveland area should contact me for further details on Middlesbrough 221501. – **C. Robinson, Micro-Technic Computer Systems.**

Child's link with world

I AM endeavouring to help a cerebral palsy child and would like to obtain a speech synthesiser to enable him to communicate with the outside world. He only has the use of his toes and with a modified keyboard is able to operate an Apple II. He understands spoken conversation and has a high level of intelligence.

If anyone could assist in any way it would be very much appreciated. – **G. Marks, London.**

● ACTIVE is an organisation established in 1975 to help disabled children and adults lead more active and independent lives. It uses, encourages and supports a do-it-yourself approach to play, leisure and communication aids for the handicapped. It has groups throughout Britain, and further information can be obtained from Mrs Heather Seaman, tel: 01-399 4160.

Roger Jefcoates is a leading independent adviser on electronic aids for the disabled and is consultant to all major organisations concerned with disability. He has been demonstrating a unique program for the Apple, called MAC-Apple, which turns the micro into a versatile communication aid for non-speakers and writing aid for physically handicapped people unable to managed an ordinary keyboard. His address is: Willowbrook, Swanbourne Road, Mursley, Bucks MK17 0JA. Tel: 029-672 533.

Med-res

IT must have been quite galling for Keith Williamson (Windfall, September 1982) to correctly state that XPLOT is not implemented, and then see my article imply just the opposite. I had, in fact, meant to write HPLOT, but substituted XPLOT in error.

Also I'm afraid line 388 is unclear. It should read OBC7:90DF. – **Ed Peach.**

This Ad wants to put you out of work.

Introducing FMS. The Worksaver. The Timesaver. From RAM.

The Financial Management System (FMS) is a totally integrated financial ledger system working in a fully interactive mode. The system was designed for the 'book-keeper/accountant'. To this end all the major elements of the system are readily recognisable to anyone conversant with basic accounting routines.

FMS PLUS is the Hard Disk version of FMS and is available on the Apple III Microcomputer.
FMS PLUS has rapidly established itself as the quality Accounting System for Apple Computers.

Consider these features:

- Complete integration of Sales, Purchase and Nominal Ledgers.
- Superb design features that makes FMS look and feel like a manual double entry bookkeeping system.
- Three levels of password security.
- Up to 100 million combinations of Nominal Analysis. (10,000 NL Accounts x 100 Cost Centres x 100 Sub Analysis codes).
- Cost Centre or Departmental Profit and Loss Accounts.
- Powerful special report writer enabling the user to create up to 99 Management Reports.
- Chequewriters for the Purchase and Nominal Ledgers.
- Automatic reversal of Accruals and Repayments.
- Fully detailed Profit and Loss Account and Balance Sheet.

- Job Costing.
- Multiple Bank Current Accounts (up to 26).
- Petty Cash Account.
- Budgeting enabling the user to set and subsequently flex Budget Information and produce Variance Analyses.
- Comparatives.
- Multi Company Option.
- Run Log Control over the operations within FMS PLUS.

Other modules to FMS are currently being developed. These include Stock Control and Sales Invoicing. Windfall, the Apple User's Magazine says *"FMS is the most comprehensive yet straightforward Accounting System yet seen on the Apple".*

For further information about FMS, business/financial programmes and microcomputers, call Jeremy Hope at RAM.

FMS

RAM COMPUTER SERVICES LTD

15/17 North Parade, Bradford,
West Yorkshire BD1 3JL.
Tel: Bradford (0274) 391166.

A CUMANA FIRST FOR APPLE II

Quality Disk Drives, the 8035, with over twice the capacity per drive

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

£745

In 80 Track Mode capacity is **327680 bytes** on each drive.
In 35 Track Mode capacity is **143360 bytes** on each drive.
And all Apple Software including ½ track software can be read.
Apple owners will find the above units . . quiet and dependable . . . real professional users units giving essential standards of data integrity.

Please add VAT to all prices. Delivery at cost will be advised at time of order.

£219

CUMANA LTD

35 Walnut Tree Close, Guildford, Surrey GU1 4UN
Telephone: (0483) 503121. Telex: 858306

A low cost Apple Computer single Disk Drive . . . a really quiet, dependable unit.

Apple is the Registered Trade Mark of Apple Inc.

DEALER ENQUIRIES WELCOME. WE OFFER GENEROUS DEALER DISCOUNTS

MORSE CODE

This machine code listing completes the series of articles by SEAN OVEREND on computer-assisted tuition in morse code. Morse Trainer is available from the author by sending an initialised DOS 3.3 disc, together with a handling charge of £5.50, to Sean Overend, 22 Highland Road, Amersham, Bucks HP7 9AX. If Vocab (see Applecart) is also ordered, reduced handling charge of £10 the two.

```
10    0006              ST3    EQU $6          CURRENT DOT/DASH STORE  DOT=0  DASH=1  NB ZEROPAGE AREAS CHOSEN OUTSIDE
20    0006  00                 DFB 0           APPLESOFT/MONITOR USAGE       INITIALISED TO ZERO HERE ON ASSEMBLY
30    0007              ST4    EQU $7          USED TO STORE THE OFFSET WITHIN TABLE OF POINTERS USING FORMULA
40    0007  00                 DFB 0           OFFSET=(NN-1)*2  HERE INITIALISED TO ZERO ON ASSEMBLY
50    0008              MEM    EQU $8          ADDRESS OF BASE OF TABLE OF POINTERS
60    001A              JAD    EQU $1A         ADDRESS OF BASE OF SUB-TABLE
70    001C              TEMP   EQU $1C         OFFSET WITHIN SUB-TABLE
80    001C  00                 DFB 0           INITIALISED TO ZERO DURING ASSEMBLY
90    001D              CT     EQU $1D         (DECIMAL 29) - TIME BETWEEN SOUNDS
100   001D  00                 DFB 0           INITIALISED DURING ASSEMBLY
110   001E              CODE   EQU $1E         CURRENT BUILD-UP OF LETTER GROUP (DOT=0  DASH=1)
120   001E  00                 DFB 0           INITIALISED TO ZERO ON ASSEMBLY
130   001F              NN     EQU $1F         COUNT OF NUMBER OF COMPONENTS CURRENTLY IN 'CODE'
135   001F  00                 DFB 0           INITIALISED TO ZERO BY ASSEMBLY
140   00F9              PITCH  EQU $F9         (DEC 249) PITCH PARAMETER TO NOTE SUBROUTINE
150   00FA              LEN    EQU $FA         (DEC 250) LENGTH PARAMETER TO NOTE SUBROUTINE
160   00FB              PH     EQU $FB         (DEC 251) BASIC PROG INPUTS PITCH TO THIS VARIABLE
170   00FB  64                 DFB 100         DEFAULT SETTING BY ASSEMBLY
180   00FC              DT     EQU $FC         (DEC 252) BASIC PROGRAMME INPUTS DOT LENGTH TO THIS VARIABLE
190   00FC  28                 DFB 40          DEFAULT SETTING BY ASSEMBLY
200   00FD              DA     EQU $FD         (DEC 253) BASIC PROGRAMME INPUTS DASH LENGTH TO THIS VARIABLE
210   00FD  78                 DFB 120         DEFAULT SETTING BY ASSEMBLY
220   00FE              ILCG   EQU $FE         (DEC 254) BASIC PROGRAMME INPUTS INTERLETTER COMPONENT GAP HERE
230   00FE  04                 DFB 4           DEFAULT SETTING BY ASSEMBLY
240   00FF              LG     EQU $FF         (DEC 255) BASIC PROGRAMME INPUTS MAX INTER-LETTER GAP HERE
250   00FF  0A                 DFB 10          DEFAULT SETTING BY ASSEMBLY
260   C030              SPEAK  EQU $C030       SPEAKER ADDRESS
270   FDED              COUT   EQU $FDED       MONITOR PRINT A CHARACTER ON THE SCREEN SUBROUTINE
280   F94A              PRBLK  EQU $F94A       MONITOR SUBROUTINE PRINTS NUMBER OF BLANKS IN X REGISTER
290                     ZERO   =  0
300                     SEVEN  =  7
310                     SPC    =  32
320                     COMMA  =  44           ********** HERE FOLLOWS THE LOOK-UP TABLE (FIRST CODE SOUNDS)
330   8EF8              START  EQU 36600       CF THE 'ORG' OPCODE IN OTHER ASSEMBLERS
340   8EF8  01 00 20    CODE1  DFB 1 0 $20     T/E
350   8EFB  03 02 01
350   8EFE  00 20       CODE2  DFB 3 2 1 0 $20 M/N/A/I
360   8F00  07 06 05
360   8F03  04 03       CODE3  DFB 7 6 5 4 3   D/G/K/D/W
370   8F05  02 01 00
370   8F08  20                 DFB 2 1 0 $20   R/U/S
380   8F09  0D 0C 08
380   8F0C  0A          CODE4  DFB 13 12 11 10 Q/Z/Y/C
390   8F0D  09 08 07
390   8F10  06 04              DFB 9 8 7 6 4   X/B/J/P/L
400   8F12  02 01 00
400   8F15  20                 DFB 2 1 0 $20   F/V/H
410   8F16  1F 1E 1C
410   8F19  18          CODE5  DFB 31 30 28 24 0/9/8/7
420   8F1A  12 11 10           DFB 18 17 16    / = 6
430   8F1D  0F 0A 07
430   8F20  03                 DFB 15 10 7 3   1/+/2/3
440   8F21  01 00 20           DFB 1 0 $20     4/5
```

```
1220  8FA2  EA                 NOP             TIMING DELAY
1230  8FA3  F0 07              BEQ EXIT        STOP IF END OF THE LENGTH PARAMETER
1240  8FA5  88          RPT2   DEY             SECOND LOOP
1250  8FA6  D0 F5              BNE RPT1        BACK TO FIRST LOOP UNLESS PITCH PARAMETER HAS BEEN REDUCED TO ZERO
1260  8FA8  A4 F9             ZLDY PITCH       IF SO RESTORE INTO Y REG FROM PITCH
1270  8FAA  10 EE              BPL NOTE        FORCED BRANCH BACK TO SPEAKER TWEAKER
1275  8FAC  60           EXIT  RTS             END OF NOTE SUBROUTINE **********
1280  8FAD  A5 FB        DOT   ZLDA PH         (DEC 36781) DOT GENERATOR
1290  8FAF  85 F9              ZSTA PITCH
1300  8FB1  A5 FC              ZLDA DT         LENGTH OF DOT
1310  8FB3  85 FA              ZSTA LEN
1320  8FB5  20 9A 8F           JSR NOTE
1330  8FB8  60                 RTS
1335  8FB9  A5 FB        DASH  ZLDA PH         (DEC 36793) DASH GENERATOR
1340  8FBB  85 F9              ZSTA PITCH
1345  8FBD  A5 FD              ZLDA DA         DASH LENGTH
1360  8FBF  85 FA              ZSTA LEN
1370  8FC1  20 9A 8F           JSR NOTE
1380  8FC4  60                 RTS             END OF DOT/DASH GENERATORS **********
1390  8FC5  A9 00        ANDOT LDA £0          (DEC 36805) DOT ENTRY ==========
1400  8FC7  85 06              ZSTA ST3        PUT 0 IN ST3
1410  8FC9  F0 04              BEQ GO          AND JUMP OVER DASH ENTRY CODING
1420  8FCB  A9 01        ANDSH LDA £1          (DEC 36811) DASH ENTRY ==========
1430  8FCD  85 06              ZSTA ST3        PUT 1 IN ST3
1440  8FCF  A5 1F        GO    ZLDA NN         GET NR OF ENTRIES IN LETTER-GROUP ALREADY
1450  8FD1  C9 07              CMP £SEVEN
1460  8FD3  90 0B              BCC CONT
1470  8FD5  A5 1E              ZLDA CODE
1480  8FD7  F0 03              BEQ ERROR
1490  8FD9  4C 83 90           JMP NOMAT       IF 7 OR MORE GOTO NOMATCH UNLESS STRING OF DOTS (USER'S ERROR SIGNAL)
1500  8FDC  A9 06        ERROR LDA £6          CUT DOWN STRING TO 6 FOR TABLE SEARCH PURPOSES
1510  8FDE  85 1F              ZSTA NN
1520  8FE0  A5 1D        CONT  ZLDA CT         GET THE TIMING BETWEEN SUCCEEDING SOUNDS (POKED IN BY BASIC PROGRAMME)
1530  8FE2  C5 FE              ZCMP ILCG       WITHIN INTERLETTER COMPONENT TIMING LIMIT?
1540  8FE4  B0 13              BCS SRCH
1550  8FE6  A5 06        DROP  ZLDA ST3        IF SO THEN ADD TO END OF LETTER-GROUP IN 'CODE'
1560  8FE8  4A                 LSR             FIRST DROP IT INTO 'CARRY'
1570  8FE9  26 1E              ZROL CODE       THEN TACK IT ON TO THE END OF 'CODE'
1580  8FEB  E6 1F              ZINC NN         INCREMENT THE COMPONENT COUNT WHEN DONE
1590  8FED  20 75 90           JSR SOUND       SOUND THE DOT OR DASH
1600  8FF0  A0 00              LDY £ZERO       RESET TO ZERO
1610  8FF2  84 1D              ZSTY CT         BUT NOT CODE OR NN
1620  8FF4  84 07              ZSTY ST4
1630  8FF6  84 06              ZSTY ST3
1640  8FF8  60                 RTS             BACK TO BASIC PROGRAMME **********
1650  8FF9  A5 1F        SRCH  ZLDA NN         IF END-OF-LETTER DETECTED THIS ANALYSIS AND OUTPUT CODING IS EXECUTED
1660  8FFB  C9 00              CMP £ZERO       FIRST CHECK TO SEE IF IT IS THE FIRST ENTRY
1670  8FFD  F0 E7              BEQ DROP        IF SO EXIT THROUGH DROP
1680  8FFF  38                 SEC             IF NOT THEN DECIDE WHICH SUB-TABLE TO SEARCH AND CALCULATE OFFSET
1690  9000  E9 01              SBC £1          OF THE SUB-TABLE POINTER BY THE FORMULA OFFSET=(NN-1)*2
1700  9002  0A                 ASL             GIVING THE OFFSET FROM THE BASE OF THE TABLE OF POINTERS
1710  9003  85 07              ZSTA ST4        STORE THE RESULTING OFFSET IN ST4
1720  9005  AD 35 8F           LDA PT          NOW GET THE POINTER TO THE BASE OF THE TABLE OF POINTERS
```

```
460   8F27   00 20          DFB 0 $20          TRANSMISSION ERROR
470   8F29   F8 8E   PTCDE  DW  CODE1         TABLE OF POINTERS TO SUB-TABLES OF CODE SOUNDS
480   8F2B   F8 8E          DW  CODE2
490   8F2D   00 8F          DW  CODE3
500   8F2F   09 8F          DW  CODE4
510   8F31   16 8F          DW  CODE5
520   8F33   24 8F          DW  CODE6
530   8F35   29 8F   PT     DW  PTCDE          POINTER TO TABLE OF POINTERS TO SOUND CODE SUB-TABLES
540   8F37   D4 C5   OUT1   ASC T E            ********** OUTPUT SUB-TABLES (SCREEN CHARACTERS) **********
545   8F39   20             DFB 32             SPACE MARKER TO CORRESPOND WITH DELIMITER IN OTHER HALF OF THE SUB-TABLES
550   8F3A   CD CE C1
550   8F3D   C9       OUT2  ASC M N A I
560   8F3E   20             DFB 32
570   8F3F   CF C7 CB
570   8F42   C4 D7 D2
570   8F45   D5 D3    OUT3  ASC O G K D W R U S
580   8F47   20             DFB 32
590   8F48   D1 DA D9
590   8F4B   C3 D8 C2
590   8F4E   CA       OUT4  ASC Q Z Y C X B J
600   8F4F   D0 CC C6
600   8F52   D6 C8          ASC P L F V H
610   8F54   20             DFB 32
620   8F55   B0 B9 B8
620   8F58   B7 AF BD
620   8F5B   B6       OUT5  ASC 0 9 8 7 / = 6
630   8F5C   B1 AB B2
630   8F5F   B3 B4 B5       ASC 1 + 2 3 4 5
640   8F62   20             DFB 32
650   8F63   AC       OUT6  DFB $AC            COMMA
660   8F64   AE BF          ASC . ?
670   8F66   A3             ASC £              HASH OUTPUT ON SCREEN WHEN USER SENDS A STRING OF DOTS (ERROR MESSAGE)
680   8F67   20             DFB 32
690   8F68   37 8F   PTOUT  DW  OUT1           TABLE OF POINTERS TO SUB-TABLES OF SCREEN OUTPUT CHARACTERS
700   8F6A   3A 8F          DW  OUT2
710   8F6C   3F 8F          DW  OUT3
720   8F6E   48 8F          DW  OUT4
730   8F70   55 8F          DW  OUT5
740   8F72   63 8F          DW  OUT6
750   8F74   68 8F   PTO    DW  PTOUT          POINTER TO BASE OF TABLE OF SCREEN OUTPUT SUB-TABLE POINTERS
760   8F76   AA      AST    ASC *              SCREEN OUTPUT CHARACTER WHEN LOOK-UP FAILS ALTOGETHER
1000  8F77   A9 00   INIT   LDA £ZERO          (DEC 36727) SUB TO INITIALISE VALUES OF WORKSPACE AREA
1010  8F79   85 06          ZSTA ST3
1020  8F7B   85 07          ZSTA ST4
1030  8F7D   85 1C          ZSTA TEMP
1040  8F7F   85 1D          ZSTA CT
1050  8F81   85 1E          ZSTA CODE
1060  8F83   85 1F          ZSTA NN
1070  8F85   A9 64          LDA £100           DEFAULT SETTINGS FOLLOW
1080  8F87   85 FB          ZSTA PH
1090  8F89   A9 2B          LDA £40
1100  8F8B   85 FC          ZSTA DT
1110  8F8D   A9 78          LDA £120
1120  8F8F   85 FD          ZSTA DA
1130  8F91   A9 04          LDA £4
1140  8F93   85 FE          ZSTA ILCG
1150  8F95   A9 0A          LDA £10
1160  8F97   85 FF          ZSTA LG
1170  8F99   60             RTS                HERE FOLLOWS THE NOTE SUBROUTINE ##########################################
1180  8F9A   AD 30 C0 NOTE   LDA SPEAK         (DEC 36762) TWEAK THE SPEAKER
1190  8F9D   CA       RPT1  DEX
1200  8F9E   D0 05          BNE RPT2           GOTO SECOND LOOP UNLESS COUNTER ZERO
1210  8FA0   C6 FA          ZDEC LEN           KNOCK ONE OFF THE LENGTH PARAMETER
```

```
1740  900A   AD 36 8F        LDA PT+1
1750  900D   85 09           ZSTA MEM+1
1760  900F   A5 08           ZLDA MEM           NOW ADD THE OFFSET JUST CALCULATED
1770  9011   18              CLC
1780  9012   65 07           ZADC ST4
1790  9014   85 08           ZSTA MEM           AND PUT BACK IN MEM
1800  9016   90 02           BCC NEXT           CHECK TO SEE IF HI-BYTE OF ADDRESS NEEDS INCREMENTING BECAUSE OF ADDITION
1810  9018   E6 09           ZINC MEM+1         INCREMENT IT IF NECESSARY
1820  901A   A0 00    NEXT   LDY £ZERO          NOW TO GET THE ADDRESS OF THE SUB-TABLE POINTED TO
1830  901C   B1 08           ZLDA (MEM),Y
1840  901E   85 1A           ZSTA JAD
1850  9020   C8              INY
1860  9021   B1 08           ZLDA (MEM),Y
1870  9023   85 1B           ZSTA JAD+1         NOW IT'S STORED IN JAD AND JAD+1
1880  9025   A0 00           LDY £ZERO          FINALLY WE MAY SEARCH THE APPROPRIATE SUB-TABLE
1890  9027   B1 1A    LOOP   ZLDA (JAD),Y       FIRST HAVE WE GOT THE END-OF-SUB-TABLE MARKER?
1900  9029   C9 20           CMP £SPC           IF SO THEN WE'VE SEARCHED RIGHT THROUGH WITHOUT SUCCESS
1910  902B   F0 56           BEQ NOMAT          AND WE BRANCH OFF TO THE NOMATCH CODING
1920  902D   C5 1E           ZCMP CODE          OTHERWISE WE CHECK THE SUB-TABLE ELEMENT AGAINST THE LETTER-GROUP IN CODE
1930  902F   F0 05           BEQ MATCH          IF THERE IS A MATCH GOTO THE 'MATCH' CODING
1940  9031   90 50           BCC NOMAT          AS THE SOUND SUB-TABLES ARE IN DESCENDING ORDER WE CAN TELL IF WORTH MORE
1950  9033   C8              INY                SEARCHING. IF SO THEN INCREMENT  FOR NEXT ELEMENT AND DO A FORCED BRANCH
1960  9034   B0 F1           BCS LOOP           BACK TO THE BEGINNING OF THE SRCH CODING
1970  9036   84 1C    MATCH  ZSTY TEMP          FIRST WE NOTE WHICH ELEMENT OF THE SOUND SUB-TABLE MATCHED WITH 'CODE'
1980  9038   AD 74 8F        LDA PTO            AND THEN REPEAT THE LOOK-UP ALGORITHM
1990  903B   85 08           ZSTA MEM           USING THE SECOND PART OF THE TABLE I.E. THE SCREEN OUTPUT TABLES/POINTERS
2000  903D   AD 75 8F        LDA PTO+1          REMEMBERING THAT THE OFFSET WE PREVIOUSLY HAD TO CALCULATE IS STILL ST4
2010  9040   85 09           ZSTA MEM+1         BECAUSE THE SOUND CODE AND SCREEN OUTPUT TABLES ARE IDENTICAL IN LAYOUT
2020  9042   A5 08           ZLDA MEM
2030  9044   18              CLC
2040  9045   65 07           ZADC ST4
2050  9047   85 08           ZSTA MEM
2060  9049   90 02           BCC NNXT           CHECK PAGE BOUNDARY
2070  904B   E6 09           ZINC MEM+1
2080  904D   A0 00    NNXT   LDY £ZERO
2090  904F   B1 08           ZLDA (MEM),Y
2100  9051   85 1A           ZSTA JAD
2110  9053   C8              INY
2120  9054   B1 08           ZLDA (MEM),Y
2130  9056   85 1B           ZSTA JAD+1
2140  9058   A4 1C           ZLDY TEMP          AND FURTHER THAT THE ELEMENT WITHIN THE SCREEN OUTPUT SUB-TABLE IS THE SAME
2150  905A   B1 1A           ZLDA (JAD),Y       SO WE CAN GET THE CORRECTLY MATCHED CHARACTER
2160  905C   20 ED FD        JSR COUT           AND PRINT IT ON THE SCREEN
2170  905F   A5 1D    WDSPC  ZLDA CT            WE NEED TO CHECK IF THE GAP BETWEEN SOUNDS MEANT END-OF-WORD
2180  9061   C5 FF           ZCMP LG            (THIS PARAMETER IS ALTERABLE EXTERNALLY LIKE ALL OTHER TIMING PARAMETERS)
2190  9063   90 05           BCC RESET          JUMP OVER SPACE OUTPUT CODING IF END-OF-WORD NOT DETECTED
2200  9065   A2 01           LDX £1             1 SPACE (INPUT REQUIRED FOR MONITOR SUBROUTINE)
2210  9067   20 4A F9        JSR PRBLK          PRINT ONE BLANK SPACE ON THE SCREEN
2220  906A   A0 00    RESET  LDY £ZERO
2230  906C   84 1F           ZSTY NN
2240  906E   84 1C           ZSTY TEMP
2250  9070   84 1E           ZSTY CODE
2260  9072   4C E6 8F        JMP DROP
2270  9075   A5 06    SOUND  ZLDA ST3
2280  9077   C9 01           CMP £1             IS IT A DASH?
2290  9079   F0 04           BEQ DSH
2300  907B   20 AD 8F  DOTT   JSR DOT           SOUND DOT
2310  907E   60              RTS
2320  907F   20 B9 8F  DSH    JSR DASH           SOUND DASH
2330  9082   60              RTS
2340  9083   AD 76 8F  NOMAT  LDA AST            PRINT AN ASTERISK IF NOMATCH FOUND
2350  9086   20 ED FD        JSR COUT
2360  9089   4C 5F 90        JMP WDSPC
```

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.

ORMBETA SOFTWARE

Ormbeta Software is now being distributed to over 100 dealers in the UK and abroad, and has rapidly gained a reputation for sophistication and flexibility. It is written in UCSD Pascal and is currently available on Apple II and Apple ///. It will shortly be released for IBM PC, Xerox 820, Altos, Philips, Osborne under P-System.
Any Pascal compatible disc system can be used including floppies, ProFile, Corvus, Megastor, Eicon, I.C.E., SymbFile. All systems are built around the Beta Database, currently one of the best selling database systems in the UK. The user requires one copy of the Beta Database regardless of the number of additional systems he uses. But remember – you also have a very powerful stand-alone system which can be used for a hundred different jobs.

ORMBETA INTEGRATED LEDGER SYSTEM

Sales Ledger with Free Format Invoicing **£250.00**
Lets the user define his own invoice and statement layouts interactively on the screen via a simple utility program. He can even set them up to use his existing stationery if he wishes. Multiple lines per invoice, brought forward and open-item accounts in the same ledger, settlement discount if required, aged analysis on statements (optional), all standard analyses plus optional user defined analyses.

Purchase Ledger with Cheque Writing **£250.00**
All the power and flexibility of the Sales Ledger plus a built in cheque writing facility that can be configured to print on virtually any type of cheque stationery the user chooses.

Nominal/General Ledger **£250.00**
Takes you right through to Profit and Loss and Balance Sheet production, plus provision for accruals etc. Can be updated automatically from Sales/Purchase Ledgers/Payroll, or via Journal entries.

Payroll/Personnel System **£250.00**
Hourly, weekly, 2-weekly, 4-weekly, monthly payrolls. Twenty user defined payments and deductions, all payment methods – cash, cheque, credit transfer. Holiday Pay accrual (several methods), pension deductions (fixed or percentage), personnel analysis and reporting.

Stock Control with Parts Explosion **£250.00**
Very comprehensive range of stock control facilities which can be easily customised to the user's specific requirements. One of our most popular and best selling systems used by many companies from the very small to large multi-nationals.

Product Invoicing **£250.00**
Integrates with the Sales Ledger and Stock systems to provide a very flexible invoicing/stock system. All the flexibility of the Sales/Stock systems with stock adjustments via invoicing.

OTHER SYSTEMS

Beta Database **£195.00**
The answer to all your filing and retrieval problems. Several levels of indexing, search facility on any record field, reports, sorted reports with totals and sub totals, word processing, labelling, manual and automatic updating and many other features. The most comprehensive system on the market.

Estate Agents System **£250.00**
Totally flexible – can be used in both commercial and domestic environments. Several very powerful matching facilities plus complete letter writing/mailing facilities. Also a window graphics and property detail scrolling facility.

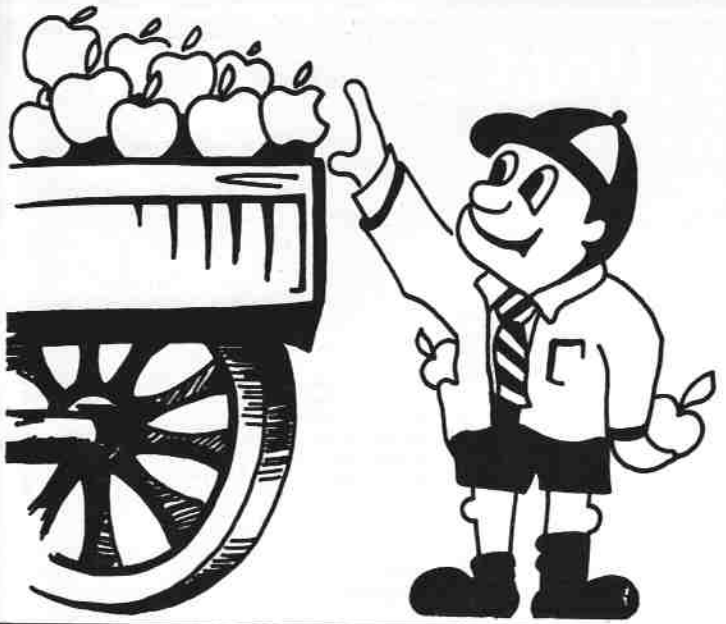
Golf Club System **£300.00**
A complete system for golf clubs – membership, subscriptions, accounting, stock control, mailing, labelling. Plus a complete and very powerful handicap recording and calculating system for the new handicapping rules due to be implemented later this year, including printing of the handicap record card.

Video Cassette Rental System **£300.00**
Up to 10,000 cassettes and 10,000 subscribers/members maintained on file. Very fast access to all information, production and printing of cassette catalogues, mailing and labelling.

Other systems available include: Bar/Restaurant Costing with Stock Control, Property Rental/Management system, Auction Room system, Membership system and others.
Please phone for our latest software list.
Dealer enquiries welcomed.

ORMSKIRK COMPUTER SERVICES LTD.

Wheatsheaf Walk, Burscough Street, Ormskirk, Lancashire L39 2XA.
Tel: Ormskirk (0695 77043/4)
Telex: 627110 & 628702 CHACOM G Prefix 'Ormbeta'



Applecart

Monthly review of
Apple in education

Age of the multi-disciplinarian

By SEAN OVEREND

GIVEN a micro and the ability to program it, the next stage – namely what to use it for – is often a stumbling block. Conversely, given an educational objective and an established method of achieving that end, the use of modern technology to assist is sometimes avoided or rejected because of lack of understanding of what that technology can do.

In the educational world, as in many other disciplines, there is sometimes a great gap between the traditionalist and the purveyors of machines. In addition, technology has moved so fast that there are now many teachers who have far less experience of the computer and its broad applications in the field of education than their own students.

The truth of the matter is that the age of the multi-disciplinarian has dawned. It will not be long before the next generation of educationalists emerges, the students of today, who have been steeped in modern technology and who can truly be said to straddle the disciplines.

In the meantime, educational establishments tend to leave the application of computers to the "experts", those who by virtue of their proximity to the devices appear to speak with authority. In practice this may mean the science departments or the representatives of the computer hardware companies. What a galaxy of experts!

How many language departments have gone beyond the "laboratory" of tape and record? How many computerised card index systems are used by English and History departments? How many sports events use computer-driven record keeping and video scoring displays? Which music departments use a micro for teaching music theory or composition practice? Is CAL really a feature of the school curriculum, or is it something rather special, to be associated with applications for research grants?

It seems that there are two reasons for the spread of computers outside the science department. The first is that a non-scientist has taken the trouble to find out what software is available to assist teaching in his field; the second is that a scientist has switched disciplines, bringing with him an appreciation of what a computer can do.

This article describes one type of utility software that has applications across the board of the educational spectrum, but particularly in languages. It is a computerised flash card device, capable of being used in any area where a student is expected to memorise information in paired lists.

"Ah!", says the traditionalist, "the mumbo-jumbo has started again. What on earth is a paired list?" The answer, of course, is to ask the questioner to think in the abstract, to project himself backwards and analyse what he is trying to get the student to do. If what the student is seeking to achieve is to relate two concepts, be they each only one word long, then he is learning information that is paired with other information, e.g. the date of the Great Fire of London was 1644. The German for brother is der Bruder. The relative minor of C major is A minor. The President of France is M. Mitterand.

It is the same as using a pack of cards with information on both sides of each card. The pack is shuffled and displayed to the students, one side of the card at a time. The students have to tell their teacher what is on the concealed side.

Teaching by packs of cards is not the answer to education, yet it is remarkable how much of the fundamentals of our education can be reduced to the concept of paired lists.

How then does the computer come to be used? The multi-disciplinarian knows the answer, because he is used to the concept of a random access file. He knows that data bases can be created with supreme ease, that visual displays can flash information onto a screen in moments and that answers can be evaluated equally quickly. What has to be analysed, however, is how best to

→

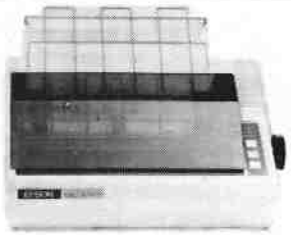
LOOK! . . . A NEW NAME IN apple ACCESSORIES

PA

- All items fully guaranteed for one year
- Free postage and packing on all orders
- Immediate delivery
- Many more items available

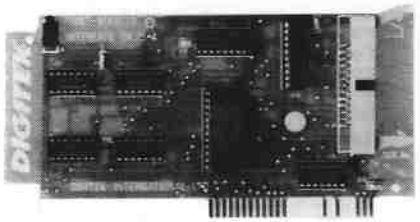
BUSINESS SOFTWARE		INC. VAT
Calcstar (CP/M) (80 column spread sheet)	59.00	67.85
dBase II (CP/M)	349.00	401.35
Data Factory 5.0 (many new features)	157.00	180.55
Data Star (CP/M)	122.00	140.30
D.B. Master (version 3.02)	119.00	136.85
D.B. Master statistics	58.00	66.70
D.B. Master utilities (links with visi's)	58.00	66.70
Desk Top Plan II	105.00	120.75
Graphmagic (bar graphs, pie charts, etc)	47.00	54.05
Mathemagic	47.00	54.05
PFS Filing system (new improved)	68.00	78.20
PFS Graph	68.00	78.20
PFS Report	53.00	60.95
Supersort (CP/M)	75.00	86.25
Versaform (form generator in Pascal)	199.00	228.85
Visicalc (new version)	105.00	120.75
Visicalc expander (use with 32K/128K cards)	53.00	60.95
Visicalc utilities	34.00	39.10
Visidex	122.00	140.30
Visifile	132.00	151.80
Visipac (calc/trend/file)	378.00	434.70
Visiplot	99.00	113.85
Visischedule	155.00	178.25
Visiterm	59.00	67.85
Visitrend/plot	155.00	178.25
WORD PROCESSING		
Apple Speller (very fast proof reading)	45.00	51.75
Apple Writer II	72.00	82.80
Form Letter (use with Super Text II)	58.00	66.70
Format 80	275.00	316.25
Letter Perfect	87.00	100.05
Mailmerge (CP/M)	55.00	63.25
Pie Writer (40/80 columns)	78.00	89.70
Screenwriter II (70 col w/out 80 col card)	62.50	71.88
Super Text II	85.00	97.75
Wordstar 3.01 (CP/M) (enhanced features)	135.00	155.25
Zardax	139.00	159.85
GAMES		
Beer Run (Sirius)	16.95	19.49
Cannonball Blitz (Online Systems)	16.95	19.49
Choplifter (Broderbund)	16.95	19.49
Epoch (Sirius)	16.95	19.49
Flight Simulator (Sublogic)	16.95	19.49
Knights of Diamond (use with Wizardry)	18.95	21.79
Laff Pak (Online Systems)	16.95	19.49
Minotaur (Sirius)	16.95	19.49
Pinball (Sublogic)	16.95	19.49
Pool 1.5 (Innovative design	16.95	19.49
Swashbuckler (Datamost)	16.95	19.49
Tawala's Last Redoubt (broderbund)	16.95	19.49
The Prisoner (Edu-Ware)	14.95	17.19
Threshold (Online Systems)	16.95	19.49
Time Zone (Online Systems)	43.75	50.31
Wizardry (Sir Tech Software)	24.95	28.69
Zork II (Infocom)	21.95	25.24
PRINTERS		
Diablo 630 (R/O)	1295.00	1489.25
Epson MX80T-3 (up to 132 col & hi-res)	299.00	343.85
Epson MX80FT-3 (as above & friction drive)	324.00	372.60
Epson MX82FT (very hi-res graphics)	359.00	412.85
Epson Mx100FT-3 (100 cps & wide carriage)	429.00	493.35
Mannesman Tally MT 120 (160 cps)	365.00	419.75
Nec 8023 (100 cps, 136 col & prop. spacing)	329.00	378.35
Silentype & interface	159.00	182.85
Corona TPI (at last a low priced daisywheel)	429.00	493.35
Tec Starwriter FP1500 (25 cps)	650.00	747.50
PRINTER INTERFACE CARDS		
CPS Multifunction Card (inc real time clock)	119.00	136.85
Digitek Printmaster (BASIC/CPM/PASCAL)	69.00	79.35
Digitek RS232 (BASIC/CPM/PASCAL)	70.00	80.50
Grappler graphics (Epson/Anadex/Cen/P.tig)	98.00	112.70
MBP-16K (Epson 16K buffer)	96.00	110.40
Wizard 16K Buffer & graphics interface	149.00	171.35
80 COLUMN CARDS		
Smarterm (very cool running, many features)	182.00	209.30
Super-R-Terminal	182.00	209.30
U-Term (inc shift mod. & font editor)	129.00	148.35
Videx Enhancer II	83.00	95.45
Videx Softswitch (40/80)	19.95	22.94
Videx Utility Disc (inc font editor etc)	24.45	28.12
Videx Videoterm	163.00	187.45
Visicalc preboot disc (80 col with videx)	32.00	36.80
MONITORS/COLOUR CARDS		
Digitek Colour Card (excellent colour on TV)	87.00	100.05
Microvitec colour monitor	264.00	303.60
Microvitec colour card (use with above)	35.00	40.25
Sanyon 12" Green Screen	105.00	120.75
Zenith 12" Green Screen (very good value)	89.00	102.35
GRAPHIC UTILITIES & MUSIC		
3-D Supergraphics	23.00	26.45
Artist Designer	33.00	37.95
Digisolve Card (512 x 512 & 64k Ram)	375.00	431.25
E-Z Draw 3.3 (excellent graphic utility)	25.95	29.84
Graforth (fast 3D utility plus music)	43.00	49.45
Graphic package Sublogic (detailed 3D pack)	64.45	74.12
Higher Text II (many diff fonts, sizes, cols)	21.95	25.24
Pascal Animation	34.00	39.10
Pilot Animation Tools	34.00	39.10
Versawriter (graphic digitiser)	138.95	159.79
Versawriter Expansion software	23.00	26.45
Zoom Grafix (zoom in on hi-res screen)	23.95	27.54
Alf Music System (9 voice)	85.00	97.75
Echo II Speech Synthesiser	125.00	143.75
Electric Duet (creates 2 part music)	18.95	21.79
Music Machine 9 Voice (Vista)	79.00	90.85
Music System (Mountain Computer 16 voice)	211.00	242.65
Zapple Sound Effects & Music Board	56.00	64.40
UTILITIES		
Ace (Applesoft Command Editor)	21.95	25.24
Aplus (Applesoft structured Basic)	18.95	21.79
Assembly lang. Dev. (6502, Z80 or 8080)	75.00	86.25
Bag of Tricks	20.45	23.52
Back It up II+ (bit copier)	48.00	55.20
B.E.S.T. (Enhanced Software Tool)	23.95	27.54
Build Using (Provides 'print using' command)	23.95	27.54
Dakin 5 (12 utility programs)	47.00	54.05
Disc Library (inc. CP/M & Pascal)	33.95	39.04
Dos 3.3 Tool Kit	39.00	44.85
Edit Soft (powerful macro line editor)	18.95	21.79
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)	55.00	63.25
Lisa (Educational system)	70.00	80.50
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)	42.00	48.30

THIS MONTH'S SPECIAL OFFERS



THE NEW EPSON MX80FT TYPE 3

The low noise, high performance printer with 40, 66, 80 or 132 columns and high res. graphics. Special price £329.00 inc. p&p + VAT.

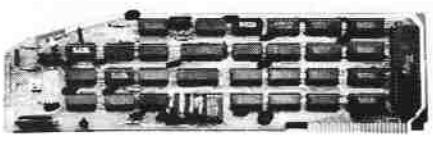


DIGITEK PRINTMASTER

Full graphics dump inc. Inverse, Double Density, Double size, 90° Rotation. Adj. margins & page length. Our price £69.00 + VAT.

U-TERM 80 COLUMN CARD

Compatible with BASIC, PASCAL and CP/M. Includes an easy to install shift key accessory. Also a utility disc and loading alternative fonts is provided. For all this we just ask £129 + VAT.



TOP QUALITY DISC DRIVES

A low cost Apple compatible disc deive. Not only is it cheaper than the Apple drive, it's a lot quieter and fully dependable. Amazing value at only £199 + VAT.

14" MICROVITEC COLOUR MONITOR

Besides offering a crystal clear display in either text, hi-res or low res models it also includes following features – 16 text colours, B/grd colours, 16 hi-res colours, 80 col, card compatibility. A superb colour monitor for £264.00 + VAT.

Z-CARD WITH SUPERCALC & CP/M

Provides Z-80A processor in the Apple with CP/M system and utilities. Additional features: CATalog-Alphabetise file names, number of files, space remaining on disc. Also – Copy & format in one pass. Plus a free copy of Supercalc, a very powerful and easy to use 80 col. spreadsheet. All this for only £179.00 + VAT.

CE
0274 575973

Printographer (supports almost any printer)	27.95	32.14
Quickloader	15.95	18.34
Speed Star (compiles 1200 lines per min)	75.00	86.25
Super Disc Copy III	20.00	23.00
Super Kram	87.00	100.05
Tasc Compiler (handles very large programs)	95.00	109.25
The Inspector (disc snooper, needs 16k card)	35.00	40.25
The Routine Machine (mach. lang. routines)	34.50	39.68
SYSTEM EXPANSION		
16K Ramcard Digitek (with dos mover)	75.00	86.25
16K Ramcard Ramex	65.00	74.75
16k Ramcard Sanram	55.00	63.25
32K Ramcard Saturn	129.00	148.35
128K Ramcard (Saturn)	299.00	343.85
128K Ramex card	245.00	281.75
Clip on fan (inc separate power switch)	44.00	50.60
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
Keyplus Numeric Keypad	83.00	95.45
Romplus Card in K/B Filter	119.00	136.85
The Mill 6809 with Pascal speed up	189.00	217.35
VC-Expand-80 (up to 145K Visicalc & 80 col)	65.00	74.75
VC-Expand Ramex (loads 136k visi in 20 sec)	40.00	46.00
Z80 card U-micro (card only)	73.00	83.95
Z80 card Microsoft (CP/M (Mbasic)	179.00	205.85
Z-card (inc CP/M & Supercalc) very good value	179.00	205.85
LANGUAGES		
Apple Logo (available at last)	115.00	132.25
Apple Pascal	145.00	166.75
Apple Pilot	79.00	90.85
Cobol 80 (CP/M)	375.00	431.25
Forth II (Integer only)	39.00	44.85
Fortran 80 (CP/M)	103.00	118.45
Transforth (full floating point Forth)	68.00	78.20

Please make your order by completing the coupon and returning to us – or you can phone **DAVE or SHERIDAN**

0274 575973

and your enquiry will receive a friendly and speedy response

David

Sheridan

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._____

WF16

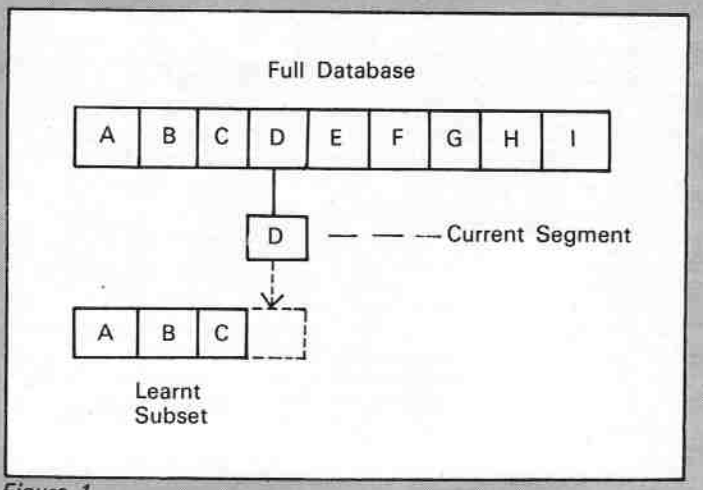


Figure 1

program the computer so that its attributes are readily available to both teacher and student.

In the context of learning a foreign language, the paired list plays a large part, especially in building up an extensive vocabulary. Each repetition reinforces the link between one word or phrase and another.

Lucky is the student who has available someone who can continuously test him, correct his mistakes and encourage him by keeping track of how well he is doing.

The traditional way of learning vocabulary in a foreign language is to memorise lists of words and their corresponding translations. Retention of each list is then strengthened by random tests of the student. Initially, the test is of the most recently memorised list. Later the tests extend over several groups of lists, thus reinforcing what was previously short term memory.

On analysis, this technique consists of the segmented presentation to the student of an overall database comprising the full language. He learns each segment in turn, and is tested periodically from an ever-expanding subset of the database, consisting of all previously learnt segments. *See Figure 1.*

Each segment consists of enough information, depending on the individual student, to be learnt in one session. Testing of the student's recall is either of the elements of the current segment (D in Figure 1), or of all or part of the "learnt" subset (eg C & D, or A,B,C & D and so on). Two aspects of the above analysis need more detailed consideration. Firstly, how is a computerised database to be created, and secondly, of what does a "test" comprise, particularly when most students have little or no typing ability?

Any flash card utility software should have a relatively well developed editing/input facility, which will enable a user:

(a) To create any number of databases – so that, for example, there can be an elementary, an intermediate and an advanced language vocabulary. Furthermore, the program should be general purpose, so that the same software is capable of

being used either for different languages or for storage of any lists of "paired" information.

(b) To edit, amend or search through parts of a current database, so as to make the correction of mistakes or duplicates an easy task.

(c) To list on the screen, or on the printer, all or parts of any database, for checking, storage of hard copy or simply for memorising.

So far as "testing" is concerned, provision must be made for the non-typist as well as for the typist, and for scores to be calculated automatically and retained. Furthermore, wrong answers should be identified immediately and provision made for hard copy printout of these errors to provide a list for remedial learning.

Finally, the extent of the database from which the tests are selected must be variable so that the student can control the test range. He should also be able to control the "direction" the test is presented.

My own flash card program, VOCAB, written for an Apple II with one disc drive (using approximately 5k of memory) is a general purpose utility program that in part allows the creation, updating or amendment of any number of random access files which contain the databases entered by the user (be they teacher, student or typist), and in part provides a "test" mode with scoring facilities.

Each database may be created by or under the direction of a teacher, or using a textbook, and by someone who can type to some extent. Data entry is extremely simple. Once entered, of course, the database is available for whole generations of subsequent students.

The "test" mode is designed for the non-typist, in that the computer operates as a genuine flash card device, showing first the question, and then – at a time selected by the student – the correct translation. The student calls up the correct answer on the screen by pressing the RETURN key, and is then required to evaluate his own answer, which will either have been in his head or else written down separately. If he has answered correctly, he presses the "+" key (for which no 'shift' is required), automatically incrementing his score tally. Depression of any other key will not increment the score.

A proficient typist, on the other hand, has the option of typing in his answer to each test question before depressing the RETURN key, and of having his answer compared automatically, letter for letter, with the other half of the pair in the database. He will probably find that the computer is a stricter marker than the self-assessing non-typist!

The program is set up so that the user can do three types of things. Firstly, the teacher can create, add to, or amend the database with the minimum of fuss. Up to 2,100 word pairs can be stored on one disc side. Each word is limited to 20 characters in length. The screen display is non-scrolling in this mode and the flashing cursor is placed in the same position for each display.

Secondly, he can scan through the whole database to see what is there and can either call for a specific record number, or for part or all of the database, or he can ask for a selective printout.

Thus, to get all French masculine nouns in a language database he might search the French group for the string "LE". Likewise, he might search the English group for "TO" to locate all verbs.

Thirdly, the student can get the computer to test him in random fashion on all or selected parts of the database. The test can be in one of three "directions", language "A" into language "B", language "B" into language "A", or in a random mixture of both directions.

Score-keeping is automatic, the precise operation depending upon whether the student has decided to type in his answers, or is adopting the self-evaluation technique. The roles of teacher and student can be combined if the student wishes to create his own database.

● *VOCAB is available from the author by sending an initialised DOS 3.3 disc, together with a handling charge of £5.50 to Sean Overend, 22 Highland Road, Amersham, Bucks HP7 9AX. If Morse Trainer is also ordered, reduced handling charge of £10 for the two.*

```
20  BLOND                BLOND
21  GLUEKLICH            HAPPY
22  GROSS                BIG
23  KLEIN                SMALL
24  NICHT                NOT
25  ABER                 BUT
26  UND                  AND
27  HIER                 HERE
28  DER FREUND           FRIEND
29  DER LEHRER           TEACHER
30  DER MANN             MAN

40  LA NINA              GIRL (CHILD)
41  LA ESPOSA            WIFE
42  EL PRIMO             COUSIN (MALE)
43  LA PRIMA             COUSIN (FEMALE)
44  EL CUNADO            BROTHER-IN-LAW
45  LA CUNADA            SISTER-IN-LAW
46  EL TIO               UNCLE
47  LA TIA               AUNT
48  LA MUJER             WOMAN
49  EL MUCHACHO          BOY
50  LA MUCHACHA          GIRL

16  L'ESCALIER           STAIRS
17  A> LA CAMPAGNE       IN THE COUNTRY
18  LA COLLINE           HILL
19  LE BOIS              WOOD
20  LA FORE^T            FOREST
21  LA MONTAGNE          MOUNTAIN
22  LE VILLAGE           VILLAGE
23  LA VILLE             TOWN
24  LA FERME             FARM
25  LE FERMIER           FARMER
26  LA FERMIE>RE         FARMER'S WIFE
```

C/WP PUTS APPLE IN THE BIG LEAGUE

C/WP is not simply concerned with selling Apple computers at prices that turn others green. We want you to get the best out of your Apple and are always looking for goodies which make it even more useful.

So we announce with pride that the superb MPSL Cobol-based accounting systems are now available on Apple II (running BOS-5) exclusively from C/WP.

If you need a really professional large capacity fully integrated accounting system, join the big league with C/WP's BOS-5 Apple II, single or multi-user.

The software is the same as used on IBM System 1 and DEC PDP 11, but the price is true to the tradition of C/WP.

To join the big league at a small price, contact C/WP Computers on 01-630 7444.

C/WP

C/WP Computers
108 Rochester Row, London SW1P 1JP
Telephone: 01-630 7444

APPLE/BOS OFFER

HARDWARE	
Apple 48K Europlus	£ 499*
24 MHz green screen monitor	£ 90
Apple disc drive with controller	£ 270*
3 MB hard disc	£ 995
16K RAM card	£ 70
80 column card	£ 119
Z80 card	£ 95
Microline 83A 120 cps matrix printer (15 inch paper)	£ 479*
Printer interface	£ 70
	£2687

SOFTWARE (SINGLE USER)	
BOS 5 + Runtime MICROCOBOL	£ 200
Purchase ledger	£ 400
Sales ledger	£ 400
Nominal ledger	£ 400
Payroll	£ 400
Fixed assets	£ 400
Autoclerk	£ 400
Autowrite	£ 400
Invoicing	£ 200
Inventory	£ 200
Autoindex	£ 200

All prices exclude VAT, delivery and installation. Items available separately at same price.
Items marked * are a special offer of limited duration and subject to availability. Software prices for multi-user on application.

French without tears

By CLIFF McKNIGHT

ALMOST 20 years ago when I failed O-level French for the second time I never thought I would end up revising by computer. Perhaps if I'd had access to a program like Magister Software's French Verb Program at that time I might have passed!

The disc I tried was a specially prepared demo which didn't do as much as the real thing, but enough to keep me busy for a while. In its full form the program has a list of 150 verbs arranged in increasing degree of difficulty. On each frame a verb is specified, a tense and subject given and the user's task is to provide the correct conjugation. For example, you might be given "parler", present tense, subject "vous", to which you would respond "vous parlez".

The program checks the first letter entered and, if it is not the first letter of the subject, gives the message "Don't forget the subject". If the first letter is correct the whole input is evaluated so a mistyped subject is interpreted as a wrong answer.

If a wrong answer is entered the user is given the option of a second try. A wrong second try results in the correct answer being given and an option to view the complete conjugation of the verb before returning to the next test frame.

A correct answer is followed by a comfortable-sounding little three-note tune, whereas the tune following a wrong answer sounds distinctly shrill. Also, most correct answers are followed by one of a variety of encouraging phrases like "magnificent", "I love you" or "where did you pick that up". It was in the encouraging phrases department that I spotted one of this month's spelling mistakes – "what a succes!"

In addition to the information already mentioned, each frame also contains the meaning of the verb, the test number, the number of right answers thus far, and the difficulty level of the displayed question. A correct answer causes the level to be increased for the following frame, while a wrong answer causes a decrease. If you work your way back to the verb where you made a mistake and give the correct answer, the program acknowledges the achievement with the statement "You made a mistake before in this verb in this tense. This time you did it right – congratulations."

I was warned that the demo disc would hang when level 80 was reached. By that time I had been given present tense questions up to about level 62 and then a mixture of present and past (imperfect) tense questions. The full program also contains the future tense and the past (perfect).

The program is menu driven, and a student using the program is initially asked to enter his name and a personal four-figure number. If the results of his interaction are saved to the disc using one of the main menu options, they can only be accessed via the name/number combination. However, a sub-menu for instructors contains the option to list the student names and numbers, and the instructor therefore has access to all saved results. The instructor's sub-menu can only be reached by giving a particular code word, so students shouldn't be able to find out how their fellows fared. The instructor's menu also allows all the beeps to be turned off or the printer to be turned on (as long as it is in slot 1). The instructor can also enter additional verbs which the student can then choose to work with.

There were a couple of problems with the introductory section. For example, the program won't allow a two-letter surname, which would be very frustrating for people called Au, Ow or Ng (all of which are names I have encountered). Also, part of the keyboard training section is confusing. In order to get information about the shift key, the user is instructed to press the S key. However, these instructions give the impression that the S key is always to be used instead of the shift key. Pressing slash, full stop or comma resulted in an explanation of the space bar, and another spelling mistake was spotted in the frame explaining mistakes – "untill".

The accompanying literature claims that the program can conjugate any French verb and the user need only supply the infinitive. Now the most common comment on my school French work was "learn it, don't invent it" and verbs were particularly easy to invent by using 'er'-ending words. I am now able to report that the future tense of the McFrench verb 'Thatcher' is conjugated as: je thatcherai, tu thatcheras, il thatchera, nous thatcherons, vous thatcherez, ils thatcheront. I leave you to supply your own meaning!

Underneath the schoolboy humour there is a serious point lurking. That is, in attempting complete generality the program's use as a teaching aid is potentially reduced; how many French teachers would want their students to conjugate P**!ER? As long as the first character input is a letter and at least the last two are a standard ending, the program will conjugate. While it could be argued that this is a good way to demonstrate the rules underlying the process, it would be worth at least including a 'garbage in – garbage out' disclaimer.

Having said that, I would also want to argue with the claim to conjugate *any* verb. Although there are various other reflexive verbs in the program's list, the program conjugates "s'en aller" as a regular '-er' verb and thus generates rubbish. There also seems to be some disagreement about the meaning of one of the verbs used. The meaning of "salir" is given as "to jump". I hadn't encountered it before, but three fluent French speakers and a French-English dictionary tell me that "salir" means "to dirty" or "to soil".

Overall, I found the program quite user-friendly, as claimed in the literature. Apparently it has been tested by the University of Leuven, Belgium, and has been used by over 100 students for more than a year. It is obvious that a lot of thought has gone into it, both in terms of presentation and options available. For example, a little thing like being able to turn off the beeps is extremely useful and would be a welcome addition to many other programs designed for classroom use. However, a few more corrections would seem to be called for. "Could do better," as my French teachers used to say. System requirements are 48k and one disc drive.

At one point I gave a wrong answer but refused the option to see the verb conjugated. I quote the program's response verbatim: "You must realise that this machine is a *teaching* aid. There is little point in going on if you do not make use of the surveys it can offer to you! You may continue, but you really must work more quietly from now on,!!" Maybe that's why I failed the O-level – I didn't work quietly enough.

I am very grateful to Pam Wells for her help in testing out this program and teaching me the French equivalents of some interesting English verbs.

OUR APPLE PRICES TURN OTHERS GREEN.

C/WP Computers prices are so low we reckon they are the most competitive you'll find. You can buy a standard factory-fresh 48k Apple II Europlus with full 12-month warranty for only £499 + VAT. Or a floppy disc drive (with controller and DOS 3.3) for £270 + VAT. Or a second disc drive for £220 + VAT. And there are hundreds of other Apple bargains at C/WP.

But we're not just clever at keeping prices down: C/WP are experts in Apple and its software.

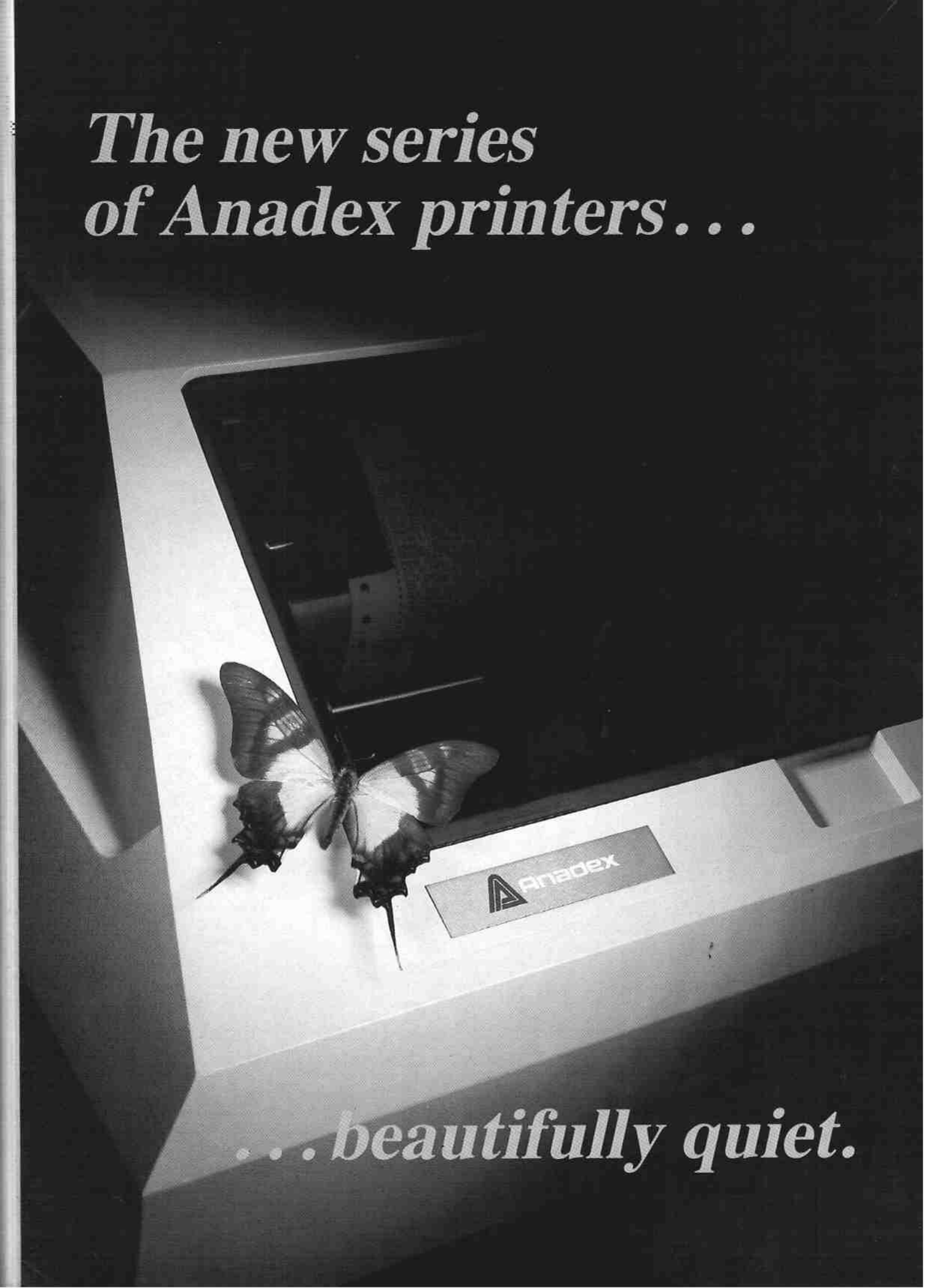
If you're hungry for an Apple at these mouth watering prices, write or phone for a C/WP price list NOW on 01-630 7444.

Special offer subject to availability.

C/WP

C/WP Computers
108 Rochester Row, London SW1P 1JP
Telephone: 01-630 7444

The new series of Anadex printers . . .



. . . beautifully quiet.

Anadex Distributors

For further information please contact your nearest Anadex authorised distributor listed below or Anadex Ltd, Weaver House, Station Road, Hook, Basingstoke, Hants.
Tel: (025672) 3401 Tx: 858762

ANADEX AUTHORISED UK DISTRIBUTORS (Head Offices)

Comart Ltd **HUNTINGDON** Cambs
Tel: 0480 215005

C.S. Scotland **GLENROTHES** Fife
Tel: 0592 773710

Data Design Techniques Ltd
WELWYN GARDEN CITY Herts
Tel: 07073 34774

Data Efficiency Ltd **HEMEL HEMPSTEAD** Herts Tel: 0442 57137

Datatype Terminals Ltd **CWMBRAN** S. Glam Tel: 063 33 69162

Informex–London Ltd **LONDON** SE13
Tel: 01 318 4213

Keytech Engineering Ltd
MANCHESTER Lancs
Tel: 061 834 9244

Kode Services Ltd **CALNE** Wilts
Tel: 0249 813771

Linburg Electronics Ltd
DUNFERMLINE Fife Tel: 0383 32231

Midlectron Ltd **BELPER** Derby
Tel: 077 382 6811

Northamber Ltd **ESHER** Surrey
Tel: 0372 62071

Riva Terminals Ltd **WOKING** Surrey
Tel: 04862 71001

Stack Computers Services Ltd
BOOTLE Merseyside
Tel: 051 933 5511

Taylor-Wilson Systems Ltd
SOLIHULL W. Midlands
Tel: 05645 6192

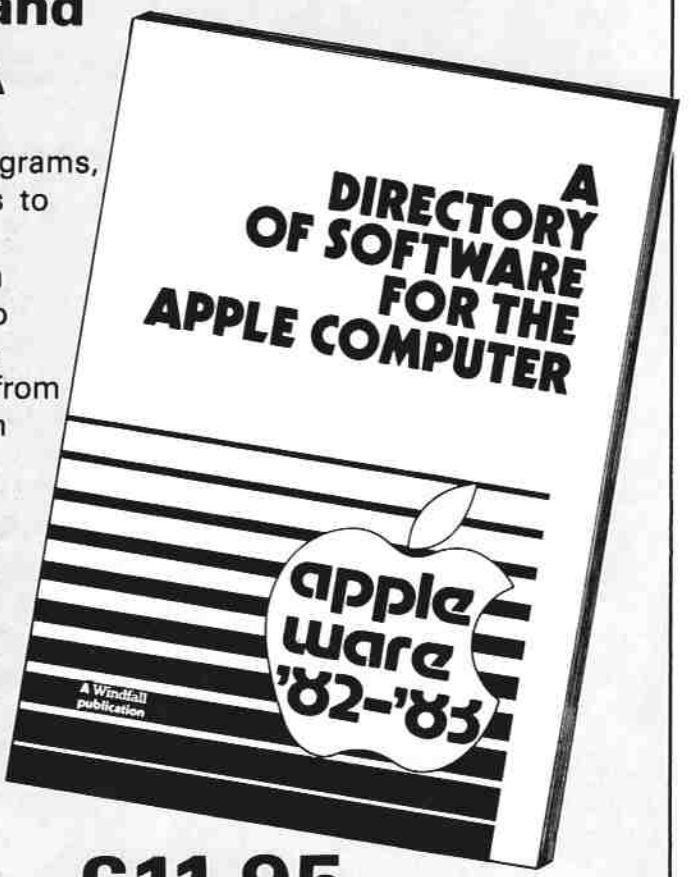
Wilkes Computing Ltd **BRISTOL**
Avon Tel: 0272 25921

Anadex

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

£11.95

ORDER NOW!

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

Postage .....90p **TOTAL** .....

Payment: please indicate method (✓)
☐ Cheque/PO made payable to Database Publications Ltd
☐ Access/Mastercharge/Eurocard
☐ Barclaycard/Visa
☐ American Express

Name _____

Address _____

_____

Card No. _____

Signed _____ Expiry Date _____

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

Are You Being Served?

We're Micromite Computers with the world's first genuine desk-top Winchester storage unit with inbuilt self-diagnostic facilities.

And we're looking for APPLE DEALERS. Right now!

The Micromite links up to 256 CP/M* Apples and offers shared resourcing through a local area network.

The Micromite has automatic File Lock for existing CP/M* application software and Record Lock for purpose-written application software.

The Micromite offers from 10 mb to 160 mb of Winchester storage with 20 mb tape streamer option for security copying.

Fill in the coupon now and receive full details by return post.

Please send me full details of your genuine desk-top Winchester storage unit with inbuilt self-diagnostic facilities – the Micromite.

Name _____

Position _____

Company _____

Address _____

_____

_____ Tel: _____

Ref W

*Reg trademark of Digital Research Inc.

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

REDUCED PRICE ★ BOOKS ★

BEST OF MICRO: VOLUME 1	£4
BEST OF MICRO: VOLUME 2	£4
BEST OF MICRO: VOLUME 3	£5
POWER OF VISICALC: VOLUME 1	£6
POWER OF VISICALC: VOLUME 2	£6
POWER OF SUPERCALC	£6
ALL ABOUT APPLESOFT	£8
WHAT'S WHERE IN THE APPLE	£8
BENEATH APPLE DOS	£10
KIDS AND THE APPLE	£10
ASSEMBLY LINES (ROGER WAGNER)	£10
ASSEMBLY LANGUAGE (RANDY HIDE)	£10
BAG OF TRICKS	£19 + 15% VAT
MICRO ON THE APPLE: 1	£13 + 15% VAT
MICRO ON THE APPLE: 2	£13 + 15% VAT
MICRO ON THE APPLE: 3	£13 + 15% VAT

(these last 4 include a diskette)

FREE SHIPPING WITHIN THE U.K.

TELEPHONE ORDERS WELCOME

Occam Software. Tel 0625 524228
13 Hawthorn Grove, Wilmslow,
Cheshire SK9 5DE

S.B.D. Software is proud to announce their distribution agreement with the most up to date APPLE-only magazine in America.

CALL A.P.P.L.E. MAGAZINE

In today's fast changing world of the APPLE you just can't afford to stay behind, so don't settle for anything less than the best APPLE-only magazine in America.

Now you can purchase this outstanding magazine for the low price of £1.75 per issue.

Your subscription for 12 or 24 magazines may start from any month in 1981.

Single back issues are available at £2.25 per issue including postage and packing.

A bound volume of the issues in 1980, 1979, 1978 are available for £20.00, £15.00 and £10.00 respectively, including postage and packaging. (Please note that in 1980 & 1981 there were only 9 issues published but in 1982 there will be 12 issues.)

☐ 12 issues @ £21.00 ☐ 24 issues @ £40.00

Europe Air Mail postage, add £6 per 12 issues

NAME .....

ADDRESS .....

TOWN ..... POSTCODE .....

Please start my subscription ..... Month ..... Year

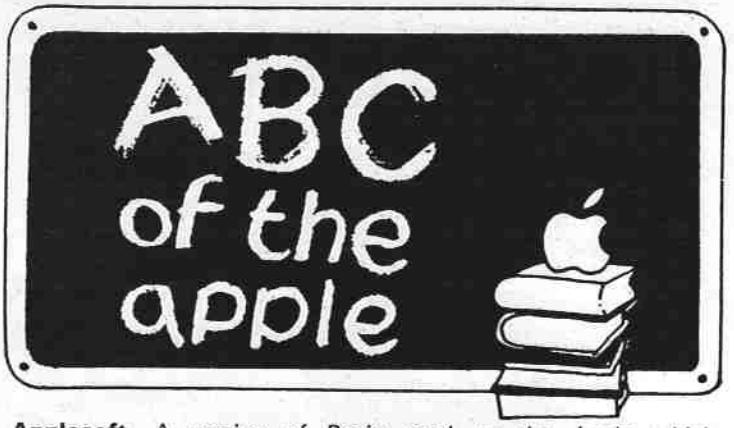
....

Barclaycard/Access Number Expiry Date

Please make cheques payable to CALL APPLE (UK)

Send to:- CALL APPLE (UK), c/o SBD Software,
FREEPOST, RICHMOND, SURREY TW9 1BR
(No postage stamp required)
Telephone: 01-940 5194

The Famous Book
"ALL ABOUT APPLESOFT"
Now available @ £9.50 incl. P. & P.



Applesoft. A version of Basic used on the Apple which contains numbers stored in floating point notation.

Application. Software developed for the Apple to do a specific task.

A/D Converter. A device (interface card or chip) which is used to convert analog signals into digital format.

Acoustic Coupler. Links the Apple to standard telephones to enable a communications link to be set up over the public network.

Asynchronous. Transporting data in and out of the Apple in one direction at a time.

Boolean. A method of handling logic statements, popular on computers.

Boot. Loading operating systems and software into an Apple, from scratch.

Byte. Assemblage of 8 bits to form a basic storage area, sufficiently large to contain meaningful information – instructions, numbers and characters.

Bit. Basic means of storing electronic data in binary format (on/off).

Basic. Beginners All Purpose Symbolic Instruction Code – the most popular method of entering instructions to operate a computer. A high level computer language, with most commands in recognisable English.

Bug. An error in a software program, or a fault in a computer.

CAL. Computer Assisted Learning – a method of teaching subjects using the computer.

Chips. A common term used to describe the small black composite objects which contain even smaller silicon 'chips' (used in the correct sense), linked via wires of minute dimensions to the terminal legs.

CP/M. An operating system used on microcomputers which use a Z80 microprocessor.

Configure. Design and set up a system containing elements of hardware and/or software.

Colour Card. An interface card which when plugged into an I/O port in the Apple enables colour to be output onto a colour monitor or standard colour TV.

Compiler. A utility which converts a high level language program, which needs to be interpreted every time it is run, into a machine code program, which runs faster, needing less or no interpretation.

Cursor. A flashing marker on a screen, indicating where the next item of input data will appear.

Data. Information stored in numerical or text format, used as transients in programs, for calculations or information storage.

Database. A large body of stored data, supported by utilities for editing, sorting, entering new data and so on.

Disc. A magnetic storage device, either hard or flexible (floppy), which can store data or programs in digital format.

Disc Drive. A unit which contains a reading and writing head for loading data onto a disc, or reading data from a disc. The drive also contains the motor for rotating the discs. Hard discs, because of their greater volume, are usually housed in sealed units. Flexible discs are easily swapped.

Dump. Transfer amounts of data (such as the 8 Kbytes required to store a picture), straight onto a peripheral, like a printer or disc, with little ceremony or reformatting.

DOS. Disc Operating System. A series of routines which need to be loaded into the Apple to enable it to initialise, save to and read from disc, plus numerous other associated refinements.

Execute. To carry out an operation in a program, or 'run' a program. *(Also may be done to the operator after pressing RESET with a disc running!)*

Hardware. Generic term for all manufactured computer equipment.

→

increase your Apple harvest

C.O.R.P., a system of program generators that writes menu driven Applesoft programs, is now available. It is the most advanced comprehensive and beneficial programming tool available for use with the Apple - a software system that writes 'stand-alone' programs! 48K Apple II, DOS 3.3 and 2 disk drives required.

The capability of C.O.R.P. is infinite with the power and versatility to speed up programming whilst at the same time making the task more simple and error-free. It generates complete Applesoft programs that execute independently and may be modified by the user, based on information supplied in the user's own everyday language.

A knowledge of programming is unnecessary. Error-free professional computerised card-index type programs can be written by complete beginners in minutes! Yet for those who want to learn to program, a comprehensive BASIC LANGUAGE tutorial is also provided. A Users' Newsletter is published at frequent intervals.

C.O.R.P. comprises;

- *a data entry program generator - BSP
- *a printed report generator - BSP
- *a diagnostic package inc., memory check, drive, printer and disk checks.
- *a Basic language tutorial - BSP
- *a (booting) menu generator
- *a forms letter generator
- *a user demo with program examples - BSP
- *a superb Datafile Editor
- *a Datafile merge option
- *program regenerator for calcs and inclusions

Applications already in use include;

1 - Data entry storage and retrieval of -
  (a) personnel records
  (b) product information
  (c) rental records
  (d) customer data
2 - Stock control systems
3 - Letter/word processing
4 - Hotel reservations systems
5 - Fixed assets and depreciation schedules
6 - Project records and control systems
7 - Mailing and labelling systems

No other program generator extends the potential of the Apple like C.O.R.P. Complete C.O.R.P. system - £249. Master Disk (Database/Print program generator) £125. Demo Tutorial - £25. Utilities Disk 1 - £75. Utilities Disk 2 - £29. Diagnostics Disk - £24. Beginners Starter Pack (BSP) - only £125.

Make the most of your Apple - increase the harvest. Write for list of authorised dealers and further information.

Dynatech Microsoftware Ltd.,
Summerfield House, Vale,
Guernsey, Channel Islands.
Telephone: 0481 47377
Telex : 4191130
Apple and C.O.R.P. are registered trademarks

DYNATECH MICROSOFTWARE

DOUBLE SIDED DEMODISK/TUTORIAL available separately at £19.00.

Buy our £475* Daisy Wheel Printer for your computer and you have an Electronic Typewriter absolutely FREE

The T/Printer 35 is the lightest weight and lowest cost daisy wheel printer you can buy for your computer. So it will fit within your budget and you can carry it wherever you take your micro. Yet it is tough enough to give years of reliable service. Interchangeable typefaces (standard Olivetti 100 character daisy wheels), variable pitch, multiple copies—all the features you would expect of more expensive word processing printers.

Yet the T/Printer 35 costs only £475 with parallel interface. Operating speed under computer control is approximately 120 words per minute of letter perfect output. What typist can equal that?

Then when you're finished using it as a computer printer, the T/Printer 35 is ready to go right on working as an electronic typewriter.

That's the dual-purpose T/Printer 35—the versatile computer printer that fits your budget.

**The T/Printer 35 costs £475 with Centronics compatible parallel interface. With RS-232C interface it costs £535. Prices listed are exclusive of VAT.*

DATARITE

Datarite Terminals Ltd
Caldare House
144-146 High Road
Chadwell Heath, Essex RM6 6NT

Tel: 01-590 1155

NOT

just another Apple bit copier

Put Locksmith back on the shelf!

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

SNAPSHOT will copy any program that runs on a 48K Apple II (except for programs that require a Z-80 card or that repeatedly access their own disc while running! **For example, SNAPSHOT will copy every 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 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 work with one program whilst you use another program. For example, you could interrupt word processing a letter to look up an address on a database, then resume processing the letter where you left off.

- Repeated interrupt and restart
- Full monitor capabilities to examine, modify, trace, single-step, or disassemble an interrupted program
- Copies from DOS 3.2 to DOS 3.3
- Faster and easier to use than any bit copier
- Lets you suspend work with one program while you use another

PRICE £95.00 (+ VAT)
from Dark Star Systems
Dealer Discounts on Quantity Orders Only

Dark Star Systems

54 Robin Hood Way, Greenford, Middx. UB6 7QN.
Tel: 01-900 0104

* Requires one disc drive and Apple, Microsoft or Ramex brand 16K RAM-language card. For other brands, specify when ordering.

IF YOU'VE GOT AN APPLE YOU NEED OUR CAT!

48 pages packed full of everything you need for your Apple, all with full details and descriptions, and all at very attractive prices.

Our range covers everything from floppies to Winchesters, from memory boards to keyboards, from business software to games.

And not just hardware and software, but consumables too. Like mailing labels from £1,95/000 (and that's for a quantity of just one box!). And pre printed stationery including typesetting and delivery from £19.95/000 for 5,000 11" x 9.5" sheets!

Every item described in detail, with almost 50,000 words telling you all about the things you need for your Apple.

And it doesn't stop there. The Monitors section includes other fantastic prices like the Prince 12" green screen for just £99.95 including carriage, or in the Daisywheel Printers section there is the Qume Sprint 9/45 at £1,485.00!

And there's a very special offer in the Disk Drives section – how about an Apple compatible 5¼" floppy drive for just £199.50!

But now the bad news. There are many who will want our catalogue just for reference, so it will cost you £1.00 including VAT. The good news is that we will refund your £1.00 on your first order.

So drop us a line (and a pound) right now, or give us a ring with your Access/Barclaycard number, and we'll send our cat by return of post.

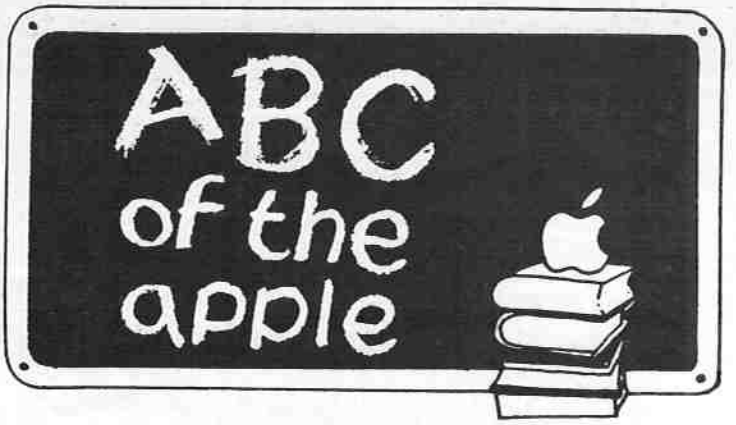
Better still why not drop in and see us – we're open 6 days a week 9.00-6.00, and our new retail showroom is full of Apple II and Apple III equipment.

All our prices (except plain stationery) are postage and packing free. Add VAT at the current rate.

We are Apple Level 1 Dealers and TABS Accredited Dealers.

T.V.S

THAMES VALLEY SYSTEMS
GREYS HOUSE,
7 GREYFRIARS ROAD,
READING, BERKS.
RG1 1NU.
Tel: 0734-581829 (2 lines)



Interface. A device for linking one finite component with another, such as a printer interface to link a printer to an Apple.

Interactive. An operation which produces an immediate result.

Hi-res. A shortened term for high-resolution graphics.

Hard copy. A dumping of data or a program held in the Apple onto a printer.

Interpreter. A program, such as Basic, which needs to be translated by the computer into machine code each time it is run.

Integer Basic. A form of Basic (the earliest Apple version) which stores its numbers in integer format (no decimals). Useful even now for higher accuracy and speed in long calculations.

I/O Port. Interface cards are connected to the Apple by placing them in one of the eight long slots at the back of the Apple. These are the Input/Output Ports.

K. Kilo – 1064 – a convenient notation for describing volume. 64k represents 64000 bytes.

Microprocessor. The Basic 'chip' which controls the memory, data transfer and other functions of the microcomputer. The Apple uses a 6502 'processor'.

Mainframe. A very large computer, capable of handling many jobs at any one time and many terminals. They cost a lot of money.

Machine Code. A language which is directly understandable by the Apple computer. High level languages have to be converted to machine code, either by compiling or interpreting, before they can be used.

Mother Board. The large printed circuit board (PCB) in the Apple, which holds all of the chips, the processor and the input/output ports.

Macros. A series of instructions which can be linked together to be operated by one or two key strokes, or instructions.

Paddles. External devices which when connected to the games socket in the Apple can be used to provide variable input of data values for games and graphics routines.

Pascal. A high level language, much in vogue at the moment, which needs compiling to run. Pascal is a structured language which, once compiled, runs faster than Applesoft Basic.

Program. A series of instructions connected in a logical format to enable the Apple to complete a task.

RAM. Random Access Memory. A 48k Apple has 24 2k RAM chips installed on the mother board. Bytes can be accessed within RAM by direct addressing methods (an index points directly to the byte required) very quickly.

ROM. Read Only Memory. A number of standard and custom designed programs can be stored on a ROM, where they are only available for reading data. Programs can only be 'burned' into the ROM chip with specialised 'burners'.

Sequential Access. Accessing memory in a linear as opposed to a random fashion. Cassettes are restricted to very slow sequential access. indexed Sequential Access is, however, a very efficient merging of both methods, using pointers to link records once accessed.

Software. Generic term for programs and digitised information, which is used to command the hardware.

Utilities. Programs which have been developed to make life easier for those writing software. These include editors, compilers, character generators and so on. Some can be incorporated into programs to improve their running.

Visual Display Unit. Any screen which is used to display the current operating status of a microcomputer.

Z80 Card. A very popular alternative microprocessor to the Apple's 6502, which uses the CP/M operating system. The Z80 processor mounted on an interface card enables the Apple to run CP/M and CP/M based programs.

APPLE BOOKS & MAGAZINES

NIBBLE EXPRESS Volume 1 £12.50
The annual publication which is a collection of all the best articles and programs that appeared in the previous year's volume. The 1981 edition includes the items from Volume 1, 1980.

NIBBLE EXPRESS Volume 2 £12.50
The 1982 edition includes the major articles and programs from Volume 2, 1981.

Nibble Magazine Volume 3 Number 2 Single Issue £2.50

What's Where in the Apple £9.50
"An Atlas to the Apple Computer." Guides the user to over 2,000 memory locations of PEEK'S, POKE'S and CALL'S . . . etc.

MICRO on the Apple Volume 1 (Includes diskette) £14.95
From the publishers of the magazine MICRO the first in a series of books containing applications for the Apple.

MICRO on the Apple Volume 2 (Includes diskette) £14.95
The second in the series, produced for the intermediate to advanced level user. Provides reference material, advanced machine language routines, programming techniques, graphics applications and entertainments.

MICRO on the Apple Volume 3 (Includes diskette) £14.95
Another volume of useful information with 44 programs on disk.

Beneath Apple DOS £11.95
A must for all Apple users. A true companion and continuation of the Apple DOS manual.

Bag of Tricks (Includes diskette) £24.95
A collection of Utility programs. TRAX – dumps & examines a raw track. INIT – reformat one or more tracks. ZAP – a sector editor like no other. FIXCAT – automates the process of repairing a damaged diskette catalog.

Using 6502 ASSEMBLY LANGUAGE by Randy Hyde £11.95
The only thing frightening about assembly language is the engineering type name.

Assembly Lines by Roger Wagner £12.95
A companion book for the new Macro-assembler "Merlin" and the debugger "Munch-a-bug".

Barclaycard/Access Number ..... Expiry Date .....

Please make cheques payable to SBD Software

Send to:–
SBD Software, 15 Jocelyn Road,
Freepost, Richmond, Surrey TW9 1BR
(No postage stamp required)
Telephone: 01-940 5194

All prices include shipping

TECHNICAL SUPPORT/SALES STAFF

MICROCOMPUTER/PERIPHERALS/PRINTER DISTRIBUTION & RETAIL

Pete & Pam Computers is a young, enterprising company with a reputation for high standards in the retail and distribution of a wide range of microcomputer related hardware, software, printers and consumables.

We are recruiting individuals to augment the country's best Sales/Technical support team.

Applicants should be able to offer knowledge and ability in any, or a combination of the company's activities.

We offer the opportunity to work in a hectic yet good humoured atmosphere in which you will be expected to share responsibility for the health and growth of the company.

Opportunities exist in both our Lancashire and London offices. Salary and conditions of service are subject to negotiation.

In the first instance contact Peter or Pam Fisher (Lancashire – call 0706 227011) or Chris Gillard (London – 01-769 1022) for further information and an application form.

Pete & Pam Computers

Head Office:
WAINGATE LODGE, WAINGATE CLOSE,
ROSSENDALE, LANCS. BB4 7SQ
Tel: Rossendale (0706) 227011
Telex: 635740 PETPAM G

London Office:
103-5 BLEGBOROUGH ROAD,
LONDON, SW16 6DL
Tel: 01-769 1022/3/4 & 01-677 2052
Telex: 923070 PPCOMP G

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 – CEMAS LTD on 0480 65886

Compac Series LCMP

– The Apple II Visicalc Aid

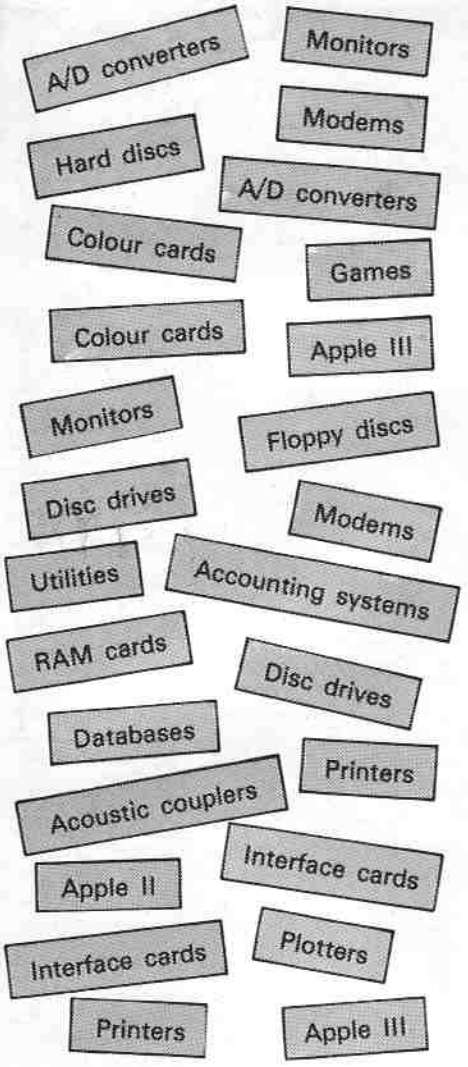
- ★ Upper and lower case.
- ★ Multiple printouts.
- ★ Format with variable column widths.
- ★ See and alter full length Visicalc formulae.
- ★ Alter lines, headings etc.
- ★ Printout or save to disk any of the above.
- ★ Fully compatable with the Videx Videoterm 80 column card.

What more could you want?

Retail Price £29.95 + VAT = £34.44
(Payment with order please).

Compac

Back Lane, Mickleton, Chipping Campden, Gloucestershire GL55 6SJ
Tel: Mickleton (038677) 464



Introducing...

apple classifieds

All right, we give in!

For months readers have been asking us for space in Windfall that can be used as a glorified Apple Swapshop – where you can sell Apple accessories you no longer need, or buy secondhand items you might not be able to otherwise afford.

Now, with the introduction of Apple Classifieds, you've got your wish!

There's no restriction on what you can include in your ad. If you want to sell a complete Apple system with all the trimmings it's all right by us.

But we expect it will be mainly used by readers who want to off-load Apple-related products that they have replaced by something more advanced – interface cards, printers, disc drives – or programs that have ceased to intrigue them, or books that can teach them no more.

However we do draw the line at ads from commercial firms. This page is for private readers only.

So now it's all yours. Let's see those ads flooding in and make this the busiest page in Windfall!

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.
- Please print your ad very clearly, one word to a box.

					10 words £2.00
					15 words £2.50
					20 words £3.00
					25 words £3.50
					30 words £6.00

Cheque enclosed for £_____

Name_____ Address _____

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

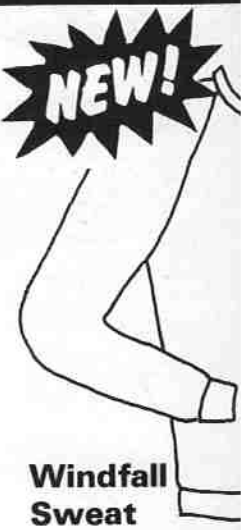
Catch up on the articles you missed by sending for earlier issues. And when your collection is complete, keep it in one of our attractive binders. You can order by mailing the coupon on the right – or by phoning 061-456 8353 and quoting your credit card number.

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.

October 1981
Micro Planner review – Games review (Computer Bismark, Battle of Waterlook, 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 Apshai, 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 synthesisers in schools – Historical review of computer literacy – Apple user profile: clothing manufacturing. PLUS three pages of Compucopia and six Appletips.

December 1981
Regain Step/Trace in Autostart Apples – Games listings (Apple Casino, Avoid, Calendar) – Games review (German Whist, Wizardry, Galactic Attack, Pool 1.5.) – Sinta Shape Manager review – Machine code techniques, Part IV (sorting arrays) – A/D converter review – Colour systems – Financial Controller review – Wordstar review – Crash course in Basic, Part IV – Debugging the Fortran Compiler – Care of discs – Electronic atlas – Pascal explored. PLUS four pages of Compucopia and seven Appletips.



Windfall Sweat Shirts ONLY **£6.29**

January 1982
Apple scoop on Tomorrow's World – 1982: The Year of the Apple? – Games review (Wizardry) – Simultaneous equations without tears – Boosting machine code technique – Program Writer/Reporter review – Crash course in Basic, Part V – Machine code techniques, Part V (flagged bubble sorts) – Apple graphics, Part I (Apple's memory map) – Orbit accounting system review – Cost effective terminal computer – Moving hi-res graphics. PLUS four pages of Compucopia and seven Appletips.

February 1982
Games review (Olympic Decathlon, Dragons Eye) – CP/M: passport to exciting new world – Pascal file conversion program – Machine code techniques, Part VI (EVALuate a new function) – Crash course in Basic, Part VI – Elements of the Apple, Part I – Apple Graphics, Part II (high resolution graph drawing) – Making programs more user friendly – Getting round the memory map muddle – Apple user profile: Sea Fish Authority. PLUS three pages of Compucopia and seven Appletips.

March 1982
Games review (Crush, Crumble and Chomp) – 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 international standard – Ga review – Flight Simulator - res Planet Plotting – M speed review – Mathem review – Update on Pri (special 16-page printer tion) – The Stationery Re tion – Understanding M computers (Part IV) – Sin tions Enhance Classroom V – Computers in Business Ed tion Studies – Speedy Wa Handle Histograms. PLUS pages of Compucopia and 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 – Ormbeta database reviewed – Crossword Magic reviewed – Make your own user port, Part I – Earth Defence game and listing – Asynchronous data transfer, Part I – School application of Cesil – Computers as an aid to concentration – PLUS four pages of Compucopia and three Appletips.

August 1982
Games review (Bandits, Suicide, Swashbuckler, Fly Wars) – Instruction file editor – Teach yourself Morse, Part I – VisiCalc section – Pastext II review – Asynchronous data transfer, Part II – 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 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.

Get tied up in your Apple!

Luxury wove ties, with Apple logo ir six brilliant colours exclusively created for Windfall by Macclesfield craftsmen

£4.99

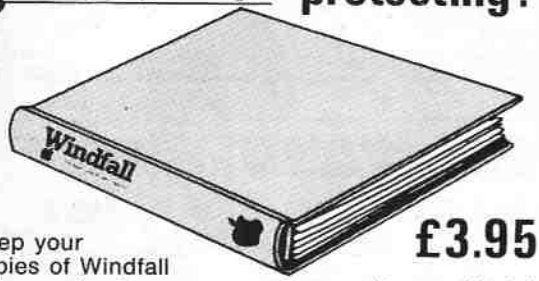
Logo T-Shirts ONLY **£3.29**

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.

Windfall needs protecting!

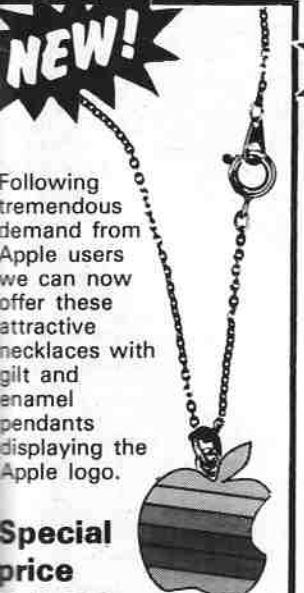
The Apple computer users' magazine



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

NEW!



Following tremendous demand from Apple users we can now offer these attractive necklaces with gilt and enamel pendants displaying the Apple logo.

Special price £4.99 While stocks last

NEW!

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		.....
EIRE £13		.....
EUROPE £18		.....
USA – Surface mail £15		.....
USA – Air mail £25		.....
Rest of world – Surface mail £15		.....
Rest of world – Air mail £30		.....

BACK ISSUES

☐ UK £1.25
Rest of world
☐ – Surface £1.50
☐ – Air mail £2.50

1981		1982	
JULY	☐	JAN	☐
AUG	☐	FEB	☐
SEPT	☐	MAR	☐
OCT	☐	APRIL	☐
NOV	☐	MAY	☐
DEC	☐	JUNE	☐
		JULY	☐
		AUG	☐
		SEPT	☐

TOTAL .....

T-SHIRTS **£3.29** (UK & Overseas)

Small – 34"-36"	☐
Medium – 36"-38"	☐
Large – 38"-40"	☐
Extra Large – 40"-42"	☐

TOTAL .....

SWEAT SHIRTS **£6.29** (UK & Overseas)

	Windfall		Logo
	Red	Blue	White
Age 6-8 28"	N/A	N/A	☐
Age 10-12 30"-32"	N/A	N/A	☐
Small 34"-36"	☐	☐	☐
Medium 36"-38"	☐	☐	☐
Large 38"-40"	☐	☐	☐
Extra Large 40"-42"	☐	☐	☐

TOTAL .....

NECKLACES **£4.99** (UK & Overseas) ☐

TOTAL .....

POSTERS **£1.50** (UK & Overseas) ☐

TOTAL .....

TIES **£4.99** (UK & Overseas)

Navy	☐
Brown	☐
Wine	☐

TOTAL .....

BINDERS
UK – £3.95
Overseas – £5.00 ☐

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)

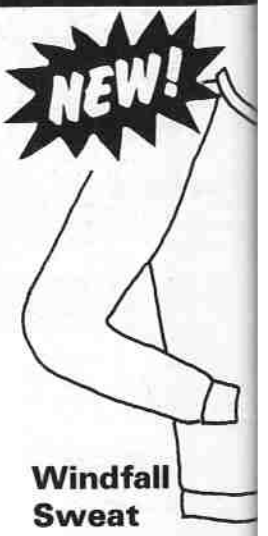
Or you can order by phone quoting credit card number and expiry date.

061-456 8383
9.30am - 5.00pm

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 8353 and quoting your credit card number.

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, Omninet) – Date validation routine – The Limits of My World (mathematical languages) – Textmaster WP review – Getting started with machine code – Running a preparatory school on an Apple – Software swop 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.



Windfall Sweat Shirts
ONLY
£6.29

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.

October 1981
Micro Planner review – Games review (Computer Bismark, Battle of Waterlook, 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 Apshai, 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 synthesisers in schools – Historical review of computer literacy – Apple user profile: clothing manufacturing. PLUS three pages of Compucopia and six Appletips.

December 1981
Regain Step/Trace in Autostart Apples – Games listings (Apple Casino, Avoid, Calendar) – Games review (German Whist, Wizardry, Galactic Attack, Pool 1.5,) – Sinta Shape Manager review – Machine code techniques, Part IV (sorting arrays) – A/D converter review – Colour systems – Financial Controller review – Wordstar review – Crash course in Basic, Part IV – Debugging the Fortran Compiler – Care of discs – Electronic atlas – Pascal explored. PLUS four pages of Compucopia and seven Appletips.

January 1982
Apple scoop on Tomorrow's World – 1982: The Year of the Apple? – Games review (Wizardry) – Simultaneous equations without tears – Boosting machine code technique – Program Writer/Reporter review – Crash course in Basic, Part V – Machine code techniques, Part V (flagged bubble sorts) – Apple graphics, Part I (Apple's memory map) – Orbit accounting system review – Cost effective terminal computer – Moving hi-res graphics. PLUS four pages of Compucopia and seven Appletips.

February 1982
Games review (Olympic Decathlon, Dragons Eye) – CP/M: passport to exciting new world – Pascal file conversion program – Machine code techniques, Part VI (EVALuate a new function) – Crash course in Basic, Part VI – Elements of the Apple, Part I – Apple Graphics, Part II (high resolution graph drawing) – Making programs more user friendly – Getting round the memory map muddle – Apple user profile: Sea Fish Authority. PLUS three pages of Compucopia and seven Appletips.

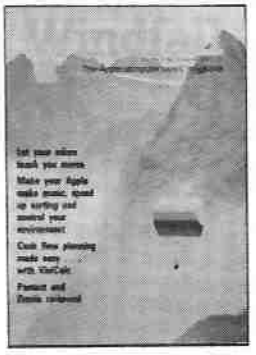
March 1982
Games review (Crush, Crumble and Chomp) – Apple Medical Forum – Data Factory review – Apple Graphics, Part III (displaying histograms) – Printing an annotated DOS disc directory – Crash course in Basic, Part 7 – Start training for the Apple Olympics – Elements of the Apple, Part II – Payroll 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 ne international standard – Gam review – Flight Simulator – H res Planet Plotting – Micr speed review – Mathemag review – Update on Printe (special 16-page printer se tion) – The Stationery Revol tion – Understanding Micr computers (Part IV) – Simul tions Enhance Classroom We – Computers in Business Educ tion Studies – Speedy Way Handle Histograms. PLUS fe pages of Compucopia and fo 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 – Ormbeta database reviewed – Crossword Magic reviewed – Make your own user port, Part I – Earth Defence game and listing – Asynchronous data transfer, Part I – School application of Cesil – Computers as an aid to concentration – PLUS four pages of Compucopia and three Appletips.



August 1982
Games review (Bandits, Suicide, Swashbuckler, Fly Wars) – Instruction file editor – Teach yourself Morse, Part I – VisiCalc section – Pastext II review – Asynchronous data transfer, Part II – 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 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.

Get tied up in your Apple!

Luxury woven ties, with Apple logo in six brilliant colours exclusively created for Windfall by Macclesfield craftsmen

£4.99

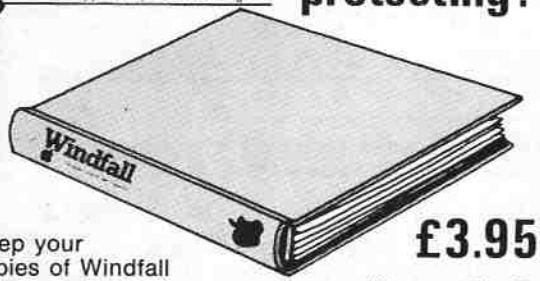
Logo T-Shirts ONLY **£3.29**

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.

Windfall needs protecting!

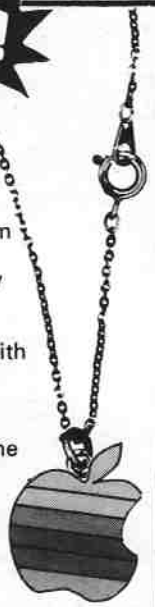
The Apple computer users' magazine



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

NEW!



Following tremendous demand from Apple users we can now offer these attractive necklaces with gilt and enamel pendants displaying the Apple logo.

Special price £4.99 While stocks last

NEW!

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		.....
EIRE £13		.....
EUROPE £18		.....
USA – Surface mail £15		.....
USA – Air mail £25		.....
Rest of world – Surface mail £15		.....
Rest of world – Air mail £30		.....

BACK ISSUES

☐ UK £1.25
Rest of world
☐ – Surface £1.50
☐ – Air mail £2.50

1981		1982	
JULY		JAN	
AUG		FEB	
SEPT		MAR	
OCT		APRIL	
NOV		MAY	
DEC		JUNE	
		JULY	
		AUG	
		SEPT	

TOTAL .....

T-SHIRTS **£3.29** (UK & Overseas)

Small – 34"-36"	
Medium – 36"-38"	
Large – 38"-40"	
Extra Large – 40"-42"	

TOTAL .....

SWEAT SHIRTS **£6.29** (UK & Overseas)

	Windfall		Logo
	Red	Blue	White
Age 6-8 28"	N/A	N/A	
Age 10-12 30"-32"	N/A	N/A	
Small 34"-36"			
Medium 36"-38"			
Large 38"-40"			
Extra Large 40"-42"			

TOTAL .....

NECKLACES **£4.99** (UK & Overseas) ☐

TOTAL .....

POSTERS **£1.50** (UK & Overseas) ☐

TOTAL .....

TIES **£4.99** (UK & Overseas)

Navy	
Brown	
Wine	

TOTAL .....

BINDERS
UK – £3.95
Overseas – £5.00 ☐

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
9.30am - 5.00pm

New for 48K Apple II ! Forget HPLOT!

IMAGE 1

A fast and flexible package which constructs images on a 128 x 128 grid in 15 colours

- No constraints on colours of adjacent pixels. Uses HIRES page 1.
- Convert a 16K binary array into a multicoloured map in 5 seconds.
- Create dynamic displays using point, line and area subroutines.
- Fully commented BASIC demonstration programme and comprehensive description of machine code subroutines included.

£19.95 inc. VAT, p&p
(specify DOS 3.2 or 3.3)

From:
Linton Video Services,
Linton-in-Craven, Nr. Skipton, North Yorkshire.

MICROMODELLER KEYPAD

For volume input to your Micromodeller models you need the special **Apple II** Micromodeller numeric keypad incorporating all the usual Visicalc keys plus a comma.

And NO soldering required!!

ONLY £104 + £2 P&P + VAT.

QIS COMPUTER SERVICES LTD.

Office No.1., 66-68 Oundle Rd., Peterborough, PE2 9PA
Telephone: (0733) 47191

apple authorised dealer & Level 1 service centre

SLIM DISC DRIVES

APPLE COMPATIBLE **£225**

JOYSTICK **£22.50**

GAME EXTENSION **£6.50**

Prices include packing and postage

TAMARISK DESIGN SERVICES
061-969 8729

µSPEED

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
169 High Street, Cheveley, Newmarket, Suffolk CB8 9DG.
Telephone: 0638 730625

Advertisers in this issue

Avitek	30	Microcomputer Products	43
APS Systems	56	Mass Micros	52
Anadex	74, 75	Jean Marsh	58
Computech	8	Microsave	76
Crofton	32	Ozwise Computers	52
Catel	48	Owl	66
CDS	49	Ormskirk	66
Croeso	54	Occam	77
Cumana	63	Personal Computers	4
C/WP	71, 73	Pact	5
Call Apple	77	Pet & Pam	10, 11
Country Computers	O/B/C	Padmede	30
Database	84	Pynwon	32
Data Supplies	49	Pedago	58
Digisolve	59	Pace	68, 69
Dynatech	78	Q.T.H. Electronics	28
Datarite	78	Quodport	48
Dark Star Systems	79	Q.I.S. Computer Services	84
Eicon	I/F/C	RAM	62
E.D.C. Photonic	40	Spider Software	6, 7, 55
Electra	48	Sub Logic	13
E.S.P.	48	SBD	27
East Central	56	Symbiotic	28
Elite Software	58	Scotbyte	52
Fletcher Dennys Systems	15	Stripeland	54
G.B. Computer	29	Startech	85
Gt. Northern	34	3M (UK)	14, 15
Holdene	51	Thames Valley	79
Island Computer	58	Tamarisk	84
Lama	52	U. Microcomputers	12, 30
Leicestershire Computer Centre	40	Vlasak	16
Linton Video	84	Village Computer	34
Microsystems Centre	9	Vergecourt	I/B/C
Mathematical Software	22	Val Warden Consultants	40
		Woodland Software	84

WOODLAND SOFTWARE

SPECIALISTS IN MICRO GAMES

Wizardry	29.90	Cannonball Blitz	21.85
Knight of Diamonds	23.00	Cranston Manor	19.55
Galactic Attack	17.25	Crossfire	19.55
Apple Panic	17.25	Jawbreaker	19.55
Choplifter	23.00	Marauder	21.85
Dueling Digits	20.70	Missile Defense	19.55
Labyrinth	20.70	Mystery House	13.80
Red Alert	20.70	Sabotage	13.80
Track Attack	20.70	Softporn Adventure	19.55
Air Traffic Controller	19.55	Threshold	21.85
Alkemstone	26.45	Time Zone	57.50
Dragon Fire	26.45	Ultima II	37.95
Snack Attack	18.40	Ulysses	19.55
Swashbuckler	23.00	Wizard & Princess	19.55
Thief	19.55	Crown of Arthain	23.00
Firebird	20.70	Bandits	20.70
Pool 1-5	21.85	Beer Run	18.40
Trick Shot	27.60	Kabul Spy	21.85
Castle Wolfenstine	20.70	Minotaur	21.85
Three Mile Island	27.60	Snake Byte	18.40
Battle of Shiloh	26.45	Napoleons Campaigns	33.35
Pursuit of the Graft Spee	33.35	Southern Command	32.20
Tigers in the Snow	26.45	The Road to Gettysburg	33.35

All prices quoted include VAT/P&P

All our titles are disc based – a full list of what we have available is free on request. Personal callers by appointment only – 24 hour service 7 days a week!

Trade inquiries invited.

Woodland Software, 103 Oxford Gardens,
London W10 6NF.
Telephone: 01-960 4877

STARTECH

Absolutly the lowest prices!

apple computer apple computer apple computer apple computer apple c

ADVENTURE

Adventure (Microsoft); Microsoft	13.95
Adventure In Time; Phoenix Software	17.95
Akalabeth; California Pacific	15.95
Ali Baba + 40 Thieves; Quality Software	17.95
Alkemstone; Dakin 5	18.95
Beneath Apple Manor; Quality Software	10.95
Castle Wolfenstein; Muse	13.95
Castles of Darkness; The Logical Choice	17.95
Cosmo Mission; Astar International	13.95
Cranston Manor; On Line	15.95
Creature Venture; Highlands Comp Services	12.95
Crown Of Arthain; Micro Lab	16.95
Crush Crumble + Chomp; Automated Simulations	13.95
Curse Of Ra; Automated Simulations	14.95
Cyborg; Sentient Software	15.95
Dark Forest; Sirius Software	15.95
Datestones of Ryn; Automated Simulations	10.95
Deep Sea Treasure; Avant Garde	7.95
Doom Cavern + Sorcerer; Synergistic Software	10.95
Dragon Fire; Dakin 5	21.95
Dragons Eye; Automated Simulations	12.95
Dungeon Campaign; Synergistic Software	9.95
Empire I World Builders; Edu-Ware	16.95
Empire II Stella Sharks; Edu-Ware	17.95
Empire III Armageddon; Edu-Ware	17.95
Epoch; Sirius Software	15.95
Escape From Arcturus; Synergistic Software	18.95
Galactic Empire; Broderbund	11.95
Galactic Revolution; Broderbund	11.95
Galactic Trader; Broderbund	11.95
Hellfire Warrior; Automated Simulations	18.95
Invasion Orion; Automated Simulations	14.95
Jabbertalky; Automated Simulations	14.95
Journey; Softape	10.95
Keys Of Acheron; Automated Simulations	10.95
Labyrinth; Broderbund	13.95
Mad Venture; Micro Lab	12.95
Missing Ring; Datamost	15.95
Mission Asteroids; On Line	10.95
Morlocks Tower; Automated Simulations	10.95
Mummy's Curse; Highlands Comp Services	14.95
Mystery House; On Line	11.95
Odyssey; Synergistic Software	14.95
Oldorf's Revenge; Highlands Comp Services	9.95
Palace In Thunderland; Micro Lab	12.95
Race For Midnight; Avant Garde	15.95
Rescue At Rigel; Automated Simulations	14.95
Rings Of Saturn; Dakin 5	18.95
Soft Porn Adventure; On Line	13.95
Sorcerer Of Siva; Automated Simulations	14.95
Space Adventure; Siera Software	14.95
Survival Adventure; U.S.A.	13.95
Tarturian; Highlands Comp Services	12.95
Tawalas Last Redoubt; Broderbund	17.95
Temple Of Asphai; Automated Simulations	18.95
Terrorist; Edu-Ware	14.95
Time Zone; On Line	40.95
Ultima; California Pacific	17.95
Ulysses And Golden Fleece; On Line	15.95
Upper Reaches of Asphai; Automated Simulations	20.96
Wilderness + Dungeon; Synergistic Software	14.95
Wilderness Campaign; Synergistic Software	10.95
Wizzard + Princess; On Line	14.95
Zork 1; Infocom	19.95
Zork 2; Infocom	19.95

BOARD GAME

Kabul Spy; Sirius Software	17.95
Bishops Square; Datasoft	15.95
Casino; Datamost	21.95
Crossword Magic; L & S Computer Ware	26.95
Gomoku; Softape	10.95
Michrochess 2.0; Personal Software	12.95
Sargon II (Chess); Hayden	19.95

BOOK

Beneath Apple Dogs; Quality Software	9.95

BUSINESS

Address Book (Mail List); Muse	23.95
Apple Bullitin Board; Software Sorcery	43.95
Correspondant; S. W. Data Systems	32.95
Data Dex; Information Unlimited	140.95
Data Disk (Data Factory); Micro Lab	17.95
Data Factory; Micro Lab	72.95
Data Factory 5.0; Micro Lab	139.95
Data Graph; Hayden	25.95
Data Manager DB + Mail List; Hayden	32.95
Data Plot; Muse	27.95
DB Master; Stoneware	104.95
DB Utility Pack II; Stoneware	47.95
DB Utility Pack No. 1; Stoneware	47.95
Desk Top Plan II; Personal Software	131.95
Easymailer (Mail List) 40; Information Unlimited	33.95
Easymailer Pro. 80 Col.; Information Unlimited	87.95
Easymover; Information Unlimited	27.95
Easywriter (WP) 40 Col.; Information Unlimited	47.95
Easywriter Pro. 80 Col.; Information Unlimited	115.95
Electronic Price Sheet; Stoneware	41.95
Home Account; Continental Software	36.95
Home Money Minder; Continental Software	21.95
Investment Decisions; Mesa Research	54.95
Invoice Factory; Micro Lab	108.95
Letter Perfect; LJK Enterprises	73.95
Magic Window (WP); Artsci	46.95
Magic Words; Artsci	32.95
Mail Room; Continental Software	17.95
Mailing List; Software Sorcery	32.95
Mailing List/Database Synergistic Software	25.95
Micro Information System; Muse	16.95
Micro Memo; Stoneware	19.95
Modifyable Database II; Synergistic Software	43.95
Personal Filing Sys (PFS); Software Publishing Corp	40.95
Personal Report Sys. (PRS); Software Publishing Corp	40.95
Store Manager; Heyes Micro Products	130.95
Super Scribe II; On Line	62.95
Super Text II; Muse	68.95
Visiblend; Micro Lab	25.95
Visicalc; Visicorp	105.00
Visidex; Visicorp	127.95
Visifactory; Micro Lab	37.95
Visifile; Visicorp	120.95
Visiplot; Visicorp	98.95
Visischedule; Visicorp	149.95
Visiterm; Visicorp	53.95
Visitrend/Visiplot; Visicorp	148.95

GRAPHICS UTILITY

A2302 Enhancement; Sub Logic	13.95
A26E1 Graphics; Sub Logic	32.95
Apple World; U.S.A.	27.95
Bill Budge 3D Graphics; California Pacific	17.95
Combo Enhanced Graphics; Computer Station	30.95
Game Animation Package; Synergistic Software	25.95
Hi-Res Secrets; Avant Garde	60.95
Higher Graphics II; Synergistic Software	17.95
Higher Text II; Synergistic Software	18.95
Histograph; Hayden	17.95
Painter Power; Micro Lab	20.95

HI RES ACTION

Alien Rain; Broderbund	13.95
Amoeba Man; Turnkey Software	18.95
Anti Ballistic Missile; Muse	12.95
Apple Panic; Broderbund	14.95
Apploids; California Pacific	14.95
Arcade Machine; Broderbund	19.95
Asteroid Field; Cavalier Computers	12.95
Astroapple; Quality Software	10.95
B. Budge Space Album; California Pacific	18.95
Bakers Trilogy; Softape	17.95
Bandits; Sirius Software	17.95
Beer Run; Sirius Software	14.95
Bloody Murder; Stoneware	10.95
Borg; Sirius Software	12.95
Both Barrels; Sirius Software	13.95
Bug Attack; Cavalier Computers	13.95
Chop Lifter; Broderbund	13.95
Cieling Zero; Turnkey Software	16.95
Computer Football; Sirius Software	14.95
Cops + Robbers; Sirius Software	14.95
County Fair; Datamost	12.95
Cross Country Rally; Continental Software	16.95
Cross Fire; On Line	13.95
Cyber Strike; Sirius Software	19.95
Cyclod; Sirius Software	15.95
Demon Derby; Broderbund	13.95
Dog Fight II; Micro Lab	9.95
Dung Beetle; Datasoft	15.95
Falcons; Piccadilly	13.95
Fender Bender; California Pacific	11.95
Fire Bird; Gebelli	12.95
Flight Simulator; Sub Logic	18.95
Fly Wars; Sirius Software	17.95
Frogger; On Line	17.95
Galaxy Wars; Broderbund	13.95
Gamma Goblins; Sirius Software	12.95
Genetic Drift; Broderbund	13.95
Gobblers; On Line	13.95
Gorgon; Sirius Software	17.95
Hadron; Sirius Software	15.95
Hi-Res Golf; Avant Garde	17.95
Hyperspace Wars; Continental Software	17.95
International Grand Prix; Riverbank Software	17.95
Jaw Breaker; On Line	13.95
Jelly Fish; Sirius Software	17.95
Lemmings; Sirius Software	15.95
Meteroids In Space; Quality Software	10.95
Missile Defence; On Line	13.95
Mouskattack; On Line	16.95
Orbitron; Sirius Software	12.95
Outpost; Sirius Software	12.95
Phantoms Five; Sirius Software	12.95
Pinball; Sub Logic	17.95
Pool 1.5; Innovative Design S. Ware	17.95
Raster Blaster; Budge Co.	14.95
Retro Ball; Sierra Software	17.95
Roach Hotel; Micro Lab	18.95
Sabotage; On Line	13.95
Shuffel Board; Innovative Design S. Ware	13.95
Snake Byte; Sirius Software	12.95
Sneakers; Sirius Software	12.95
Snoggle; Broderbund	17.95
Space Eggs; Sirius Software	12.95
Space Quarks; Broderbund	13.95
Space Warrior; Broderbund	12.95
Star Thief; Cavalier Computers	13.95
Suicide; Piccadilly	13.95
Swashbuckler; Datamost	19.95
Thief; Datamost	12.95
Three Mile Island; Muse	19.95
Threshold; On Line	18.95
Track Attack; Broderbund	13.95
Trick Shot (Pool); Innovative Design S. Ware	19.95
Twerps; Sirius Software	15.95
Zero Gravity Pinball; Avant Garde	15.95
Red Alert; Broderbund	13.95
Hi-Res Soccer; On Line	13.95

LANGUAGE

Asm Lang. Development Sys; Hayden	24.95
Expediter II Compiler; On Line	39.95
Fourth II (Language); Softape	31.95
Hayden Applesoft Compiler; Hayden	87.95
Lisa 2.5 6502 Assembler; On Line	45.95
Tasc Applesoft Compiler; Microsoft	80.95

STRATEGY GAME

Air Traffic Controller; Avant Garde	7.95
Battleship Commander; Quality Software	10.95
Cartels + Cuthroats; Strategic Simulations	17.95
Network; Edu-Ware	10.95
Operation Apocalypse; Strategic Simulations	27.95
Robot Wars; Muse	18.95
Shattered Allience; Strategic Simulations	27.95
Southern Command; Strategic Simulations	17.95
Tanktigs; Avalon Hill	14.95
Tigers In The Snow; Strategic Simulations	17.95
Torpedo Fire; Strategic Simulations	27.95
President Elect; Strategic Simulations	17.95

UTILITY

Apple Doc (Utility); S. W. Data Systems	25.95
Applesoft Prog Optimizers; Sensible Software	11.95
Appsoft Structured Basic; Sensible Software	12.95
Back It Up; Sensible Software	30.95
Bag Of Tricks; Quality Software	20.95
DDU + Single Disk Copy; Software Sorcery	28.95
Deadly Secrets; Broderbund	17.95
Disk Organiser II; Sensible Software	13.95
Disk Recover; Sensible Software	13.95
Disk Utilities; Softape	15.95
Dos Boss; Beagle Bros	13.95
Dos Plus; Sensible Software	12.95
Dossource 3.3 Dos Listing; Lazer	18.95
Linguist; Synergistic Software	18.95
Memory Management II; On Line	23.95
Multidisk Catalog III; Sensible Software	12.95
P.I.T.S.; Software Sorcery	30.95
P.U.M.P. Software Sorcery	19.95
Program Line Editor; Synergistic Software	18.95
Programmers Utility; S.W. Data Systems	9.95
Quick Loader; Sensible Software	12.95
Super Disk Copy III; Sensible Software	13.95
Text Editor; On Line	43.95
Utility City; Beagle Bros	15.95

HARDWARE

Excel-9 (6809 With "Flex"); ESD Laboratory Co. Ltd.	164.95
Eprom Blaster 2708/16; Apparat Inc.	95.95
Propotyping Board; S.S.M.	16.95
23 Key Keypad (Visicalc); Keyboard Company	101.95
A.B.T. 10 Key Keypad; A.B.T.	65.95
Microbuffer Epson (16K); Practical Peripherals	86.95
Microbuffer II (16K); Practical Peripherals	149.95
Microbuffer II (32K); Practical Peripherals	186.95
Ram Card (16K) Pascal CPM; Computer Stop	49.95
10 Meg Hard Disk System; Computer Stop	1644.95
Videx 80/24 Video Card; Videx	179.95
Omnivision 80/24 Video; Computer Stop	144.95
Videx Inverse Rom; Videx	14.95
Videx Switch Plate; Videx	12.95
Videx Graphics Eprom; Videx	14.95
U Term 80/24 Video Card; U Micros	151.95
Videx Soft Switch Card; Videx	18.95
Z80 Softcard; Microsoft	203.95
U Z80 (Z80 Card); U Micros	72.95

Z80 CPM (Z80 Softcard Required)

Calc Star; Micro Pro	73.95
Data Star; Micropro	102.95
DBase II Relational DBase; Ashton Tate	318.95
Mailman; Standard Micro	65.95
Mailmerge; Micropro	47.95
Select (WP); Select Information	176.95
Select + Superspell; Select Information	247.95
Spell Star; Micropro	69.95
Supercalc; Sorcim Corp	164.95
Wordstar; Micropro	137.95
DBase II Manual; Ashton Tate	33.95
Alds Z80, 8080 Assembler; Microsoft	57.95
C Basic; Compiler Systems	75.95
Fortran 80; Microsoft	90.95
Mac Macro Assembler; CCS	54.95
Basic Compiler (MBasic); Microsoft	172.95
Bstam Micro to Mainframe; Byrom	108.95
Bstam Micro To Micro; Byrom	108.95
Fabs B Tree File Access; Computer Control	108.95
Tex (Text) Formattter); Digital Research	43.95

Please send me .....

I enclose cheque/P.O. for .....

NAME .....

ADDRESS .....

Please add VAT at 15% to all orders.
Postage FREE in U.K.
Dealers Discount Available.
Access, Barclaycard orders Welcome on 051-256 8244

BARCLAYCARD

STARTECH
63 Lisburn Lane
Tuebrook, Liverpool, L13 8AF

The Ultimate Experience in Alien Invasion . . . .

MARAUDER

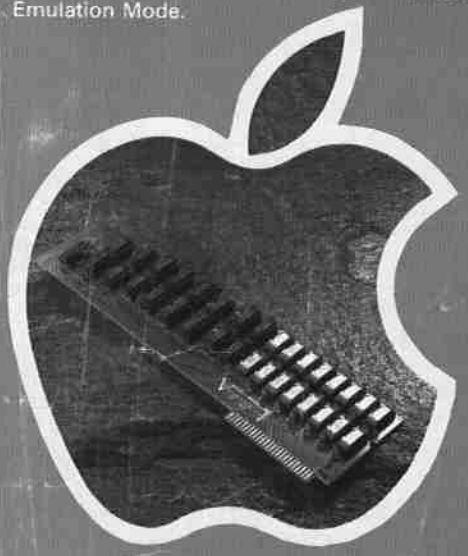
ON-LINE systems

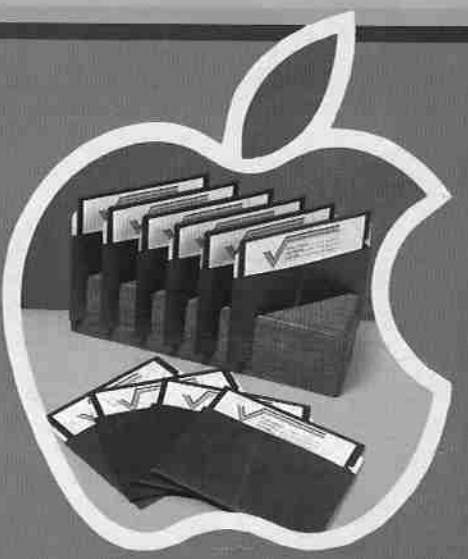
Available NOW for £19.95 from your local dealer or direct from SBD Software, 15 Jocelyn Road, Richmond TW9 2TJ. Tel: 01-948 0461

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.



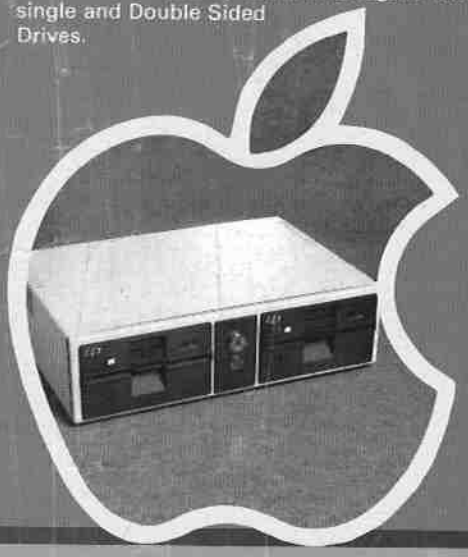


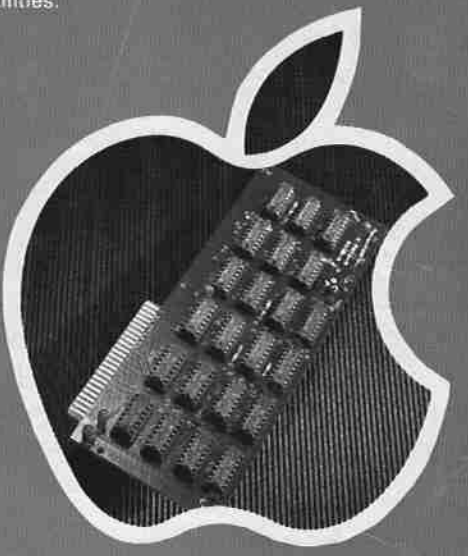
Software

- ★ Super Expander — using 128K Ram Board expands Visicalc to 136K usable memory
- ★ Expander — using 2 × 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.

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.





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.

Visicalc is the registered trade mark of Visicorp
Apple II is the registered trade mark of Apple Computers Inc.

VERGECOURT LTD

DDP RESEARCH & MARKETING

Reg Office: 17 Nobel Square,
Basildon, Essex SS13 1LP.
Telephone: 0268 728484.
Telex: 995323

Acclaim

...a truly business like alternative to the Apple II

FEATURES

- ☐ 6 megabyte Winchester
- ☐ 64k RAM memory
- ☐ Full cursor control
- ☐ Auto repeat
- ☐ 12 programmable function keys
- ☐ 80 or 40 columns switchable from keyboard
- ☐ High quality display
- ☐ Serial or parallel interface

OPTIONS

- ☐ 21 or 12 megabyte Winchester
- ☐ Dual floppy unit
- ☐ Tape streamer
- ☐ Any Apple peripherals
- ☐ ICL C01/C02 protocols available
- ☐ Any Apple II software

FOR YOUR LOCAL DISTRIBUTOR CONTACT

Country Computers Limited

Pipers Road, Park Farm Industrial Estate
Redditch, Worcs. B98 0HU Tel. 0527 29826

TELEX: 337497
ANSBCH: FISTEX.

Apple is a trademark of Apple Computer Inc.