$2

Washington Apple Pi

The Journal of Washington Apple Pi, Ltd.

Volume 5 December 1983 Number 12

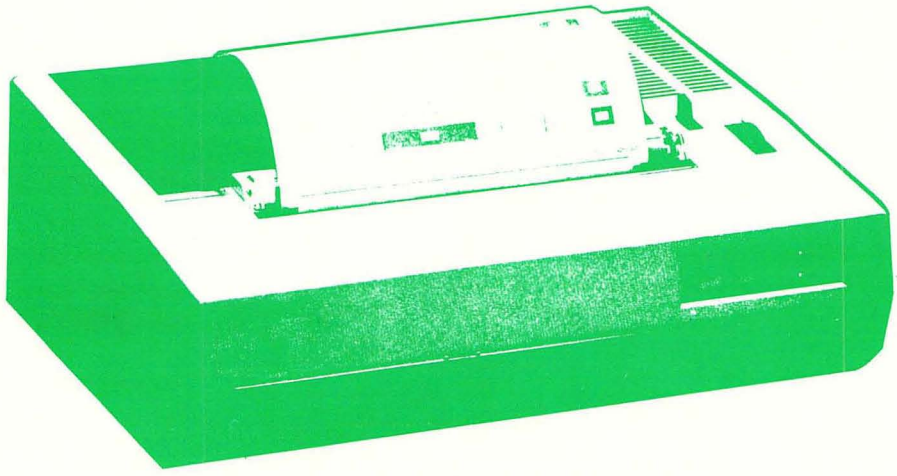
Highlights

THE DP-10, VOICE TECHNOLOGY, SERIAL CODE AND MINIMUM MOVEMENT KEYBOARDS FOR THE HANDICAPPED
HANDICAPPED BABIES ON-LINE

In This Issue

COLOR YOUR APPLE FOR X-MAS

INTRODUCING . . . professional-looking hard copy COLOR printouts with the touch of a button!



Owners of the Apple II, Apple II + , Apple IIe, and Apple III (in II emulation) can combine the exciting new **CANON 7-Color Ink Jet Printer,** with a **unique software-independent printer-interface,** to reproduce any screen display (graphics, text, pictures, charts, and more).

CANON COLOR PRINTER A-1210 FEATURES

- Seven color plain paper printing
- Advanced drop-on-demand ink-jet printing system
- Standard and enlarged characters
- High speed printing (40 characters per second)
- Low noise level
- Image printing and CRT hard copy functions
- Large capacity ink cassettes
- Compact, light design

PRINT-IT FEATURES

- Operates at the push of a button
- Fully software independent—will print any screen image in **any** program at **any** time, resuming program operation at original point of request
- Automatic selection of proper screen format, printing any screen (hi-resolution, low-resolution, text, mixed, color, black/white, 40 or 80 columns)
- Full function interface card—includes horizontal and vertical margin control, firmware for screen dump, and text control
- Easy to operate

FOR ONLY $995.00, you can bring the colors of the spectrum to your computer, with the CANON A-1210 color printer, intelligent parallel printer port card, and a 5' printer cable.

FOR YOUR OWN COLORFUL CHRISTMAS, CALL (301) 937-5030.

Canon Copiers

CAPITOL COPY PRODUCTS, INC. 12000 Old Baltimore Pike, Beltsville, Maryland

Canon COMPUTER SYSTEMS

Color Printer A-1210

APPLE II Outperforms IBM PC with 'Supermini' Virtual Memory Technology

If you need to get SERIOUS, POWERFUL, PROFESSIONAL results from your II+/e, for Business or Engineering applications, nothing comes close to MegaTASK PLUS! Modelled on and developed from minicomputer-based commercial timesharing software available to large corporations for thousands of dollars annually, MegaTASK PLUS is primarily designed for the APPLE II owner who demands quick, effective analytical solutions to business problems—and immediate RELIEF from the frustrations and limitations of using hundreds of dollars of mutually-incompatible 'canned' software packages, or WORSE, programming in Applesoft, assembly or Apple DOS!

MegaTASK PLUS is a combined, multi-product hardware-and-software package that provides an instant **Virtual Memory** expansion, an Applesoft-compatible **SuperBASIC**, and a series of **Business Management** packages that greatly enhance the power and value of the APPLE II in both **systems programming** and **business applications** areas. MegaTASK and MegaDOS employ multitasking, virtual memory optimization and virtual storage technology, which, until now, were limited only to mainframes and the 'super' minicomputers. The SMARTCHIP™, an Intel 8748 Single-Chip Plug-In Microcomputer, provides sufficient processing power to enable your APPLE II to outperform both the IBM PC and Apple's new MacIntosh computer. Yet, all you need to begin is an APPLE II series computer plus one diskette drive. And generally, no modification to your existing Applesoft programs, assemblies and DOS 3.3 files is necessary.

MegaTASK and MegaDOS accordingly generate an enormous enhancement to the power available to the APPLE II owner, specifically:

- Multitasking System processing techniques. (As many as 16 PROGRAMS or TASKS can execute at one time).
- The MegaDOS VS/OS (Virtual Memory Operating System) can place within reach of your system MEGABYTES of Virtual Memory. Largest program size: 8 Megabytes. Largest ISAM file: 451 Megabytes. Largest transparent core array: 75 million FP numbers.
- 100-400 new Mainframe Basic commands bring machine-language speeds to interpretive Basic. Powerful instructions comprise extensions to Applesoft that include many of the most useful commands found in FORTRAN, COBOL, PL/1, ADA, PASCAL and LOGO.
- Enormously simplified ease of programming—modular, insulated routines, localized variables, ability to pass variable names. Dependence on line numbers **totally removed.**
- Substantially increased speeds: program execution (3x-10x), file access (6x-10x), alpha data transfer rate (2x-6x), and numeric transfer (>20x).

On the applications side, the 'PLUS' portion of MegaTASK PLUS includes:

- Hardcopy and screen Business Graphics, Calc, Database Management and Word Processing Applications Packages—plus Custom Modifiability.
- Editing Systems & Format-Related Commands
- Communications/Corporate Data Capture programs
- Text Manipulators and better-than-TSO Program Editors
- Database Management Systems capable of maintaining and sorting Supermini-Size Datafiles. Maximum single transparent file: 5.5 million records (if 80-chrs ea). File access time independent of file size.
- Report Generators and Strategic Business Analysis programs—similar to those used by most of America's Fortune 500 Corporations.
- The only system capable of taking full, transparent advantage of one or more Corvus's, Profile's, Ramdisks, 5-Megabyte replaceable hard-disk cartridges and the coming Laser Disk units, bringing the APPLE II up to minicomputer performance.

The MegaTASK PLUS product package includes:

- Manuals for MegaTASK, MegaDOS and MEGABASE II in sparkling white binders
- 1 SMARTCHIP™ Memory Management Microprocessor
- Six diskettes PACKED with applications programs, including Mega GRAPH, Mega EDIT, Mega TEXT and several Report Generator examples.
- A One-year Replacement Warranty on all products.
- A 60-day Financial Risk-Free Return Policy. If you are not completely satisfied you can return the product in good condition with proof-of-purchase for a complete refund.
- A 14-hour-per-day telephone Hotline to support you in your use of the entire MegaTASK PLUS series of software packages.

Because of the much larger amount of memory that is available to the Apple's microprocessor through Virtual Memory, the increased processing speed, and the integration of major applications packages PLUS custom modifiability by users who know Basic, MegaTASK PLUS may well surpass or replace most of the worthwhile APPLE II program packages currently available on the market. With the introduction of this product, Quantum Leap has made a commitment to be the technology leader in the area of business software systems for personal computers. This will be achieved through Quantum Leap Technologies' continuing Applications Software Package Series—quarterly diskettes and manuals mailed free to purchasers of MegaTASK PLUS for one year from date-of-purchase.

$495.

QUANTUM LEAP
TECHNOLOGIES

Distributed by

QLT Distributing

Box 7713
Silver Spring, Maryland 20910
(301) 565-4656

Apple is a trademark of Apple Computer, Inc.
IBM is a trademark of International Business Machines

OFFICERS & STAFF

President	- David Morganstein	(301) 972-4263
Vice President	- Dana Schwartz	(301) 725-6281
Treasurer	- Edward Myerson	(703) 759-5479
Secretary	- Sarah Lavilla	(301) 926-6355
Directors	- Bernie Benson	(202) 546-0076
	- Peter Combes	(301) 871-1455
	- Bruce Field	(301) 340-7038
	- Nancy Philipp	(301) 924-2354
	- Gordon Stubbs	(703) 750-0224
	- Rich Wasserstrom	(703) 893-9147
Editor	- Bernie Urban	(301) 229-3458
Associate Editors	- Betsy Harriman	(202) 363-5963
	- Genevie Urban	(301) 229-3458
Journal Staff:		
Store Distrbtn.	- Ray Hobbs	(301) 490-7484
Columnists:		
Applesoft	- James T DeMay Jr.	(301) 779-4632
Business	- Leon Raesly	(301) 460-0754
EDSIG	- Peter Combes	(301) 871-1455
Q & A	- Bruce Field	(301) 340-7038
Telecomm	- Dave Harvey	(703) 527-2704
VisiCalc	- Walt Francis	(202) 966-5742
Group Purchases	- Rich Wasserstrom	*(301) 654-8060
	*(Call Kevin at office on M,W,Th,F)	
Head Disk Lib.	- John Malcolm	(301) 384-1070
Library Staff:	- Dave Weikert, Bob Hicks, Ed Lang,	
	- Jim & Nancy Little, Terry Prudden,	
	- Bruce Redding, Gordon Stubbs	
New Disks	- Bob Platt	(202) 223-1588
Pascal Lib.	- Mike Hartman	(301) 445-1583
CP/M Lib.	- Kit Leithiser	(703) 569-8037
Head Reading Lib.	- Walt Francis	(202) 966-5742
Apple Tea Coord.	- Paula Benson	(202) 546-0076
Arrangements	- Marge Gildenhorn	(301) 460-5540
	- Mike Koenig	(301) 948-5371
Demonstrations	- Signe Larson	(703) 524-4541
General Counsel	- Jim Burger (Shaw, Pittman, Potts & Trowbridge)	day (202) 822-1093

Membership	- Dana Schwartz	(301) 654-8060
Program	- Cara Cira	(301) 468-6118
Publicity Chairman	- Hunter Alexander	(703) 820-8304
Rules & Elections	- Bob Platt	(202) 223-1588
School Coordinators:		
Virginia	- Barbara Larson	(703) 451-9373
	- Nancy Strange	(703) 691-1619
Mont. Co. MD	- Margie Stearns	(301) 657-2353
Pr. Geo. Co. MD	- Conrad Fleck	(301) 699-8200
Special Publctns.	- Betsy Harriman	(202) 363-5963
SYSOP	- Tom Warrick	(301) 656-4389
Tutorials	- Leon Raesly	(301) 460-0754
	- Steve Stern	(301) 881-2543
Volunteer Coord.	- Boris Levine	(301) 229-5730
SIG Coordinator	- Bob Platt	(202) 223-1588
SIG Chairmen:		
Appleseeds	- David Stern	(301) 881-2543
APPLE ///	- Bill Hershey	(301) 588-1992
ASMSIG	- Ray Hobbs	(301) 490-7484
Business	- John New	(301) 577-7959
CESIG	- John Kapke/	(301) 694-5968
	- Roy Rosfeld	(301) 340-7962
CP/M	- Charles Franklin	(301) 997-9138
DISABLEDSIG	- Curt Robbins	ABBS WAP428 or
write 8805 Barnsley Court, Laurel, MD 20708		
(or phone)	- John Molineaux	(301) 341-7391
EDSIG	- Peter Combes	(301) 871-1455
FORTH SIG	-	
Home Control SIG	- Russ Eberhart	(301) 596-4995
LAWSIG	- Charles Field	(202) 265-4040
LOGOSIG	- Nancy Strange	(703) 691-1619
NEWSIG	- Bernie Benson	(202) 546-0076
Pascal (PIG)	- Harry Bishop	(703) 931-4937
	- Jim Harvison	(703) 593-2993
SIGAMES	- Jim Eatherly	(202) 232-6046
STOCKSIG	- Robert Wood	(703) 893-9591
Telecomm. SIG	- George Kinal	(202) 863-6489

Washington Apple Pi, Ltd.
8227 Woodmont Avenue, Suite 201
Bethesda, MD 20814
Office (301) 654-8060

ABBS (301) 657-4507

EVENT QUEUE

Washington Apple Pi meets on the 4th Saturday (usually) of each month at the Uniformed Services University of the Health Sciences (USUHS), Building B, 4301 Jones Bridge Road, Bethesda, MD, on the campus of the National Naval Medical Center. Library transactions, journal pickup, memberships, etc. are from 8:45 - 10:00 AM. From 9:00 to 10:00 AM there is an informal "Help" session in the auditorium. The main meeting starts promptly at 10:00, at which time all sales and services close so that volunteers can attend the meeting. A sign interpreter and reserved seating are provided for the hearing impaired.

Following are dates and topics for upcoming months:

December 17 (3rd Sat.) - Garage Sale
January 28 - WOZ and the Mc

The January meeting will probably be held at the Departmental Auditorium, which is in DC, between 12th and 13th Streets on Constitution Avenue, NW. More on this later.

The Executive Board of Washington Apple Pi meets on the second Wednesday of each month at 7:30 PM at the office. All members are welcome to attend. Call the office for any changes.

EDITORIAL

On a snowy day in December 1978, the very first meeting of Washington Apple Pi took place in a basement off Colesville Road in Silver Spring. Two years later we could be found meeting in a large auditorium in George Washington University, and two years later in the various lecture rooms of USUHS. We were, of course, just visitors in these places, and for three years we had no day-to-day "home". Many readers will remember the Board meetings in my home, with members scattered over the carpet, nuzzled from time to time by our enormous dog, Matilda. Matilda no longer attends Board meetings, as we now meet in Apple Pi's own meeting rooms on Woodmont Avenue. At last Apple Pi has its own permanent home, with office space, library space, and a room for tutorials and SIG meetings.

Having permanent office space has been a great step forward in the history of the Pi. However, I still have a dream of an integrated "home" with not only office, classrooms and library, but an adequate meeting space as well. I would also envisage a site convenient for public transportation (will Metrorail reach the Pi by 1985?), easy access to the Beltway, and with plenty of parking. A search is underway for such a dream home. It may turn out that it would be beyond our resources unaided, but perhaps a cooperative arrangement with other user groups so that we could share the use of the meeting space is not beyond the bounds of possibility. Perhaps one day we will look back on our present premises as we now look back on that basement in Colesville Road.

WAP HOTLINE

Have a problem? The following club members have agreed to help. PLEASE, keep in mind that the people listed are VOLUNTEERS. Respect all telephone restrictions, where listed, and no calls after 10:00 PM except where indicated. Users of the Hotline are reminded that calls regarding commercial software packages should be limited to those you have purchased. Please do not call about copied software for which you have no documentation. If the person called has a telephone answering machine, and your call is not returned, don't assume that he did not try to return your call - perhaps you were not home. Try again.

General	Dave Harvey		(703) 527-2704
	Robert Martin		(301) 498-6074
APPLE SSC	Bernie Benson		(202) 546-0076
Apple TechNotes	Ed Schenker		(301) 977-7349
	Lance Bell		(703) 550-9064
Basis 108	Loftus Becker		(202) 338-5217
Communications Packages and Modems-Telecom.			
Anchor Sig. & BIZCOMP Modem	Jeremy Parker		(301) 229-2578
Apple CAT II	Ben Acton		(301) 428-3605
ASCII Express	Dave Harvey		(703) 527-2704
CompuServe	Jerry Michalski		(703) 442-8835
General	Ben Acton		(301) 428-3650
	Tom Nebiker		(216) 867-7463
Hayes Smartmodem	Bernie Benson		(202) 546-0076
Omninet	Tom Vier (1-6 PM)		(703) 860-0083
Source & Transcend	Jerry Michalski		(703) 442-8835
VISITERM	Steve Wildstrom		(301) 564-0039
XTALK CP/M Comm.	Bernie Benson		(202) 546-0076
Corvus Hard Disk	Tom Vier (1-6 PM)		(703) 860-0083
Expediter Compiler	Peter Rosden		(301) 229-2288
Data Bases			
dBase II	Loftus Becker		(202) 338-5217
	John Staples		(703) 759-3461
DB Master	Doug Daje		(301) 868-5487
	Dave Einhorn		(301) 593-8420
Data Perfect	Leon Raesly	*	(301) 460-0754
Data Factory	Bob Schmidt		(301) 736-4698
General Manager	Loftus Becker		(202) 338-5217
	Ben Acton		(301) 428-3605
	Leon Raesly	*	(301) 460-0754
InfoMaster	Doug Daje		(301) 868-5487
List Handler	Jon Vaupel		(301) 977-3054
Graphics	Bill Schultheis		(703) 538-4575
Home Accountant	Leon Raesly	*	(301) 460-0754
Languages (A=Applesoft, I=Integer, P=Pascal, M=Machine			
A	Peter Combes		(301) 871-1455
A,I	Jeff Dillon		(301) 422-6458
A	Richard Langston		(301) 258-9865
A	Mark Pankin		(703) 370-9219
A	Leon Raesly	*	(301) 460-0754
A,I,P,M	Bill Schultheis		(703) 538-4575
A,I,M	Richard Untied		(703) 241-8678
P	Dottie Acton		(301) 428-3605
LOGO-Apple	Ron Murray (eve.)		(202) 328-3553
-General	Dagobert Soergel		(703) 823-2840
Multiplan	Terry Prudden		(301) 933-3065
Operating Systems			
APPLE DOS	Richard Langston		(301) 258-9865
	Richard Untied		(703) 241-8678
CP/M	Robert Fretwell		(703) 971-2621
Paddles	Tom Riley (eve.)		(301) 340-9432
Pers. Filing Sys.	Bill Etue		(703) 620-2103
	Ben Ryan		(301) 469-6457
	Jenny Spevak		(202) 362-3887
Printers			
General	Walt Francis		(202) 966-5742
Anderson Jacobson	Bill Etue		(703) 620-2103
	Leon Raesly	*	(301) 460-0754
Apple Dot Matrix	Joan B. Dunham	*	(301) 585-0989
IDS 460	Jeff Stetekluh		(703) 521-4882
MX-80	Jeff Dillon		(301) 422-6458
Okidata	Scott Rullman		(301) 779-5714
Silentype	Bruce Field		(301) 340-7038
Spreadsheet 2.0	Leon Raesly	*	(301) 460-0754
Statistical Packages	Jim Carpenter		(301) 371-5263
Stock Market	Robert Wood		(703) 893-9591
Tax Preparer-H.Soft	Leon Raesly	*	(301) 460-0754
Time-Sharing	Dave Harvey		(703) 527-2704
VisiCalc	Walt Francis		(202) 966-5742
	Leon Raesly	*	(301) 460-0754
Word Processors	Walt Francis		(202) 966-5742
Apple Writer II	Doug Daje		(301) 868-5487
	Dianne Lorenz		(301) 530-7881
	Leon Raesly	*	(301) 460-0754
	Tom Warrick		(301) 656-4389
Gutenberg	Neil Muncy		(301) 251-9330
Letter Perfect	Cara Cira		(301) 468-6118
	Leon Raesly		(301) 460-0754
Peach Text	Carl Eisen		(703) 354-4837
PIE Writer/Apple PIE	Jim Graham		(703) 643-1848
ScreenWriter II	Peter Combes		(301) 871-1455
Supertext II	Doug Daje		(301) 868-5487
	Peter Rosden		(301) 229-2288
Word Handler	Jon Vaupel		(301) 977-3054
WordStar	David Inouye		(301) 422-8926

*Calls up until midnight are ok.

Current Office hours are:

Mon, Wed, Fri - 10 AM to 2:30 PM
Tue - 12:30 to 2:30 PM & 7 to 9:30 PM
Thurs - 10 AM to 2:30 PM & 7 to 9:30 PM
Sat - 12 to 4 PM (meeting Sat only)

GENERAL INFORMATION

Membership dues for Washington Apple Pi are $25.00 for the first year and 18.00 per year thereafter, beginning in the month joined. If you would like to join, please call the club office or write to the office address. A membership application will be mailed to you. Subscriptions to the Washington Apple Pi Journal are not available. The Journal is distributed as a benefit of membership.

MEMBERSHIP IN CALL-A.P.P.L.E.

Membership in Call-A.P.P.L.E., a users group in Kent, Washington, is available at a discount to WAP members. The one-time application fee is $5 instead of $25, and the annual dues of $20 remain the same, making a total of $25 for the first year. Call the WAP office for further details and an application blank.

PRESIDENT'S CORNER

by David Morganstein

WOZ WINGS TO WAP WITH MC IN TOW(SH). Rrring. Rrring. "Hello, Steve?" "Hello, who is this?" "David Morganstein from Washington Apple Pi." "Oh", came the reply. "How's the 28th of January for your visit?" "Fine", came the response, "Mind if I bring a McIntosh along?" "No, not at all...uh", I said, trying to seem casual. "Well, Bye." "Bye, Steve." Click.

YOUR SUGGESTIONS. If one one-hundredth of our members came to the next board meeting, we would have to convene in the USUHS Auditorium. One of my concerns about our size is the increased difficulty of knowing what most members want from the WAP. Fortunately, almost every board meeting is attended by at least one new-comer who may only come once but who adds an important, fresh perspective. We occasionally receive excellent suggestions by mail from those unable to attend any meeting. Your Exec board needs your suggestions for new projects and reactions to current and proposed activities. Please drop us a card with your support or criticism and any ideas of what you want to see!

SCHOOL COORDINATORS. We have four volunteer coordinators (Barbara Larson and Nancy Strange in Va., Conrad Fleck in P.G. Co. and Margie Stearns in Mont. Co.) These members are ready to help connect school and PTA needs with WAP Apple Advisers. If your school or PTA is in need of help please contact these coordinators. While they may not be able to find someone for every problem, they are willing to try. We still need a coordinator for the D.C. schools and can always use additional coordinators in other areas.

SOFTWARE FOR SCHOOLS. At this month's board meeting, we discussed ways of making our public domain software available for educational purposes to all local public schools. The current proposal is that a letter from the principal containing a list of ten disks be sent to the office with a box of 10 blank diskettes. The letter should state that the software will not be reproduced for use outside of the school. Upon receipt of the letter and blanks, we would send the ten selections to the principal. Would your school be interested in such an offer?

NEWSIG MEETING. Our Office is now open Thursday, as well as Tuesday, nights. Eight members have volunteered to be at the office on Thursday evenings for a gathering of the NewSig. (NewSig is a "special interest group" for those who have just entered the bewildering world of the Apple.) In the NewSig notes column in the Journal, you will find a list of which volunteer will be at the office on what night. Please come over and find out all you wanted to know but were afraid to ask!! (The volunteers do not guarantee an answer, let alone a correct one, but they are willing to try.) Thanks to the generous eight...

CALL-A.P.P.L.E. SOFTWARE. By this time, we should have the much asked about A.P.P.L.E. software at the office. Please call to verify this before coming over, however, if you are interested. (This software will only be available to members of WAP who are also members of A.P.P.L.E.)

YOUR LOCAL STORE. As many of you know, one of the ways that new Apple owners find the WAP is through the purchase of a copy of the Journal at a local computer store. We would like to have the Journal on sale at as many stores as possible to identify ourselves. Please look in the magazine rack of your favorite computer stores and see if our Journal is there. If not, please ask the store manager if they would be willing to carry the Journal as a way of getting help to their customers.

MEMBERS PROGRAMS. Have you written a program which you think is valuable but because of the long hours which you put in, don't want to "give it away"? We have been discussing ways of making that software available to all of the members while allowing you to obtain compensation for your efforts. Would you be willing to allow a listing of the software in the Journal with an accompanying notice that the software could be obtained on disk, at a nominal handling fee, directly from you? I have seen many listings in magazines which were too long for me to take the time to type, but for which I gladly sent $3.00, a blank disk and a self-addressed envelope. What do you think?

As a reminder, our public domain library exists primarily because of your donations. If you have typed in a program from a magazine which does not have a copyright notice or have written one which you are willing to donate, please trade it for a FREE disk of your choice from our library. Label the disk with your name and phone number so we can contact you if we have questions about the program or documentation.

HOLIDAY SPECIALS. During the month of November and December, our Public Domain Software Library will have a "five for the price of four" sale on library disks. Question: Do disks make good stocking stuffers?

GOODBYE, T.I., HELLO JR. The hot competition for the personal computer has claimed yet another victim. No doubt, Texas Instruments will not be the last to bow out of the field. IBM's latest entry, the JR., appears to be a direct challenge to our beloved //e, but its rumored lack of compatibility with PC-DOS, the primary IBM-PC operating sytem, will cut its usefulness dramatically. We need you, Mac. (Or should I say "Mc"?)

We spoke with members of the local T.I. users group and they appear undaunted by the turn of events. In fact, they were interested in finding ways in which users groups can share resources and support educational uses of microcomputers. Bernie Urban and I are continuing a dialog with several user's groups (including Radio Shack, IBM and Commodore groups) to discuss ways in which we might help each other.

SIGNEWS

APPLE /// SIG meets on the second Thursday of the month at 7:30 PM. The next meeting will be on December 8 at Universal Computers, 1710 Fern Street, Alexandria, VA.

APPLESEEDS is the special interest group for our younger members. They meet during the regular WAP meeting. Featured are presentations of topics of interest in graphics, programming techniques, etc., as well as question and answer sessions. Following are the topics for the next few months:

November - Communications with modems
December - Garage sale
January - Game contest

ASMSIG meets immediately after the regular Washington Apple Pi meeting.

Business SIG meets just after the regular Washington Apple Pi meeting.

CESIG is the new special interest group of computer entrepeneurs. They meet after the monthly WAP meeting at the club office.

EDSIG - the education special interest group - see the EDSIG Page elsewhere in this issue.

FORTHSIG is in the process of reorganizing. If you are interested in using Forth (either the WAP library version or commercial versions), please attend our organizational meeting to be held immediately after the main meeting on November 26.

Home Control SIG will meet after the regular WAP meeting each month.

LAWSIG provides attorneys and those not versed in the law an opportunity to discuss various aspects of computer applications to the law. The LAWSIG usually meets in downtown Washington, D.C. at noon once a week. For information call Charles G. Field, Chairman, 265-4040, or Jim Burger, 822-1093.

LOGOSIG meets monthly at 12:45 after the regular WAP meeting at the Barrie School, 13500 Layhill Road, Silver Spring, MD.

NEWSIG will meet just after the regular Washington Apple Pi meeting and on Thursday evenings from 7:30-9:00 PM in the office. We will answer questions and try to help new owners get their systems up and running. We will also explain how our club operates. The following members have agreed to answer questions over the phone when someone gets stuck and needs help between meetings:

Bob Chesley	560-0120	Paul Hoffman	831-7433
Sarah Lavilla	926-6355	Boris Levine	229-5730
Steve Sondag	281-5392		

PIG, the Pascal Interest Group, meets on the third Thursday of each month at 7:30 PM at the Club Office.

SIGAMES is the special interest group of computer hobbyists interested in using their APPLEs for entertainment. They meet immediately following the monthly meeting of Washington Apple Pi.

STOCKSIG meetings are on the second Thursday at 8:00 PM. Starting in December, they will be held at the WAP office. Call Robert Wood, (703) 893- 9591.

Telecomm SIG usually meets after the regular WAP meeting.

ELECTION RESULTS

The SIGs held elections in October and here are some of the results:

SIG	Chairman	Columnist/Lib.
ASM SIG	Ray Hobbs	?
CESIG	John Kapke/ Roy Rosfeld	Paul Manchak-Lib.
CP/M	Charles Franklin	?
EDSIG	Peter Combes	Peter Combes
LOGOSIG	Nancy Strange	Nancy Strange
	Program Chmn.	David Weaver
	Secretary	Barbara Beam
	Procedure Libr.	Ron Murray
	Copy Libr.	?

JOB MART

POSITION WANTED

I wish to begin moonlighting, doing programming in BASIC, COBOL, and ADA. I have a degree in engineering and experience in information retrieval. Please send reponses to PH, 921 Welham Green Road, Great Falls, VA 22066.

Do you need personal help on Apple programs or applications? We'll help with almost anything, including custom data bases, real-time control systems, hardware problems. Diversified experience, reasonable rates. Call Steve Knowles, 767-3010.

HELP WANTED

I need help in choosing and using an accounting software package for retail business in Columbia, MD. Experienced users only. Call Mark Sheppard, (eve.) 301-997-3350; (day) 301-565-5750.

TYPIST wanted for word processing. Evening or daytime $3.50 - $5.00 per hour, on call basis, will train. Call Cara Cira, 468-5718, evenings.

ASSISTANT DIRECTOR for the Computer Center, Trinity College, Washington, DC, part-time beginning January. Responsibilities include running microcomputer workshop for faculty and providing programming and application software assistance to students and faculty. Knowledge of one computer language and one microcomputer system (Apple, IBM or Radio Shack) required. Send resume to Computer Center Director, Trinity College, Michigan and Franklin, N.E., Washington, DC 20017.

VOLUNTEERS NEEDED

Volunteers are needed to provide in-class assistance to an elementary school kindergarten class on a very primitive basis. The school is located in Lake Ridge, Woodbridge, VA, and involvement would only be once every 3 - 6 months, depending on the number of volunteers, and 2 hours per in-class session per month. Please contact Randy Zittel at (703) 491-5493 evenings, or (202) 325-7026 during the day. No hardware/software required; only a desire and a very basic knowledge of the Apple II+//e.

MINUTES

SUMMARY OF THE OCTOBER BOARD MEETING

The Executive Board of Washington Apple Pi, Ltd. met on October 12, 1983 at the WAP office. Vice President Dana Schwartz presided. Items discussed were the copy machine, office rental, the reading library, hotline, hardware SIG, group purchase, a new reference and referral service for members to be managed by the office, the commercial aspect of some monthly meeting presentations, the Mid-Atlantic Computer Show (the Board appropriated up to $450.00 to cover the costs of our participation), an increase in the imprest fund, and problems with paying invoices by C.O.D. The Board voted to add the words "The Journal of Washington Apple Pi, Ltd." to the cover of the Journal.

October General Meeting

WAP, Ltd. met at USUHS on October 22, 1983 at 10:00 AM. President David Morganstein presided. Members were reminded to avoid wandering through the USUHS facility. Several members responded to the request for volunteers at the Mid-Atlantic Computer Fair to be held at the D.C. Convention Center October 27-30. Those interested in the beginner's tutorials were advised to preregister. The members expressed interest in participating in other tutorials (Pascal, VisiCalc, VisiPlot, dBase II, CP/M, and repair). Tom Riley volunteered to conduct a hardware tutorial. The ASM SIG will begin an assembly language class in January. Ideas for topics for future meetings were solicited. Journal address labels may contain errors which should be reported to the office. Volunteers are needed to lead the NEWSIG meetings to be held at the office on Thursday evenings. John Malcolm asked for help in indexing back issues of magazines and announced a special Holiday discount on disks. Bob Hicks presented an update on the commercial software library. A revival of Forth SIG will begin in November. Interest in a LISA SIG was sought. Bob Platt asked for volunteers to help index and debug library disks and announced the most recent disk library acquisitions. Group purchase reported. A map to the office is to be found in the New Member's Reference Book. The meeting adjourned to a presentation of data base management systems.

SEASON'S GREETINGS

Q & A

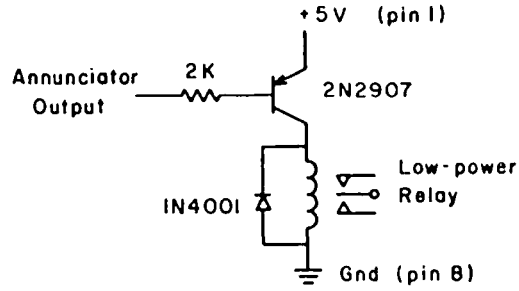
by Bruce F. Field

Last month I was asked if it was possible to put new volume numbers on a disk without re-initializing it. My answer was that the volume number is imbedded within each track and can only be changed by re-initialization. Dave Harvey wrote to tell me that Southwestern Data Systems now distributes a program "Disk Library" that allows the volume number to be changed. It does this by patching DOS which causes it to use the Volume Number encoded at byte 6 of the VTOC as the one displayed by the DOS Catalog command, rather than using the number encoded at one of the inaccessible locations. Once the patch has been installed, the Catalog command displays the number at byte 6 of the VTOC, whether it has been altered or not. Thus any Disk Zap program can be used to modify byte 6 of track $11, sector $0 (the VTOC) to whatever value between 0 and 254 is desired. Dave also comments that this is an excellent program that is truly outstanding for keeping track of lots of disks.

Q. I'd like to drive some mechanical relays from my Apple. It seems to me that I ought to be able to use the annunciator outputs directly for 4 relays or through a decoder for 16. Unfortunately, I know nothing about the loading that the annunciator outputs can take. Does anyone have a circuit they've tried? The BSR X-10 interface is just too slow for what I need.

A. There are many ways to do this; the circuit shown uses parts readily available from Radio Shack. Suggested relays are part numbers 275-243, 275-246, or 275-215. The transistor and diode are part numbers 276-2023 and 276-1101 respectively. None of the components are particularly critical; other similar components may be used. The recommended relays are small, requiring reasonably low drive currents (less then 100mA) and have a contact current rating of 3 A or less. If you wish to control devices with high power consumption I suggest that you drive a more powerful relay using the low power one. This provides an extra layer of protection between the Apple and high power circuits. The diode connected across the relay protects the transistor from the back emf generated by the relay when it opens; do not eliminate it from the circuit.

The emitter of the transistor is connected to pin 1 of the 16-pin DIP of the game I/O port; the other end of the relay is connected to pin 8. The 2K resistor can be connected to any one of the annunciator outputs, pins 15 through 12 for outputs AN0 through AN3 respectively. If you have an Apple //e you must use the 16-pin connector inside the Apple, as all the signals are not present on the 9-pin connector on the back. One by-product of this circuit is that the relays appear to operate backwards. That is, setting the output low will turn the relay on, and setting it high will turn the relay off. When you first turn things on you will probably want to turn the Apple on first, set the outputs to whatever they should be, and then energize the circuits that are being controlled by the relays.



Q. I need some help in tracing the attached program on random numbers. It is from the Applesoft Tutorial. What I do not understand are the numbers printed by lines 370 to 390. Somehow I do not understand how those random numbers got assigned to Glass(1) to Glass(8). I have tried printing values of the variables TEMP, GLASS(MILK) and GLASS(WINE) from within lines 270 to 350 but the values from any of these variables do not match the numbers produced by line 370 to 380. Could you, perhaps, expand on the program?

A. Let me include a copy of the program for our readers. This is on page 109 of the Applesoft Tutorial manual.

```
200  REM DIMENSION THE ARRAY
210  DIM GLASS(8)
220  REM FILL THE ARRAY
230  FOR I = 1 TO 8
240  GLASS(I) = I
250  NEXT I
260  REM SCRAMBLE THE ARRAY AND CHOOSE EACH
     ELEMENT
270  FOR WINE = 1 TO 8
280  REM CHOOSE SOME OTHER ELEMENT
290  MILK = INT ( RND (1) * 8) + 1
300  REM WAS MILK DIFFERENT FROM WINE?
310  REM IF NOT, TRY AGAIN
320  IF MILK = WINE THEN  GOTO 280
330  REM INTERCHANGE GLASS(WINE) AND
     GLASS(MILK)
340  TEMP = GLASS(WINE):GLASS(WINE) =
     GLASS(MILK): GLASS(MILK) = TEMP
350  NEXT WINE
360  REM PRINT CONTENTS OF ARRAY
370  FOR C = 1 TO 8
380  PRINT GLASS(C)
390  NEXT C
```

An array called GLASS is created in line 210 and specified to have 8 elements. Lines 230 to 250 fill the array with the numbers 1 through 8, i.e. GLASS(3) = 3, etc. Line 290 is where a random number is chosen. The RND(1) function returns a number between 0 and 0.999999999. The value is multiplied by 8 and truncated to an integer so the result is an integer number from 0 to 7. One is added to this and assigned to the variable MILK. So, MILK may have a value of from 1 to 8. As we go through the FOR-NEXT loop starting in line 270, WINE starts as 1, a random number for MILK is chosen and the MILKth value in the array is exchanged with the WINEth value. This process continues for WINE equal to 2 through 8. We are randomly rearranging values in the array. The last three lines print the final results in the array GLASS.

contd.

By only rearranging the numbers one through eight in the array we can be sure that no number will show up more than once in the final result. Line 320 was included to make sure that no number in the array would be exchanged with itself. Actually this line is not necessary.

Q. Using Applewriter II in the print preview mode, is there any way to just preview one page without having to see all previous pages? For example, preview page 11 on the screen of a 15 page document.

A. You may print (or preview) part of a document using the .EP1 and .EP0 commands of Applewriter. For your example you must insert .EP0 at the beginning of your document to turn the printing off and .EP1 at the beginning of page 11 to turn it back on. If you don't know exactly where page 11 begins you'll have to guess or list it out all the way once. Then insert another .EP0 at the end of the page. The page numbering will still be correct, i.e. page 11 will be numbered page 11 not page 1.

Q. Recently I purchased a plotting program named "Graphmagic". It claims it has full printer support for the Epson MX-80 and other printers. I tried to print out a pie graph using my Epson RX-80, and it comes out as garbage. Does the Epson MX-80 use a different graphics set or control codes for graphics? What should I do?

A. Yes, the RX-80 does have different graphics capabilities from the MX-80. You should get in touch with the publisher of Graphmagic to see if they have a version for the RX-80. Unfortunately Epson has released a number of similar printers with several different printer operating systems. The MX-70 came in only one version; however the MX-80 has three different systems: the original (block graphics but no hi-res), Graftrax 80, and Graftrax Plus, also called Type III. The MX-100 has two versions: the original (with graphics) and Graftrax Plus (Type III). Before purchasing any program for the Epson make sure you know which type of printer you have. An article in the October 1983 Softalk by Bill Parker explains how to tell which type of printer operating system you have.

Q. A few months ago my Apple II began to occasionally print two characters on one key stroke, i.e. LL, 33, ::. The problem appears random and does not seem to favor any particular characters. Any suggestion would be appreciated.

A. The problem is most likely the keyboard encoder chip on your keyboard. This chip continuously scans the keyboard and sends the value of any key pressed to the Apple CPU. If only one or two keys were misbehaving the problem would probably be with the mechanical switches in the keyboard. I believe there may be different chips used in the different revisions of the Apple; however the suspect chip is the 40 pin chip on the keyboard itself, or for newer Apple IIs it is on the encoder board attached to the bottom of the keyboard. The Apple //e uses an AY3600 PRO encoder chip and 2716 EPROM, both of which are on the motherboard.

Q. Are you aware of any VT-100 Emulator program that is available in the public domain?

A. No, unfortunately I do not know of any public domain program. Perhaps our readers can help. There are however a couple of commercial emulator programs. VT100 Emulator is sold through Apple's Special Delivery Software and should be available at local Apple dealers for $75. Softerm, distributed by Softronics, 6626 Prince Edward, Memphis, TN 38119 for $150, is supposed to emulate many popular CRT terminals, presumably including the VT-100.

Q. I have an Apple 80 column card in the Auxiliary slot on a //e. Can I put a Videx 80 column card in slot 3 also so, I can use Videx's Applewriter II preboot? Which card will be active when I boot via PR#3?

A. If you have a card in the auxiliary slot you CANNOT use another 80 column card in slot 3. If you try to access the card in slot 3 with a PR#3, the 80-column card in the auxiliary slot will be turned on. When the //e is turned on or reset, a routine looks for a card in the auxiliary slot; if one is found the signal to the peripheral-card ROM in slot 3 is disabled (see pages 132 and 133 of the //e Reference Manual for more technical details).

What this means is that slot 3 cannot be used for any peripheral card that has an on-board ROM. Most cards for the Apple do have ROM on-board; a card does if you turn it on by doing PR#n. Some cards, like music synthesizers, use only a program loaded in RAM memory and can be used in slot 3 in addition to the card in the auxiliary slot. One other type of card can be used also, an Integer Basic ROM card or a 16K RAM card that doesn't require a strap to the motherboard. The memory on these cards operates in a different way and no conflict occurs with the auxiliary card.

Q. I have an Apple //e with the 80-column card in the auxiliary slot. I find the 80-column character set difficult to read - it's dot resolution is very coarse. Is there an alternate software routine to use a different character set?

A. No, the character set is permanently loaded into a 2732 EPROM. Actually the character set for the 40 and 80 column modes is identical, except for 80 columns, the characters are just half as wide. This tends to make them look more spread out vertically and make the spaces between the vertical lines more noticeable. One thing you can do to improve this is to adjust the vertical height control on your monitor to reduce the height of the letters. This will make them look a little more solid.

If you have access to an EPROM programmer it is possible to program a new 2732 EPROM with a different character set; however each character must still fit in a matrix 5 dots wide by 7 dots high so there is no improvement in the resolution. Some 80-column cards designed for the Apple II that fit in a regular slot, not the auxiliary slot, have somewhat better looking characters. These cards are usually not exactly compatible with the //e card so some //e software may not work properly with these cards.

Q. I have an Apple II+ and I want to put a modem on my system. I can get an Anderson-Jacobson 300/1200 baud modem from work, but I would have to buy an Apple Super-serial card for the RS-232 interface. The question - what software will work with this configuration to send and receive data?

A. The Super-serial card contains some elementary software on the card to allow the Apple to be a

contd. on pg 44

TRI-STATE SYSTEMS

DISCOUNT APPLE SOFTWARE

HOLIDAY SPECIALS

	Retail	Our Price		Retail	Our Price
Zaxxon	39.95	27.50	Screen Writer II	129.95	89.95
Choplifter	34.95	24.50	Master Type	39.95	27.95
Kraft Joysticks	64.95	46.95	Bank Street Writer	69.95	49.95
Choplifter & Kraft Joystick	99.90	67.95	Snack Attack	29.95	19.95
Exodus: Ultima III	54.95	38.95	Galactic Adventures	59.95	42.95
Frogger	34.95	24.50	Doss Boss & Utility City	53.50	37.95
Lode Runner	34.95	24.50	Verbatim (10 disks) 5¼"	42.00	26.95

GAMES

	Retail	Our Price
Wizardry	49.95	37.95
Wizardry II-Knight of Diamonds	34.95	25.95
Wizardry III-Legacy of Llylgamyn	39.95	29.95
Wizardry I & II	84.90	59.95
Castle Wolfenstein	29.95	20.95
Thunderbombs	19.95	14.95
Transylvania	19.95	14.95
Spy's Demise	19.95	14.95
Pie Man	19.95	14.95
Serpentine	34.95	25.95
Zork I, II, or III	39.95	29.50
Star Blazer	31.95	22.95
Repton	39.95	29.50
Pinball Construction Set	39.95	29.50
Deadline	49.95	37.95
Aztec	39.95	29.95
Cytron Masters	39.95	29.50
Starcross	39.95	29.50
Prisoner 2	32.95	24.95
Robot War	39.95	29.50
Apple Panic	29.95	20.95
Battle for Normandy	39.95	29.50
Laf Pak	34.95	25.95
Sammy Lightfoot	37.95	27.95
David's Midnight Magic	34.95	24.95
Ultima I	39.95	29.95
Ultima II	59.95	44.95

UTILITIES

	Retail	Our Price
Home Accountant	74.95	56.95
Sensible Speller	125.00	89.95
ASC II Express: The Professional	129.95	94.95
Transend I	89.00	69.95
Visicalc, Visifile, or Visidex	250.00	169.95
Multiplan	275.00	169.95
PFS: File, Report, or Graph	125.00	89.95
dBase II (CP/M)	700.00	414.95
The Incredible Jack	179.00	134.95
The Accountant	129.00	94.95
DB Master	229.00	149.95
Snooper Troopers I or II	44.95	32.95
Facemaker (Spinnaker)	34.95	25.95
The Graphics Magician	59.95	44.95
Beagle Basic or Touble-Take	34.95	25.95

HARDWARE

Microsoft 16K RAM Card	99.95	69.95
Rana Elite I Disk Drive	355.00	279.95
Hayes Micromodem II w/term Program	409.95	289.95
TG Select-a-port	59.95	44.95
System Saver Fan	89.95	69.95
Grappler II + ($179 w/16K Buffer)	175.00	129.95
Videx Ultraterm	379.00	279.95
Amdek Color I Monitor	379.00	294.95
Amdek 300A (Amber) Monitor	199.00	159.95
Okidata Micro 92 Printer	699.00	495.00

ALL ORDERS SUBJECT TO AVAILABILITY OF MERCHANDISE

Mail orders to:
TRI-STATE SYSTEMS
P.O. Box 2544
Springfield, VA 22152
or call: (703) 569-9363

VISA
No credit card penalty!
MasterCard

- We accept VISA or Mastercard (include card # and expiration date), personal checks (allow 2 weeks), or money orders
- VA residents add 4% sales tax
- Include $2.00 for shipping
- All software products on disk
- All prices subject to change without notice
- **We carry a large line of discount software. Write us for our free catalog.**

HAVE A HAPPY HOLIDAY SEASON!

TELECOMM SIG NEWS

by Dave Harvey

The Telecomm SIG held its October meeting after the WAP meeting on October 22. There were no other nominations for SIG offices, so George Kinal is the new Telecomm SIG Chairman and Dave Harvey the Columnist.

George Kinal announced that hopefully within the next week he should have the ANCHOR MARK 12. He will be testing it over the next few weeks and thought it would be a good idea to demonstrate the modem at our next meeting. This modem operates at 300 and 1200 baud and is external to the Apple, which means that a serial interface card is required. This modem, according to the manufacturer, is compatible with the Hayes Smartmodem and uses all of the same commands and has all the same features as the Hayes. It was agreed by everyone present that the Telecomm SIG meeting in November would be on Tuesday, November 15 at the WAP office.

A general discussion followed about 1200 baud operation on the Apple. Because of this high speed, sometimes the first few letters of a line are lost. This is due to the time it takes for the monitor screen to scroll to the next line. One way to prevent this is to use a protocol checking file transfer system such as the Christensen protocol which is a system available on CP/M and some DOS 3.3 commercial software. There are a number of reasons why 1200 baud is now becoming so popular. The main one is that the price of 1200 baud modems has dropped considerably and there has been a reduction in time required for file transfer. The point was made that Compuserve rates for non-prime time 1200 baud service has gone down, which could be another reason for getting a 1200 baud modem. The rate has been reduced from $17.50 to 12.50 per hour. On the other hand, the 300 baud rate has gone from $5.00 to $6.00 per hour.

Also discussed at the meeting was the XICOM serial card. This card is a low cost card that sells for $60.00 and could be used with the ANCHOR 1200 baud modem mentioned. George Kinal will also be testing this card to see if it is compatible with commercial terminal programs such as ASCII Express Professional. The one disadvantage with this serial card is that baud rates have to be set by switches on the card and is not controlled by software.

The question was asked if anyone knew of a public domain Apple DOS 3.3 program that uses the Christensen method of protocol file transfer, thereby eliminating the problem of dropped characters. No one knew of any, but George Kinal announced that although it didn't use the Christensen protocol transfer, he was developing a program that would be able to operate at 1200 baud for file transfer. When file transfers are taking place, the screen is inoperative, thereby eliminating the problem caused by the screen scrolling. He will donate the program to the WAP disk library when it is completed.

EARLY DEADLINE FOR NEXT JOURNAL

Due to the Holidays and the early December meeting, the "absolute" deadline for articles for the January Journal is December 1. We would appreciate your sending copy as early as you can. Deadline for advertising copy is December 8. Thanks for your continued cooperation.

TIDBITS FROM NEWSIG

by Bernie Benson

FLASH! FLASH! FLASH!

NEWSIG ANNOUNCES UNPRECEDENTED WEEKLY MEETINGS

Washington Apple Pi is growing at approximately 100 new members a month. Only about 15 to 20 of these new members attend the regular NEWSIG meeting after the general monthly WAP meeting. In an effort to reach more of these new members and others seeking general information about the Apple and the WAP, NEWSIG has begun to meet weekly.

Beginning this month, NEWSIG in coordination with the office staff has begun meeting every Thursday night at the office from 7:30 to 9:00 PM. A NEWSIG representative will be available to answer questions and present information to anyone dropping by the office. We will continue these meetings as long as there is any interest from the members. Please come by and take advantage of an informal informative evening. Call it a weekly APPLE TEA if you like.

CLASSIFIEDS

WANTED: Apple II+, color monitor, 48K or 64K, 2 disk drives preferred, 1 accepted. No software or peripherals wanted. Call 424-1266 evenings or weekends.

FOR SALE: Heathkit H14 serial printer with cables and complete documentation. Features include: eight selectable baud rates, 50 or 60 Hz operation, self-test mode, software selectable 80, 96 or 132 characters per line with optional variable fonts. Forward and reverse linefeeds. Must sell, $350 or best offer. Contact Don Mayes at (homes) 301-589-4190 or (work) 202-282-0585.

FOR SALE: Micro-Sci disk drive $190; Microsoft A.L.D.S. $75. Call Steve Hollar (home) 250-5979 or (work) 763-5897.

FOR SALE: ORCA/M Assembler Language. Perfect condition. Used once. Good for longer programs. $90. Book for Apple II 6502 assembly language (great for beginners), $10. Call Gideon Stein 722-0883, 6:30-8:30 PM weekdays or 4:00-9:00 weekends.

EDSIG NEWS
by Peter Combes

EDSIG Calendar

Tuesday, December 6, at 7.30 p.m.

"Touch Monitors and the Apple" - George Berke.

All EDSIG meetings are held in the Auditorium, Building B, of the Uniformed Services University of the Health Sciences, on the campus of the National Naval Medical Center, 4301 Jones Bridge Road, Bethesda, MD.

Meeting Report

Tuesday, November 1, at 7.30 p.m.

"What's Good in Educational Software?" - organized by David Wyatt and chaired by Jerry McSpadden.

David was called away at short notice, but at even shorter notice Jerry chaired a lively meeting that looked at various examples of interactive software. Jerry opened with a quick demonstration of Koala Pad - a useful tool for getting hi-res graphics drawn on the screen quickly, and with some impressive graphics utilities.

SRA Math Program

Helen Tognetti demonstrated part of this formidably large program, which runs thru grades 1&2, 3&4, 5&6, and 7&8 - each pair of grades costing $575. She uses it in the Newmarket Middle School in Frederick, MD, and reports that it is very effective. "For kids making mistakes because they make digits carelessly, it is a godsend". One girl, she reported, originally did not know which number to "carry", but after using the program was able confidently to multiply together two three digit numbers. This provoked a lively discussion among members present as to whether it was an appropriate use of high technology to teach the mechanical skills that the same technology was making obsolete. The professional teachers had a pragmatic attitude - "If the state demands it - you do it!"

The program is slow to download - Helen gives the kids a commercial game to play during downloading.

The screen displays are obviously the result of a great deal of work; a wide variety of hi-res fonts is used, and detailed help routines are used for students who are having difficulties. The program will also print out worksheets if needed. Children can ask for practice problems.

The program has professional record keeping abilities - it will put the children at their grade level, it will make statistics of what they are doing, and produce graphs.

The Math Machine is a far more economical program at around $50 for two disks.

Calculations are worked through in lo-res, and carrying is not displayed. The reward for correct answers is a one-minute game, and children seem to enjoy this. This program, too, runs student score lists, and can produce a printout of where children are going wrong.

Janet Schreiber, from Bethesda Computers, showed some attractively packaged programs:

The Fraction Factory by Counterpoint Software uses hi-res, lo-res and upper and lower case text to explain equivalent fractions for 4th and 5th grade. It has some attractive visuals that seem to help in getting across the basic concepts.

Piece of Cake, again by Counterpoint Software, is for much smaller children, and has been used for preschoolers. Again, there is clever visual leading through the basic concepts.

DLM --Development Learning Materials -- is a major supplier of educational materials, with a considerable reputation in the field of special education. Their Word Attack uses flash card techniques. The program is said to be for vocabulary building, involving some 2000 word definitions, at one definition per word. There are 15 levels, and 500 words per disk. The validity of having children memorize the definition of, say, "hale" in this way was seriously challenged by members of the group.

Word Invasion, by Educational Information Systems Inc. uses arcade techniques, with a man "catching" adverbs, verbs, and so on. Even judged as an arcade game it is quite formidable - "Nobody has ever beaten it at Level 5".

Elections

Peter Combes was re-elected Chairman of EDSIG and also appointed to the new position of SIG Columnist.

Last Minute Bulletin - Just received from Learning Well the educational game, THAT'S MY STORY. Review in our next issue.

I AM WHAT I AM . . . AND WHAT I AM, I AM

by John A. Love, III

As I mentioned in my first article on Machine and Assembly language, the KEYBOARD DECODER, the BASIC INTERPRETER, the INPUT/OUTPUT (I/O) BUFFER and the 6502 CENTRAL PROCESSING UNIT (CPU) play the focal roles in translating the operator's keyboard presses to the "on" and "off" pulses that the CPU understands. To review the bidding - the KEYBOARD DECODER translates the keyboard press to its high byte binary equivalent which is then stored in the I/O BUFFER. Once the BASIC INTERPRETER "understands" this keyboard press, this high binary byte is released and converted to low byte under the direction of the 6502 CPU. Once a <CR> is pressed, the string of low byte characters in the I/O BUFFER is stored in memory beginning at decimal location #02048.

During this multi-stage process, of course, each keyboard press is shown on the screen. This is because the CPU has called the MONITOR routine COUT ($FDED) to enact the display. As Mr. Roger Wagner states in his "Assembly Lines" series (completed a short time ago in "Softalk"), an indirect JuMP to $9EBD (with DOS active) is accomplished via the Character output SWitch (CSW) at memory locations ($36,$37). Eventually, COUT1 ($FDF0) is called which places your keyboard press on the screen.

The point here is that if you want to intercept the output-to-screen process, simply hook your Machine language routine to ($36,$37). Your routine will accomplish any intermediate processing, followed by a JuMP to COUT1. Simple, isn't it - hook up, process and re-transmit. Let's try it!

In Applesoft, upon LISTing a program to the monitor, the operator simply types a "CTRL-S" to stop the scrolling. What if I wanted to scroll up 18 lines on the monitor and have the LISTing stop for my examination? And, then, to continue with the scroll of another 18 lines only when I pressed a "CTRL-S". The following is the required routine. On the right is the Assembly or source code. In the middle is the Machine or object code, and on the left is the beginning hexadecimal memory location for each line of code:

```
:ASM
                1  ********************************
                2  *                              *
                3  *      ASSEMBLY LANGUAGE       *
                4  *           PROGRAM            *
                5  *                              *
                6  *         "LISTING"            *
                7  *                              *
                8  *   LISTS 18 PROGRAM LINES     *
                9  *       ON THE MONITOR         *
               10  *                              *
               11  ********************************
               12  *
               13          OBJ $0300
               14          ORG $0300
               15  *
               16  STROBE  EQU $C010
               17  KYBD    EQU $C000
               18  ASAVE   EQU $0385
               19  XSAVE   EQU $0386
               20  YSAVE   EQU $0387
               21  COUNT   EQU $0384
               22  *
0300: 8D 85 03 23  LISTING  STA ASAVE ;SAVE ACCUMULATOR
0303: 83 86 03 24          STX XSAVE ;SAVE X-REGISTER
0306: 8C 87 03 25          STY YSAVE ;SAVE Y-REGISTER
0309: AE 84 03 26          LDX COUNT ;LOAD LINE COUNT
               27  *
030C: C9 8D    28          CMP #$8D  ;<CR>?
030E: D0 14    29          BNE EXIT  ;IF NOT, RETRANS-
               30  *                    MIT
0310: E8       31          INX       ;ONE MORE LINE
0311: 8E 84 03 32          STX COUNT ;CUMULATE LINE
                                       COUNT
0314: E0 12    33          CPX #18   ;18 LINES?
0316: D0 0C    34          BNE EXIT  ;IF NOT, RETRANS-
               35  *                    ;MIT
0318: AD 00 C0 36  LOOP    LDA KYBD  ;KEYBOARD PRESS
031B: C9 93    37          CMP #$93  ;CTRL-S?
031D: D0 F9    38          BNE LOOP  ;IF NOT, WAIT
031F: A9 00    39          LDA #0    ;RE-INITIALIZE
                                       LINE
0321: 8D 84 03 40          STA COUNT ;COUNT AFTER
               41  *                    ;CTRL-S
0324: 8D 10 C0 42  EXIT    STA STROBE;CLEAR STROBE
0327: AD 85 03 43          LDA ASAVE ;LOAD BACK IN
032A: AE 86 03 44          LDX XSAVE ;A,X AND Y
032D: AC 87 03 45          LDY YSAVE ;REGISTERS
0330: 4C F0 FD 46          JMP $FDF0 ;RETURN
               47  *
               48  ******  END OF SUBROUTINE ******

--End assembly, 51 bytes, Errors: 0
```

Before I begin explaining this listing, I should first explain what is missing, namely, how to implement it. Once this subroutine is BLOADed into memory, then:

1. LOAD your Applesoft program to be listed.

2. Type "POKE 900,0". This initializes the <CR> counter to zero in memory location $384.

3. Type "POKE 54,0" : POKE 55,3 : CALL 1002". The two POKEs hook up the Machine language subroutine to DOS at memory locations $36,$37. The "CALL 1002" maintains this hook; otherwise, DOS would tenaciously rehook to $9EBD and your routine would never be seen.

4. Type "LIST".

Well, what do you know, it actually works!!! Now, let's look at the routine itself to see why:

o Lines 23-25 save the values of the accumulator, the X-register and the Y-register for restoration later (lines 43-45). As Mr. Wagner explains, "this is because the 'official' output routine, COUT1, returns with all registers (A, X and Y) intact when called. Many other routines in Basic and DOS assume that all output will be done as safely, so we must honor that convention as well."

• Line 26 is present because your routine will be repeatedly accessed and the X-register serves as the <CR> counter; so the <CR> count must be saved (see line 32).

• Then, the input (accumulator) value, the next character in your program LIST, is compared with <CR> (low byte = decimal 13), but high byte = decimal 141).

contd. on pg 30

DISABLEDSIG NEWS
by Jay That

* * * * * * * * * * * * * * * *

DISABLEDSIG DECEMBER MEETING
THURSDAY, DECEMBER 8, 1983, 7:00 P.M.
Chevy Chase Community Center
Connecticut Ave. & McKinley St., NW, D.C.

* * * * * * * * * * * * * * * *

For a long time I have been parroting Goldenberg's metaphor on technology -- that the computer, like eyeglasses before it, can become ubiquitous enough that we will forget it. Yet, like the eyeglass it will attain such a state of transparency that it will allow the user to do things that will be otherwise difficult, perhaps impossible. Intellectually I've known that to be true, though I've been what some friends refer to as a TAB (Temporarily Able Bodied). But now my arms have grown so short that I cannot read with ease. Now spectacles rest on the bridge of my nose, imposing no agenda on me while they ameliorate my handicap.

On November 26 I will be looking out upon the attendees at the WAP main meeting, two days after Thanksgiving, helping to remind them that the odds are that they too will be disabled during their lifetimes. Computers extend and amplify our abilities and that is what that meeting will (was, for those of you who missed it and are reading this anticipatory note) be all about.

Within this December issue of the Journal there are several articles describing solutions for handicapping problems, as there will be in future issues. Some of them were demonstrated at the main meeting. But solutions must be customized for those whose physical or mental capabilities fall ±2 or 3 sigmas of the statistical norm.

There are presently devices that can unleash the power of a computer through the wrinkling of an eyebrow, a puff of breath, a slight movement of the finger or of the head. The technologies exist -- today. But they need to be made more transparent. The blind can read via computer, or be read to. The deaf can communicate at the speed of light, or at least 300-1200 baud. The isolated can become less so, and productive. The slow can learn from patient and non-threatening "micro" tutors. The CPU, as the name suggests, processes data. Inputs need not be keyboards or a mouse. Outputs need not be monitors or printers. And, the intent of this article, and others on devices or techniques, is not just to demonstrate what is but to enlist you the reader in what can be.

The DISABLEDSIG is making an appeal beyond that of the Marines. The DISABLEDSIG is looking for many (not just a few) good women and men to help us. We would very much like to be able to identify individuals whose handicaps can be remediated through computer applications. But, equally important, we need those of you who can contribute some small effort in developing software or hardware applications for the identified tasks. That is what the November main meeting is (was) about. That is what these articles are about.

If you can contribute your time and talents contact the WAP office.

THE DP-10 MAKES APPLE ACCESSIBLE TO VISUALLY IMPAIRED

by Susan M. Gowin

DISCLAIMER: I am affiliated with Phillip Barton Vision Systems which locally distributes Visualtek equipment. I have made every attempt to be fair and unbiased in the description which follows, but I feel the reader should be aware of this affiliation.

SUMMARY: Last month Visualtek, a company that pioneered in developing electronic vision aids, introduced the DP-10 Large Print Display Processor for the Apple II, II+ and the //e. This peripheral device automatically enlarges the print display from 2 to 16 times normal size. The DP-10 works in a passive or "transparent" manner without software control. This enables non-graphics software to be used without program modification.

INSTALLATION: The DP-10 consists of an interface card with cable, the display processor with 2K mirror memory, and the User Control Panel. The interface card may be fitted into any available slot. The display processor box fits conveniently underneath the Apple and a ribbon cable connects the card into its back. Another ribbon cable connects to the User Control Panel. The standard monitor cable connects the video output from the back of the Apple into the processor and a second monitor cable leads from the DP-10 to the display monitor.

USING LARGE PRINT DISPLAY: All methods of generating large print on the display monitor face the same barrier. If one increases the character size, one no longer has room to display 40 characters by 24 lines on the screen. Developers have tried to resolve this situation by:

1) decreasing the interletter space - actually "squeezing" the characters onto the display;

2) decreasing the dimensions of the display screen, such as Peachy Writer's 20 character by 12 line image; or

3) treating the screen as a window which can pan the enlarged, full 40 character by 24 line display.

Visualtek chose to employ the last solution. The DP-10 stores the video image produced by the computer in its own 2K memory, leaving the Apple's resources untouched. The User Control Panel (UCP) guides the screen window to any point on the display. All manipulations of the screen (other than inputting data from the keyboard or game port) is controlled independently and outside of the Apple. None of the UCP functions are transmitted back to the Apple.

The UCP is the heart of the DP-10's usefulness. A four-direction joystick is used to designate up/down or left/right flow of pan. The scanning speed is directly related to how far the joystick is moved from center. With a little practice a comfortable reading speed is easy to set. Buttons allow the user to stop, temporarily reverse, and restart the display without having to adjust the joystick. The degree of magnification of letter size is selectable from 2 to 16 times original size and a switch enables the user to revert to normal, non-enlarged display without disassembling the hardware.

Other unique features include tab settings for rapidly advancing the display to predetermined locations. Line markers can be set to isolate single lines or areas of the display for easier reading. When used with the continuous scroll mode which wraps around the display it allows rapid reading with no chance of losing one's place on a full screen.

APPLICATIONS: Because the DP-10 works with existing software, including word processors and terminal emulation programs, the partially sighted user has greater access to a wider world of information than s/he has ever had before. For example, such resources as The Source could not be utilized previously due to the tediousness of trying to read the normal display. The DP-10 will allow the visually impaired user to comfortably, and more effiently use a CRT display without needing external magnification devices. This should open up new opportunities for the computer user whether s/he employs the Apple alone or connects it to a mainframe.

The following lists summarize the primary advantages and weaknesses of the Visualtek DP-10.

STRENGTHS

- Software independent -- passive, transparent hardware device
- Does not interfere with peripherals -- works with modem, voice synthesizer, printer, etc.
- Creates %solid%, high-contrast characters -- not "dot-matrix-like".
- The large print display is manipulated by a separate user control panel -- no need to learn special meanings for keys on the Apple keyboard.
  - Joystick control of scanning direction and speed
  - Line markers can be set for easier reading
  - A cursor location button rapidly finds cursor and positions screen for data input
  - User selectable polarity reversal switch for black-on-white or white-on-black display
  - Eight image magnification sizes available allows use by persons with varying degrees of low vision

WEAKNESSES

- Does not support graphics display nor does it display text created using lo- or hi-res graphics.
- Does not display characters or fields in "inverse" -- i.e., control characters used in word processing are not displayed; the row numbers are not highlighted in VisiCalc.
- Since cursor character is different in CP/M from that used in Applesoft or integer, the cursor location key fails to consistently find it (Visualtek is working on a fix)
- Some graphics games "turn off" the DP-10 as part of

contd. on pg 21

VISUALTEK® ELECTRONIC VISUAL AIDS

HELP THE VISUALLY IMPAIRED
TO STUDY, LEARN NEW SKILLS, AND PREPARE
FOR CHALLENGING CAREERS OF THEIR CHOICE

Actual, UNRETOUCHED Photograph

DP-10 w/Apple Computer, Disk Drive, & VISUALTEK 19" Monitor

New opportunities unfold for the visually impaired with the NEW, exciting Apple Compatible Large Print Display Processor (DP-10) by Visualtek. Clear, solid, high-contrast letters, up to 5½ inches high, are available with the simple turn of a dial on the User Control Panel (UCP).

For further information on the DP-10 or any of Visualtek's exciting electronic visual aid systems

WRITE OR CALL

PHILLIP D. BARTON
3911 York Lane
Bowie, Maryland 20715
(301 262-3665

SUSAN GOWIN
7120 Murray Lane
Annandale, Virginia 22003
(703) 256-2555

VOICE TECHNOLOGY FOR THE HANDICAPPED

by Jim Turri

This article centers around the importance of the new voice synthesizer technology that has made it so much easier for a visually impaired person to use microcomputers. Votrax has been making voice synthesizers for years. Most of them were quite costly, but the comparatively low cost Type N Talk became available in the $400 range. This seemed like a real bargain until I tried to interface the unit with a remote terminal and modem. With the aid of a good friend/computer enthusiast/ham radio operator, we found the Votrax had no x/on x/off protocol. Also, the unit would not pronounce punctuation symbols seen in programming. These difficulties may be overcome with a new unit marketed under the name of Personal Speech.

However, the less costly Echo and Echo-II made their appearance more than two years ago. The Echo Voice Synthesizer has many features designed to aid the visually impaired computer user. It is made by Street Electronics Corp., 1140 Mark Ave., Carpinteria CA 93013, phone (805) 684-4593. The Echo-II is designed to plug directly in to any Apple II peripheral slot and uses a small speaker box that can be laid under the Apple keyboard. It comes with a copyable disk called Textalker. Talking Terminal, Graforth and Pascal disks are also available at a cost of under $25.00 for each. The documentation is clear and comprehensive, assuming no prior knowledge of computer operation or programming. When you boot the disk and your computer begins talking, it will have a male voice which sounds like a Scotchman. Most words are clear and well formed, with the vowel sounds pronounced precisely. I personally find the accent of the voice refreshing compared to many Votrax based voices. These units tend to slur many of the vowel sounds. The Echo-II can select 3 levels of punctuation. Control ES sets the unit to read only some punctuation. Only necessary punctuation marks are pronounced such as decimal point, number sign, dollar sign, plus, equal. In "Most" punctuation mode it gives you the word Period when it appears in the text. Star, apostrophe and exclamation are a few more examples. By pressing Control EA you get all possible punctuation that might be seen in programming. These include return, linefeeds, space, delete, and so on. I have saved the best feature for last. That is the screen review setting that allows you to review up to 24 lines of previous text without moving the location of your actual cursor. In this mode you can even get it to spell individual words. This feature is a real help, especially if you can not see the screen. The software for the Echo likes to sit in a RAM card in high memory. For this reason programs containing hi-res graphics will not run. Unfortunately, copy protected programs will not run either.

A few ambitious blind programmers have been writing and marketing software that is not only compatible with the Echo, but have other features useful to blind computerjsts. These are good solid aplication programs usable at work and at home. The two leading people currently writing software are Mr. Bill Grim, Computer Aids Inc., P.O. Box 5502, Fort Wayne, IN 46895. His philosophy is to write programs that are effective yet easy to learn and use. I am using his word processor program to write this article. He also has a data base program available called Info. This program is modeled after the Apple Personal File System. It gives 20 user definable fields and allows multi-criteria searches in a single pass. This program also can be used to merge information into form letters. Another program, called Agendas, works in conjunction with the Thunderclock to give you a smart calendar. It will remind you of appointments up to 9 days in advance. Another patch he is presently perfecting is for the Transcend intelligent terminal program. It has proven to be tricky to have all the features of Transcend available through voice. Bill indicates that even though the development time is much longer and often involves several people, those people have felt the projects are important enough not to drive the cost higher than anyone would pay for the same kind of software off the shelf. It has been said that some of the profits from program sales are going toward development of a reading machine that will scan printed meterial and make it available through the talking Apple.

Another person writing software is David Holiday of Raised Dot Computing, 310 South 7th Street, Lewisburg, PA 17837, (717) 523-6739. David's programs are compatible with the Echo-II and also have drivers for a host of input and output devices. His major program is called Braille Edit. It is designed for proficient braille users. I understand it is a sophisticated word processor among other things. One day I will have it to use along with the Bill Grim programs, but for now I will leave it to another expert who uses this program. Both these folks have started SIGs which are growing like tobacco leaves. I have learned a great deal from both of these aggregations.

One of the most exciting items announced recently is the Zero Card, developed by Elliott Friedman and marketed by the Cyberon Corporation, 1175 Wendy Road, Ann Arbor, MI 48103, phone (313) 994-0326. This card plugs in to any slot and directly takes the output of the video ROM, and pumps the characters down a 9600 baud port. You can connect a voice synthesizer or a versabraille to the output. This will work with either unprotected or protected software. There are some limitations. Currently it is wire wrapped so that it takes up two slot locations. It outputs only at 9600 baud. There are no handshakes. This means you cannot use a Votrax Type&Talk with it. Pascal programs currently will not work because of different input/output routines. It is said to work with 75 to 80% of Apple software. Since it uses none of the memory space, a program such as Transcend can be run without shrinking the size of the capture buffer as an Echo-II program may have to do. The cost is $270.00. A spelling checking program is also available for $160.00. I hope to have these items in the computer room soon.

PROGRAM PREVIEWS

by Cara Cira

December 17 - Garage Sale

Have any software you're bored with? Any hardware you've outgrown? Want to do a little trading or buying? We are running another garage sale, so gather your extras, tired-withs, and bring your coins to splurge during this pre-holiday sale.

COMPUTERS AND HANDICAPPED CHILDREN: A Bibliography

by Jay Thal

This bibliography has been excerpted from one supplied to us by The Council for Exceptional Children (CEC). It includes a variety of references in the literature for the use of microcomputers in ameliorating handicapping conditions.

The CEC will be sponsoring a National Conference on Technology in Special Education on January 25-28, 1984, in Reno, Nevada. This will be the CEC's second such conference--the first was held last March in Hartford, CT. Copies of the Proceedings will be available soon from the CEC, Dept. 6509, 1920 Association Drive, Reston, VA 22091-1589.

Additional publications available from the CEC include:

No.248 Microcomputers in Special Education: Selection and Decision Making Process, 1983, 112pp., $7.95

No.274 SpecialWare Directory, 100pp., $13.95

No.262 Microcomputers in Special Education, 1982, 96pp., $5.00

No.231 Computer Connections for Gifted Children and Youth, 1981, 92pp., $16.95

and, available in January 1984, the Microcomputer Resource Book for Special Education.

HEARING IMPAIRMENT

Arcanin, J., Zawolkow, G.
Microcomputers in the service of students and teachers--CAI at the California School for the Deaf., American Annals of the Deaf, Sept. 1980.

Bates, M., Wilson, K.
ILIAD: Interactive Language Instruction Assistance for the Deaf. Final Report, No.4771. Cambridge, MA: Bolt, Beramek and Newman, Inc.

Casey, K.B.
Computer applications for the deaf and deaf/blind. Directions: Placement and Programming, 1981.

Cronin, B.
The DAVID System: The development of an interactive video system at the National Technical Institute for the Deaf. American Annals of the Deaf, Sept. 1979.

Dolman, D.
English remediation and the older deaf student: the computer as a tool. American Annals of the Deaf, Sept 1980.

Goldberg, E.P.
Creative use of media in the schools and programs for the hearing impaired. Volta Review: Curriculum Content and Change, Oct/Nov 1980.

Hoffmeyer, D.B.
Computer-aided instruction at the Florida School for the Deaf and Blind. American Annals for the Deaf, 1980.

Mothner, H., Shawn, J.
Microcomputers are "Macrocontributors" to special education programs. American Annals of the Deaf, Aug. 1982.

Richardson, J.E.
Computer-assisted instruction for the hearing impaired. Volta Review, Sept. 1981.

Sewell, D.F. et al
Language and the deaf: An interactive microcomputer-based approach. British Journal of Educational Technology, Jan. 1980.

Watson, P.G.
Utilization of the computer with deaf learners. Educational Technology, Apr. 1978.

Winthrow, F.B., Ed.
Learning technology and the hearing impaired. Volta Review, Sept. 1981.

LEARNING DISABILITIES

Colby, K.M.
The rational for computer-based treatment of language difficulties in non-speaking autistic children. Journal of Autism and Childhood Schizophrenia, July/Sept. 1973.

Goldenberg, L.M.
Special Technology for Special Children: Computers to serve communication and autonomy in the education of handicapped children. Baltimore, MD: University Park Press, 1979.

Hasselbring, T.S.
Reducing inappropriate social behavior of moderately retarded students as a function of modifying teacher interactive behavior using the computer assisted teacher training system (CATTS). Ann Arbor, MI: Indiana University, 1979.

Hasselbring, T.S.
Remediating spelling problems of learning handicapped students through the use of microcomputers. Educational Technology, April 1982.

Holz, E. et al
Computer assisted instruction for teaching basic money handling skills to mentally handicapped students. Edmonton, Alberta: Alberta Department of Education, Edmonton, Planning and Research Branch, 1979.

Sevcik, E. & Sevcik, J.
PET reading program: A learning program for problem readers. Recreational Computing, Jan/Feb 1980.

Watkins, M.W. , Webb, C.
Computer assisted instruction with learning disabled students. Educational Computer, Sep/Oct 1981.

GENERAL

Carman, G.O., Kosberg, B.
Educational Technology Research: Computer Technology and the education of Emotionally handicapped children. Educational Technology, Feb 1982.

contd.

Doorly, A.
Microcomputers for Gifted Microtots. G/C/T, Sept/Oct 1980.

Etlinger, L.E., Ogletree, E.G.
Calculators and microcomputers for exceptional children, 1981 (ERIC Reproduction Document No. ED 202 707).

Fay, G. et al
The electronic schoolhouse: New technology in the education of the severely retarded. Pointer, Winter 1982.

Hallworth, H.J., Brebner, A.
CAI for the developmentally hadicapped: Nine years of progress. Proceedings of the Conference for the Development of Computer Based Instructional Systems, 1980.

Hannaford, A., Sloane, E.
Microcomputers: Powerful learning tools with proper programming. Teaching Exceptional Children, Nov 1981.

Laewen, D.
Microcomputers in teaching handicapped students. Proceedings of the 19th Annual Convention of the Association for Educational Data Systems, 1981.

Lally, M.
Computer assisted teaching of sight-word recognition for mentally retarded school children. American Journal of Mental Deficiency, Jan 1981.

Lindsey, M.
State-of-the-Art report: Computers and the Handicapped. Eugene, OR: Northwest Regional Educational Laboratory, Aug 1981 (ERIC Document Reproduction Service No. ED 213-393).

Papert, S.A.
Information prosthetics for the handicapped. Final Report. Cambridge, MA: Massachusetts Institute of Technology, 1981.

Pollard, J.
Testimony to a micro - Peter can now read. Recreational Computing, May/June 1979.

Ragan, A.L.
The miracle worker: How computers help handicapped students. Electronic Learning, Jan/Feb 1982.

Ragosta, J., Holland, P., & Jamison, D.
Computer assisted instruction and compensatory education: the ETS/Lausd Study. The Executive Summary and Policy Implications. Washington, DC: National Institute of Education, June 1982.

Scully, T.
Microcomputer communication for the handicapped. People's Computers, Mar/Apr 1978.

Semmel, M.I. et al
Microgames: An application of microcomputers for training personnel who work with handicapped children. Teacher Education and Special Education, Summer 1981.

Spring, C., Perry, L.
Computer assisted instructions in word-decoding for educationally-handicapped children. Carmichael, CA: San Juan Unified School District, 1980.

Thomas, M.A.
Educating handicapped students via microcomputer/videodisc technology: A conversation with Ron Thorkildsen. Education and Training of the Mentally Retarded, Dec 1981.

Thorkildsen, R. & Williams, J.G.
A brief review of the current status of computers in special education. Logan, UT: Exceptional Child Center, Utah State University, January 1981.

Vitello, S.J., Bruce, P.
Computer assisted instructional programs to facilitate mathematical learning among the handicapped. Journal of Computer-Based Instruction, Nov 1977.

DP-10 contd. from pg 16

the copy protection. It seems to be very rare (Sargon II was only program we've found so far).

PRODUCT DETAILS

Price: $2,495. Available for Apple II, II+, //e. Available for IBM PC first quarter, 1984. Model with 80-column compatible interface (for Apple) announced for January, 1984. Manufactured by Visualtek, 1610 26th Street, Santa Monica, CA 90404; (213) 829-6875. Local orders (MD, VA, DC, NC) contact: Phillip Barton Vision Systems, 3911 York Lane, Bowie, MD 20715; (301) 262-3665 or Susan Gowin (703) 256-2555. Demonstrations will be arranged upon request.

THE SERIAL CODE KEYBOARD HELPS THE SEVERELY HANDICAPPED.

by Wolfger Schneider (APL User's Group)

Data and command entry to computing machinery via a typical keyboard is a relatively easy task for those of us having no physical handicaps. But consider the plight of the upper limb amputee trying to type shift or control keys using the traditional mouthstick. Or how about a quadriplegic just trying to move any key with remnant head motion or vestigial finger or toe motion. Many of these individuals are presently denied access to computing machinery because of the lack of a suitable data entry technique.

The Serial Code Keyboard is a low-cost and relatively easy method of data entry. It requires only the capability to move a spring-centered three position switch to either extreme position. These two extreme positions are sensed as simple switch closures and stimulate the generation of two easily distinguishable tone sequences. Modulation of these tone sequences by appropriate movement of the switch can be used to generate an easily learned pseudo Morse Code. These serial tone encoded sequences can then be translated to corresponding ASCII codes to duplicate the function of the standard keyboard.

Assuming the availability of an appropriate three position switch, the Serial Code Keyboard functions can be implemented in either a separate firmware module that logically ORs the standard keyboard produced ASCII with the Serial Code Keyboard produced ASCII, or they could be implemented in appropriately linked software executing on a personal computer. The firmware approach is advantageous for proprietary software packages that allow no linking with other software. The software approach provides a good familiarization with the Serial Code Keyboard approach to data entry and can be successfully used with most Applesoft programs.

The Electro-Mechanical Interface

To exercise the Serial Code Keyboard software, a three position switch arrangement suitable to the individual handicap has to be constructed. It is important to arrive at a switch-lever arrangement that properly takes into account the handicapped user's stroke length, stroke trajectory, stroke force levels, and stroke positioning accuracy capabilities. In some situations, a standard Morse keyer suitably mounted, may serve as an appropriate three position switch.

Electrically, the two switch contacts are interfaced to the Apple computer via the game port as shown in Figure 1 using the same bit inputs used by the game paddle pushbuttons. This electrical connection is of opposite polarity to that used by the pushbuttons on the game paddles. The switch connected to PB0 will produce a sequence of high frequency "dits" for as long as the switch is closed. Similarly, PB1 will produce a sequence of low frequency "dahs".

Operation of the Serial Code Keyboard

To "type" a character with the Serial Code Keyboard, the user must move the switch so as to generate the tone sequence corresponding to the desired character. For example, **-- will generate the letter "Z", where "*" is used to represent the higher tone (dit) and "-" is used to represent the lower tone (dah). It should be noted that dit and dah sounds are of equal duration and that the sound-on time equals the sound-off time. This departs from the traditional Morse Code which does not frequency encode dits and dahs and has dahs lasting three times the duration of dits. Since we are not using time duration modulation, it is more efficient to make dits and dahs of equal duration. The end of character is recognized by no transmission for a time equal to more then two dah durations.

The serial code correspondences with printable, non-printable, and mode keys are shown in Table 1. For historic reasons and for code efficiency reasons, the International Morse Code definitions for alphabetic, numeric, and punctuation keys were retained. New definitions had to be made for the space, backspace, linefeed, escape, and enter keys.

Besides the standard keyboard mode, four keyboard modes are defined by first generating the serial code for the desired mode followed by the alphabetic or numeric modifier. The shift mode allows the shift codes to be generated and the control mode allows the control codes to be generated. The repeat mode will repeatedly generate at a reasonable rate the code for the selected character until either switch is momentarily closed. A short high frequency tone will indicate termination of the repeat mode. The sequence mode allows predefined ASCII code sequences to be called up. For example, sequence-C will generate code for "CATALOG-(return)" to list the catalog of disk files. Serial codes not defined in any of the keyboard modes are identified by a short high frequency tone being issued and no code being generated.

Continuous backspacing occurs when generating more than seven dahs, after which every new dah results in a backspace. Similarly, continuous "retype" occurs when generating more than seven dits. Cursor movement can be done by using escape I, J, K, or M just as with the regular keyboard but is better defined as a repeating sequence.

Summary

The software implementation of the Serial Code Keyboard provides potential users with the opportunity of trying it out to see if it is a reasonable approach to data and command entry for some members of the handicapped user community. A copy of the Serial Code Keyboard software is available in the Apple Pi files. Firmware implementations of the Serial Code Keyboard have been developed for the Apple personal computer and for "dumb" RS-232 type terminals by the Applied Physics Laboratory of the Johns Hopkins University under sponsorship of the Veterans Administration. These units are currently being evaluated in several rehabilitation centers throughout the United States and Canada. A firmware version for the Apple computer is being marketed by M. E. D. Inc.

This article is excerpted from one by the author published in the October issue of Creative Computing Magazine.

contd.

```
A *-     N -*    1 *----   SPACE **--
B -***   O ---   2 **---   BACK  ----
C -*-*   P *--* 3 ***--   LINE  *-*-
D -**    Q --*- 4 ****-   ENTER ---*
E *      R *-* 5 *****
F **-*   S *** 6 -****    SHIFT ------
G --*    T -   7 --***    CTRL  ******
H ****   U **- 8 ---**    REPT  ----**
I **     V ***- 9 ----*    SEQ   ***---
J *---   W *-- 0 -----    ESC   **----
K -*-    X -**-
L *-**   Y -*-- : ---***  , --**--
M --     Z --** ; -*-*-*  . *-*-*-
                - *****-  / ****--
```

TABLE 1. This Morse code table shows the code assignments for alphanumeric and punctuation keys. Special code assignments for cursor control and mode control keys were made as shown. Punctuation and graphic keys requiring the shift key on the standard keyboard will require the shift mode code to precede the code of the desired key that shares its location.

```
  3 Position              Game Paddle
    Switch                  Connector

DIT ! <!> ! DAH    ------------5V PIN 1
    !  !  !         !
    !  !  !         !--2 KOHM--
    !  !  !         !         !
    !  !  !--------!----------PB1 PIN 3
    !  !-----------!----------GND PIN 8
    !              !--2 KOHM--
    !                        !
    !------------------------PB0 PIN 2
```

FIGURE 1. Electrical connection of the three position switch is easily achieved via the Apple's game I/O socket. A 16 pin DIP connector should be hooked up as shown.

MULTI-HANDICAPPED BABIES ON-LINE WITH APPLES

by Mike Behrmann, Ed.D and Liz Lahm, M.A.

The passage of the Education for All Handicapped Children Act, PL 94-142, in 1975 opened a new era of hope in the education of handicapped children in the United States. Over four million handicapped children are now being served through the public schools and the services provided to handicapped children in general have seen significant improvement in terms of quality and quantity since the passage of this law (U.S.Department of Education, 1982). Currently we are on the brink of another new era, a revolution in our society, moving from an industrial age to an information age, which probably holds an even brighter future for handicapped children, particularly young handicapped children. In this age of technologies, the computer will be the central tool for work, home life and recreation. Computers and robots will do many of the tasks that our handicapped children require other people to do for them today. With proper training, handicapped children will also be able to make the decisions which help them use computers in their daily lives.

Severely physically handicapped infants and toddlers are limited in the amount of interaction they can have with their environment. This may limit the amount they can learn from it, causing secondary handicaps and thus creating an even more handicapped individual. This cycle can possibly be broken by using a microcomputer to give some of the environmental interaction back to the infant.

The early years are vitally important for conceptual and language development. Kephart states that all knowledge is built on the infant's motor experimentation on the world around him (Goldenberg, 1979, p.40). Without that motor information, the child is unable to attach meaning to his world. Similarily, Piaget states "knowledge is derived from action ..." (Goldenberg, 1979, p.41). These individuals are joined by many others in reciting the importance of early motor actions and environmental manipulations to develop knowledge bases and language.

The question is raised by Goldenberg (1979, p.47) as to the level of motor interaction necessary to obtain the sensorimotor experiences needed. He points out that some severely motor-handicapped individuals reach high levels of cognitive development and suggests that active control over the environment may not be necessary but that these individuals are receiving feedback from their surroundings in some other form. He proposes the possibility of 'remote control' manipulation as being an adequate experimentation method for conceptual development.

The computer's ability to maximize a minimal physical input in a controlled process, combined with the computer's ability to collect and analyze large amounts of data may provide researchers and teachers with the ability to investigate the learning capabilities of very young children and severely disabled children to a much greater extent. The two most common areas of application are cognitive development and communication. They are, not surprisingly, the two areas that have received the most attention for older handicapped individuals. Just as important, though, are the areas of self-help and socialization.

Cognition

Within the cognitive domain, technology can be used to assist an individual in learning through the techniques developed for computer assisted instruction (CAI). The young child can also benefit from these techniques if software is appropriately designed. This means content, type of interaction, and responses must match their developmental levels. The problems of low or non-existent reading skills can be by-passed by using animated graphics and voice synthesis for giving directions and feedback. With improving interface technology that requires minimal physical manipulation, switches are available that allow severely handicapped individuals to demonstrate their cognitive abilities both for classroom skills and for assessment purposes. The Adaptive Firmware Card from Adaptive Peripherals is an example of available technology for the Apple that allows single switch inputs to replace keyboard inputs in commercially developed software. The cognitive abilities of some individuals are being exhibited for the first time through these advances in technology. These same technologies are also often appropriate for allowing very young children to use the technology in a beneficial way.

Communication

Communication devices have improved tremendously in recent years. Dedicated devices for communication are becoming lighter and more portable, more flexible and expandable, and easier to use. Stand alone computers such as the Apple are also being programmed to allow equivalent and, in some cases, better communication abilities while still maintaining availability for other functions. The Votrax voice systhesizer is an example of easily accessed voice output for inclusion in self-developed software or commercially available communication programs such as those from Input-Output Research Inc. Techniques to teach early communication skills using technology can be based on those used to teach with traditional devices such as communication boards. The early learner can begin with a computer controlled communication system that displays as few as two pictures. As the child increases vocabulary and ability to function with the system, the number of options can easily be expanded.

Self-Help

Recent appearance of relatively low cost environmental control and manipulation devices allow teaching in other domains. Self-help is an area that the technology can offer innovative alternatives to handicapped children and their families. Beyond the ability to communicate as a self-help skill, children can be given the means to operate age-appropriate electrical devices such as toys, radios, TVs, and record players through environmental control devices. These devices can also enable the individual to control devices outside their immediate environment. For a young child, this might incorporate turning on a flashing light in the kitchen to alert parents that s/he needs attention. Older individuals can open doors with electric admittance devices and use electronic bulle-bulletin boards to communicate outside their home. Waldo from Artra, Inc. is one device designed for the

contd.

Apple that turns the computer into a tool for environmental control. These abilities contribute to the development of independence in a child, provide pragmatic reinforcement for communication, and free up the rest of the family for other functions.

Robotics technology, although very new in personal applications, is beginning to surface giving new thoughts to the area of environmental manipulation. The HERO-1 from Heathkit is an example of a relatively low cost multi-function robot currently available. A new product from Micromation, the Apple-Hero Communicator, which provides two-way communication between the Apple and the Hero will rapidly increase the sophistication of robotics applications. As one example, robots can be programmed to retrieve objects in the environment. The implications are many for the motor-handicapped child who wants to play with a particular toy. Presently he must communicate to another person the desire to play with it and request their assistance to bring it to him. If the robot can perform this function, independence and self-concept growth opportunities are enhanced. Additionaly the desire and ability to gradually explore and manipulate the environment should allow more normalized development in the child's learning process. Research in relatively low-cost and portable biomedical applications of the computer is also being developed and has numerous implications for the handicapped child. Very little has ever been done before to assist the motor-handicapped person to regain motor control without the necessity of cumbersome equipment or prosthetics. Computer activated muscles may eventually allow the child to more accurately manipulate his/her environment and capture similar learning experiences to their peers and help create a more normal view of their world. In this sense, the child's body becomes the mechanical "robot" that is controlled by the microprocessor.

Socialization

Along with increased communication abilities and independence comes the opportunity to develop age-appropriate socialization skills. For example, the voice output of a communication device can give the two year old the opportunity to gain adult attention and live up to the stereotype of the "terrible two's". The increased independence allows more opportunities to interact with others in the recreational domain or engage in isolated play as their peers do.

Numerous examples could be given to show the benefits that the technology can provide for the young developing child. Each would contribute to the total development of the child but each would also allow the cognitve growth to continue in a normal fashion. The literature is full of testimonies that the child learns from personal experiences of their environment. By providing the opportunity to independently explore and test hypotheses about their world, cognitive growth in all of the developmental domains can continue in a more normal way.

Conclusion

The age of computers is unquestionably going to impact the education of our children. The questions of how, when, and where are in the hands of informed parents and educators. It is important that decisions be made to utilize the benefits of the technology for our children and yet not let the technology remove or lessen other learning experiences.

Technological innovations show particularily bright prospects for the education of handicapped children. In addition to the benefits that all children may derive from this age, handicapped children and special learners will receive some truly remarkable advantages. This includes the ability of computers to perform many of the tasks that other people have had to perform for the handicapped.

The above examples illustrate a few of the tool uses of computers and it is in this respect that computers will probably impact most on the lives of handicapped individuals. The computer is integral as a tool for learning skills that will make communicating and daily life easier.

It is difficult to predict where this computer revolution will take us. Will retardation be eliminated through microelectronic implantation? Will microelectronic biomedical engineering be able to "cure" paraplegics by providing computer controlled stimulation to muscles? Will the handicaps be taken out of disabilities? With continued research and development, there is great promise for the education of handicapped children and their ability to function successfully in our world.

REFERENCES

Goldenberg, E.P. Special Technology for Special Children. Baltimore: University Park Press, 1979.

U.S. Department of Education. Progress Toward a Free Appropriate Public Education, Washington, D.C., 1982.

THE IMPORTANCE OF COMPUTERS TO DISABLED PEOPLE

by Roger Petersen

I don't think I need to argue the importance of computers in modern life to this audience. And of course, computers are important to disabled people in the same ways, assuming the appropriate person-machine interfaces can be made. But in addition to these applications, there are at least two ways in which computers are of special importance to disabled people. For one thing, the applications which disabled and non-disabled people have in common are quite often tasks which non-disabled people could do much more easily than disabled people could without computers. For example, the editing which has traditionally involved drawing lines and arrows, making erasures and writing words under or over other words, ranges from extremely difficult to impossible in braille. Thus word-processing capability increases the productivity of a blind person even more than for a sighted person. Also there are applications for which non-disabled people do not use computers, but which computers make possible for disabled people. For instance, computerized speech synthesis is making it possible for some severely disabled people to speak for the first time.

Let me begin to elaborate upon this subject by making an observation about attitudes which I often encounter among computer enthusiasts. Despite what I assumed computer types should know about computers, I find that they have fixations about the input and output systems rather than on the computers themselves. They think of a computer as a keyboard and a screen, when actually, those are among the most trivial parts of the machine. They are simply input and output devices which are convenient for non-disabled people. What is important about computers is what's in between the keyboard and the screen. Unlike pre-computer devices such as typewriters, there is no necessary connection between any particular key on the keyboard and any particular shape appearing on the screen. In fact, the computer doesn't care whether the input comes from a keyboard or whether the output goes to a screen, as long as the input device delivers strings of pulses that the computer can recognize and the output device reacts to the streams of pulses which the computer sends out as the computer expects it to. Thus, many of the applications of the computer to disabilities may be conceptualized as keyboard emulation and screen emulation.

Now, a word about disabilities. I find it most useful to view people with disabilities as lacking, or having some impairment in one or more specific functions, such as reading ordinary print, understanding spoken language, or writing in the normal way. Of course, in addition to the above input and output functions, some disabilities involve impairments in processing functions, such as memory, sequencing of tasks or calculation. In cases where these functions are moderately impaired, augmentative devices may suffice, e.g., enlarged keyboards or bigger letters on the screen. In cases of more severe disability, alternative devices must be used, which make use of totally different sensory or motor channels. Upon reflection I feel sure that it will be as clear to you as it is to me that the characteristics of the computer discussed above make it the ideal instrument for the optimization of the quality of life for disabled people.

The purpose of this article is not to catalog the special hardware and software available for disabled people. Suffice it to say that keyboard emulators have been developed using joysticks, light pens and various scanning systems controlled by switches among others. Screen emulators include refreshable braille displays and speech synthesizers. My purpose is rather to create interest in disability-related problems among the members of the club, so that their cumulative programming knowledge can be brought to bear on these problems.

Most of the modification of hardware and software required to adapt computers for disabled people is well within the capabilities of at least some of the members of WAP. Let me enumerate a few miscellaneous examples of problems which I have identified.

Much commercial and public domain software is not compatible with the ECHO II speech synthesizer. Either the program is cursor-oriented instead of giving explicit prompts, or it competes with the synthesizer for space in memory, or there is some other fairly trivial problem. Other software is incompatible with other speech and braille devices which operate through serial interface cards because the programs are not designed to allow output to be sent to a slot.

There is a great deal of adaptive hardware and software which has been documented but is not available, or is available for some other computer system. I'm sure that many of these hardware and software modifications could be done on an individual basis by members of WAP.

We even need help just finding out what's out there. The other SIGs can help in that regard. For example, I bet the Home Control SIG has information on environmental controls which severely disabled people could use to great advantage.

By now, I hope you are asking, "What can I do to help?". The answer is to join SIG Disabled and lend your particular genius to the cause. Whether you are a home controller, a telecommer, a logophile, or even a game freak--after all, disabled people like games too--we need you.

SALE SALE SALE SALE

Who: For Washington Apple Pi Members only.

What: All WAP disks, when you buy 5 or more disks at one time.

Price: $4.00 per disk.

When: Starting at the November 26 meeting and ending when the Club Office closes on December 23.

Where: At the November and December meetings, and at the Club Office.

A MINIMUM MOVEMENT KEYBOARD

by Tom Riley

Many handicapped people would be greatly aided in working with computers if they could enter all keyboard strokes by making a simple movement of a particular part of the body. For example, someone in a wheelchair who has limited hand use might find the single finger keyboard shown in Fig. 1 a vast improvement over a mouthstick. By employing software in the public domain and an inexpensive ($20.00) homebuilt device that plugs into the game I/O port, it is now possible to perform all keyboard functions with a minimum movement. This short article will discuss the construction of such a unit.

The normal keyboard input will be replaced by Morse code, a system that uses only two input signals. Software that lets the Morse code key replace the keyboard is provided in the article, "Communicating in Code" by Wolfger Schneider, Creative Computing, October 1983. (See also article this issue - Ed.) The article also includes a special "HELLO" program to load the Morse keyboard machine language program and a "Morse Tutor" to assist in learning the code. A good Morse operator can easily keep pace with a good typist.

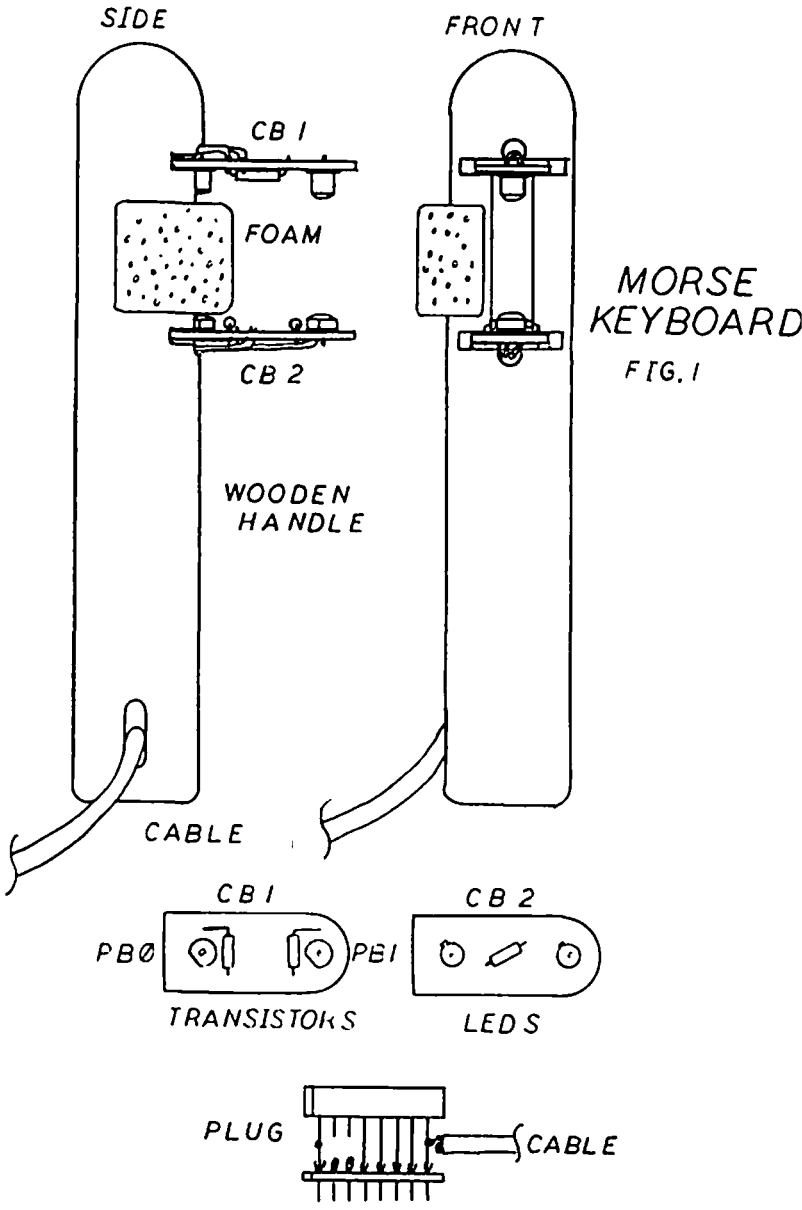
Mr. Schneider uses a standard mechanical Morse key cabled to the game I/O connector for input. Such mechanical keys are expensive, however, and difficult to mount for the special needs of the handicapped. The homebuilt unit shown in the two accompanying figures can be readily adapted to operation by various parts of the body. The software requires that pushbutton 0 and pushbutton 1 on the game port be activated in turn to make the dots and dashes of Morse code. This unit activates the pushbuttons in response to the interruption of two tiny light beams (no force is required to break the beams). The mechanical layout can be modified for almost any configuration.

The hand-operated unit shown in Fig. 1 consists of a wooden handle, two small circuit boards, and a cable. A small piece of foam helps position the index finger between the two light beams. If the finger is flexed inward slightly the PB0 beam is broken. This has exactly the same effect as pressing the pushbutton on the zero paddle of the Apple. Straightening the finger breaks the PB1 beam. The entire unit can be held in the lap or in any comfortable position, and all keyboard strokes can be achieved with six or fewer one quarter-inch movements of one finger.

Figure 2 shows the circuit schematic. The LEDs and phototransistors are sets, Radio Shack part #276-142. The two small circuit boards were cut from #276-157 predrilled circuit board, and the cable is #278-365 modular telephone cable. The plug was made from a 16-pin DIP header (#276-1980) and a 16-pin wire wrap socket (#276-1994). The finished wiring was protected with a layer of RTV silicon sealant, not shown in the drawing.

The size of the mechanical parts must be adjusted for the individual's requirements. Simply line up the LED and transistor sets so that some part of the body can break the light beam between them. If the body part is a toe, the handle might be replaced with a wooden sandal. If it is an arm, then a larger unit, perhaps fashioned like the arm rest of a chair, would be in order. A device for the tongue might look like an athletic teeth protector. Units that respond to the movement of an eyelid or a facial muscle would be more difficult to design and build, but are feasible. All in all, this project is an excellent study in human/machine interfacing.

Additional work is needed on the software to inprove its compatability with commercial software packages. If there is any demand at all for this type of input device, I am certain that all software and hardware problems can be quickly overcome. Please feel free to call me at home (301-340-9432) in the evenings or on weekends if you would like to work on these applications, or if you need such a device.



MORSE KEYBOARD
FIG. 1

contd. on pg 28

MORE ON THE SERIAL CODE KEYBOARD

by Boris Levine

This is to call your attention to a very interesting article on helping disabled persons to make more effective use of computers, and to describe the hardware I have made, based on that article.

The article referred to is by Wolfger Schneider and is in Creative Computing ('Communicating in Code', Oct 1983, Pg 222). In that article, Mr. Schneider described software, written in Applesoft, which would accept signals in a modified Morse code and convert them into signals equivalent to keyboard input. Further, he described hardware of various degrees of complexity to provide those signals, using the Apple's game I/O socket. The technique is particularly effective because it goes beyond displaying the words keyed in; it also permits entering pre-packaged commands like 'CATALOG' and booting other programs by keying commands like 'LOAD xxxx,d2'. The software listing included a tutorial and a practice program which permitted practice at various speeds.

When I called Mr. Schneider (twice) for some technical information on one form of key, he cheerfully provided that information and -- in addition -- sent me a disk with the three programs listed in his article. (I have provided a copy to the WAP library).

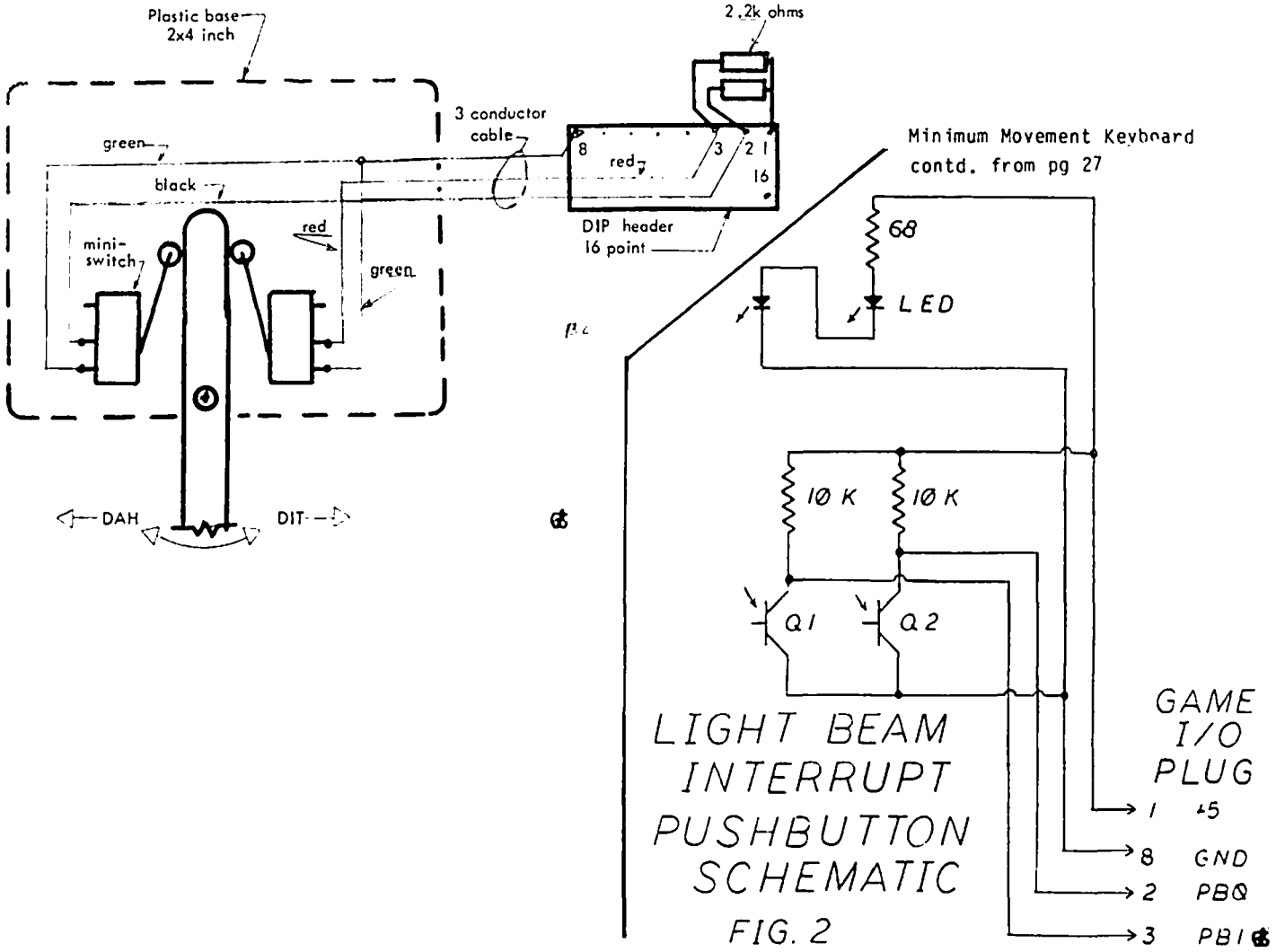
My intention is to adapt Mr. Schneider's approach to the needs of a person with very limited manual capability (due to a form of muscular dystrophy). As a starter, I have built a special Morse key suitable for tiny finger-movements (Fig 1). It includes several details which are for the purpose of simplifying its use, like moving the lever to the left causes the cursor also to move to the left. Parts for a minimal version, as available from Radio Shack, are as follows:

5feet	Cable,3 cond (inc shield)	278-1276
2	Resistors (2200 ohm,1/2W)	271-027
2	Switch, lever	275-016
1	DIP Header, 16 position	278-1980

Later, the key will be mounted in a closed chassis, as follows:

1	Case, plastic	270-221
1	Plug, 5 pin (only 3 used)	274-003
1	Chassis socket, 5 pin	274-005

The construction part has been simple; the first version, described above, works. I have been able to write sentences and even boot other disks. But I've also had some problems in making full use of the software. These were discussed with Mr.Schneider; some are due to a change in the polarity of the signal (compared with the signal provided by the pushbutton on the game paddle).



LIGHT BEAM INTERRUPT PUSHBUTTON SCHEMATIC

FIG. 2

AN IBM COMPATIBLE APPLE

by Bill Jacobson

In the November 21, 1983 issue of Infoworld, a senior editor of that magazine reported that the Apple II+ and //e computers may soon have MS-DOS compatibility.

The MS-DOS operating system, marketed by Microsoft Corpration, is considered to be the industry standard for 16-bit computers.

Paul Freiberger of Infoworld stated that Rana Systems, with the full blessing of Apple Computer Inc., will release an interface card/disk drive combination with the following characteristics:

-- 256K of RAM, upgradeable to 512K.

-- two double-sided, double-density drives (326K each), that read both Apple and IBM-PC formatted disks.

-- an 8086 processor which is significantly faster than the 8088 used on the IBM-PC.

-- the ability to use many, if not most, programs written for the IBM-PC.

-- total compatibility with all Apple software.

A telephone conversation with Susan Wolf of Rana confirmed most of the information contained in the Infoworld article. Ms. Wolf stated that deliveries of the MS-DOS unit, known as "Rana 8086/2", are scheduled for March 1984 and that list prices have not been established. It is clear that Apple and Rana will attempt to keep the combined price of an Apple //e and the Rana 8086/2 well below that of a similarly configured IBM-PC.

Ms. Wolf also indicated that discussions are underway with producers of the most popular IBM-PC software to induce them to make their programs fully compatible with a MS-DOS equipped Apple. She assumed that this could be accomplished by including "Apple" as one of the terminal configuration options available with each program.

With the introduction of the Rana 8086/2, Apple owners will have access to six operating systems: MS-DOS, CP/M-80, CP/M-86, Apple DOS, Pascal, and PRODOS.

APPLESOFT TOKENS

by Richard A. Untied

When you are writing an Applesoft program, and you enter a line at the keyboard, Applesoft scans through what you typed, and converts keywords to tokens, then enters the "compressed" line into your program in memory. These tokens are then interpreted by Applesoft when you RUN or LIST the program. Characters which are not recognized as keywords are stored in the line as ASCII characters (high bit off). These include numbers, variable names, strings and everything following REM or DATA statements.

An Applesoft program will normally be stored in memory starting at address $0801. Each line begins with a forward pointer to the next line (two bytes), then the line number (two bytes). Next is the tokenized line contents, followed by a zero byte to signal the end of line.

The table below was produced directly from the Applesoft ROM contents. It lists each Applesoft token, with the token processing entry point address, and the corresponding keyword. Tokens $C0 through $D1 are used only in conjunction with other keywords, and so have no jump table entry. Error messages follow the keyword list in ROM. While tokens $EB through $FC are not valid, if present in an Applesoft program they would LIST as the corresponding error message. The address/jump table can be found starting at $D000, and the keywords at $D0D0. This table may be of use as a reference for the 6502 machine language programmer who wishes to understand or modify Applesoft internals.

TOKEN	ADDR	KEYWORD	TOKEN	ADDR	KEYWORD
80	D870	END	A4	F2A6	LOMEM:
81	D766	FOR	A5	F2CB	ONERR
82	DCF9	NEXT	A6	F318	RESUME
83	D995	DATA	A7	F3BC	RECALL
84	DBB2	INPUT	A8	F39F	STORE
85	F331	DEL	A9	F262	SPEED=
86	DFD9	DIM	AA	DA46	LET
87	D8E2	READ	AB	D93E	GOTO
88	F390	GR	AC	D912	RUN
89	F399	TEXT	AD	D9C9	IF
8A	F1E5	PR#	AE	D849	RESTORE
8B	F1DE	IN#	AF	03F5	&
8C	F1D5	CALL	B0	D921	GOSUB
8D	F225	PLOT	B1	D96B	RETURN
8E	F232	HLIN	B2	D9DC	REM
8F	F241	VLIN	B3	D86E	STOP
90	F3D8	HGR2	B4	D9EC	ON
91	F3E2	HGR	B5	E784	WAIT
92	F6E9	HCOLOR=	B6	D8C9	LOAD
93	F6FE	HPLOT	B7	D8B0	SAVE
94	F769	DRAW	B8	E313	DEF
95	F76F	XDRAW	B9	E77B	POKE
96	F7E7	HTAB	BA	DAD5	PRINT
97	FC58	HOME	BB	D896	CONT
98	F721	ROT=	BC	D6A5	LIST
99	F727	SCALE=	BD	D66A	CLEAR
9A	F775	SHLOAD	BE	D8A0	GET
9B	F26D	TRACE	BF	D649	NEW
9C	F26F	NOTRACE	-----	----	-------
9D	F273	NORMAL	C0		TAB(
9E	F277	INVERSE	C1		TO
9F	F280	FLASH	C3		SPC(
A0	F24F	COLOR=	C4		THEN
A1	D96B	POP	C5		AT
A2	F256	VTAB	C6		NOT
A3	F286	HIMEM:	C7		STEP
C8		+	D9	E2FF	POS
C9		-	DA	EE8D	SQR
CA		*	DB	EFAE	RND
CB		/	DC	E941	LOG
CC		^	DD	EF09	EXP
CD		AND	DE	EFEA	COS
CE		OR	DF	EFF1	SIN
CF		>	E0	F03A	TAN
D0		=	E1	F09E	ATN
D1		<	E2	E764	PEEK
-----	----	-------	E3	E6D6	LEN
D2	EB90	SGN	E4	E3C5	STR$
D3	EC23	INT	E5	E707	VAL
D4	EBAF	ABS	E6	E6E5	ASC
D5	000A	USR	E7	E646	CHR$
D6	E2DE	FRE	E8	E65A	LEFT$
D7	(DEF9)	SCRN(	E9	E686	RIGHT$
D8	DFCD	PDL	EA	E691	MID$
-----	----	----------			
EB		NEXT WITHOUT FOR			
EC		SYNTAX			
ED		RETURN WITHOUT GOSUB			
EE		OUT OF DATA			
EF		ILLEGAL QUANTITY			
F0		OVERFLOW			
F1		OUT OF MEMORY			
F2		UNDEF'D STATEMENT			
F3		BAD SUBSCRIPT			
F4		REDIM'D ARRAY			
F5		DIVISION BY ZERO			
F6		ILLEGAL DIRECT			
F7		TYPE MISMATCH			
F8		STRING TOO LONG			
F9		FORMULA TOO COMPLEX			
FA		CAN'T CONTINUE			
FB		UNDEF'D FUNCTION			
FC		ERROR IN			
		BREAK:			
END					

I Am What I Am contd. from pg 14

If the character seen is <CR>, the X-register counter is incremented and the new count stored in memory.

• Then, this count is compared with #18. If the count = 18, this means that 18 lines of your program are now on the screen.

• Memory location $C000 is that designated for keyboard input. Lines 36-38 serve as a loop until a "CTRL-S" is pressed. "CTRL-S", high byte, is $93.

• When a "CTRL-S" is finally pressed, and only a "CTRL-S" is pressed, then lines 39-40 re-initialize the <CR> counter to zero. Line 42 is called "clearing the keyboard strobe". Mr. Wagner explains that "it is always a good idea to clear the keyboard when you're done with it". Otherwise, your previous keyboard press will still be present when you don't want it to be.

• At the very, very end is the JuMP to COUT1 as discussed earlier.

Speaking of "end" . . . . . .

DIF: THE VISI-CONNECTOR

by David Morganstein

At our October meeting, several members asked how to Visi-Plot something you had Visi-Calculated. They knew it could be done but wanted some help in figuring out the method. The answer lies in the "universal" file format labelled the 'DIF' (Data Interchange Format) developed by Software Arts, Inc. To fully understand this sequential file format, get Software Arts Technical Note SATN-18, "Programmer's Guide to the Data Interchange Format".

The DIF is a "standard" format. In this incompatability ridden world of microcomputer hardware and software, it is a breath of fresh air. It allows program developers to talk to each other through files of the same format. Many commercial programs now offer a read/write DIF option to allow you to exchange data from their program with others, a useful option!

On to the specific issue. The solution has two steps. First, write a DIF file of the rows or columns in VisiCalc which you want to plot. Second read the DIF file with VisiPlot. For a step by step, read on.

From VisiCalc, go to the upper left hand corner of the rectangle you wish to save and then issue a /S# (what, you never used the "#" before?) command. This tells VC that you want to save the about-to-be-selected rows or columns in DIF form. Your DIF file is much like a Print file, if you have ever saved one of those before. It consists of rows or columns of the data values and labels, but no formulas. VC will then ask if the file is to be viewed as rows or columns. The rows or columns will become series in VisiPlot. VC will also ask for the name of the file in which to save this rectangle of data. If you want VisiPlot to have a label for the rows or columns, put the label at the top of the columns or at the left hand side of the rows, so that it will be the first thing stored within each series. Lastly, you give the bottom right hand coordinate of the rectangle, just as though you were printing the data.

After creating the DIF file, boot VisiPlot. Indicate that you want to read a file and give the DIF file name. When VP reads the file, it will realize that it is not a standard VP file and ask you for two pieces of information stored in a VP file but not a DIF file, the period and the start year. Most of my data are not time series so I give a period of one and a start year of one. That's all there is to it. May all your plots be smooth ones...

Description		List $	Sale $
HARDWARE			
Disk Drives			
Micro Sci			
A35 w/o Controller		395.00	269.95
A35 w/Controller		495.00	349.95
Rana			
Elite One		379.00	269.95
Elite One Plus		519.00	349.95
Controller		145.00	89.95
Quentin			
500 - 5mb hard disk		1,995.00	1,449.00
5¼ floppy drive		335.00	249.95
Controller Card		65.00	49.95
Monitors			
BMC 12A 15MHz		99.95	79.95
AMDEK			
Video 300G		199.00	149.95
Video 300A		210.00	149.95
Dot Matrix Printers			
Epson			
MX-80		549.00	359.95
FX-80		699.00	539.95
MX-100		845.00	629.95
IDS			
Prism 132 w all options		1,699.00	1,495.00
MicroPrism		799.00	529.95
NEC 8023		645.00	449.95
Okidata			
92		699.00	499.95
93		1,199.00	844.95
Daisy Wheel Printers			
C Itoh			
Starwriter 40cps		1,895.00	1,249.00
Prowriter 55cps		2,395.00	1,479.00
Smith Corona TP-1		895.00	599.95
Transtar 130	"Best Buy"	895.00	659.95
Surge Protection			
Kensington			
System Saver		89.95	69.95

Also available

Modems
Interfaces
Disk drives
Accessories
Terminals
Peripherals
Joysticks
Paddles
Keypads

and, hundreds more!

Description	List $	Sale $
BUSINESS		
Data Managers		
dBase II with ZIP	700.00	399.95
DB Master	229.00	149.95
Utility pac #1	99.00	74.95
Utility pac #2	99.00	74.95
Stat pac	99.00	74.95
General Manager	229.00	149.95
InfoStar (Replaces DataStar)	495.00	299.95
PFS File	125.00	84.95
Report	125.00	84.95
Graph	125.00	84.95
Versaform II	389.00	249.95
Visifile	250.00	169.95
Accounting		
Accounting Plus II +	995.00	599.95
II e	995.00	599.95
Business Bookkeeping System	395.00	239.95
E-Z Ledger	60.00	44.95
General Ledger w Payables	495.00	379.95
Home Accountant	74.95	44.95
Payroll	395.00	294.95
Receivables	495.00	379.95
Financial Modeling & Planning		
Asset Manager	200.00	149.95
Budget Planner	150.00	119.95
Business Forecasting Model for VisiCalc	100.00	79.95
CalcStar	195.00	114.95
Multiplan	275.00	169.95
SuperCalc	295.00	199.95
VisiCalc II +	250.00	169.95
II e	250.00	169.95

and much, much more!

New Specials		
Davong 5mb hard disk drive	1,995.00	1,449.00
Includes cables, card and software		
Microtek		
Parallel Printer Card	130.00	89.95
Pkaso	165.00	134.95
Micro-Professor MPF II	399.00	319.95
Apple Compatible portable**		
Mind II	695.00	599.95
CSI slimline disk drive	295.00	239.95
Orange Micro		
Grappler Plus	165.00	129.95
Bufferboard	175.00	134.95
Syscom II		
95% Apple II Plus Compatible	895.00	659.95

COLUMBIA COMPUTER SYSTEMS

OVER 12,000 PRODUCTS AVAILABLE FOR YOUR APPLE

The largest & oldest supplier of Computers, Peripherals, & Software
in the Washington, D.C. Area

Mail your orders to: P.O. BOX 40813, Washington, DC 20016
or call (202) 364-0273 any time, day or night

Office Hours: 10:00am - 6:00pm M-F & 10:00am - 2:00pm Sat.

USER DEFINED PROGRAMMABLE FUNCTION KEYS

by Charlie Brown

User defined programmable function keys: the IBM PC has 10; the COMPAQ also has 10; the Apple II has none .... or so we used to think. Actually it has as many programmable keys as there are keys on the keyboard (including use of the SHIFT- and CONTROL- keys). An article entitled "Micro Macros" by Sandy Mossberg in the October, 1983 issue of InCider magazine contains a machine-language program which provides an example of programmable function keys for the Apple II, II+, or //e. Also note that the October, 1983 issue of the WAP newsletter contains an article by J.T. DeMay Jr. in which he describes a similar function built into GPLE (Global Program Line Editor) which is obtainable from Call-A.P.P.L.E. or Beagle Bros.

The purpose of this article is to present a machine-language program similar in concept (but different in execution) to that presented by Dr. Mossberg. In addition, an Applesoft driver is included so that a user unfamiliar with machine language will be able to easily define his/her own special function keys. These programmable function keys enable two keystrokes to take the place of any number up to 255 keystrokes. The first of these two keys is CONTROL-F which tells the Apple that the next keystroke is a special function key (these special function keys can be any letter, number, Shift-number, or Control-letter except F). When CONTROL-F is followed by a special function key, the definition of that key, rather than the key itself, will appear on the screen.

These programmable functions can be: DOS commands for immediate execution (e.g. C=CATALOG,S4,D2 or S=SAVE NEWEST VERSION OF PROGRAM); special commands for your word-processor, spreadsheet program, database management program, or any game that requires oft-repeated commands; computer program statements that are repeated (e.g. FOR I=START TO END); words or phrases used repeatedly in a word processing application (e.g. when writing a story about THE HONORABLE MONTGOMERY M. MONTAGUE).

After defining a set of programmable function keys, and using them in your particular application, you may want to "turn them off" (this means that CONTROL-F will no longer engage the special function mode). This is done by pressing the ESCAPE key; the RESET key will then turn this special function key mode back on.

The following two listings give the programs with which you can define and use these special function keys. The first, LISTING 1, shows the Applesoft program which defines the set of function keys to be used. Lines 80-90 load the machine-language program (LISTING 2) which operates the special function key mode, and sets its starting memory location ($7000= 28672) and its length ($8C=140). This driver assumes that the machine-language program has been saved under the name PROGRAM KEYS starting at memory location $7000. Line 200 asks the user to define a keystroke which will signify the end of a function key definition. This will usually be a RETURN unless a carriage return is to be part of a function key definition (e.g. carriage return will normally be the last keystroke for immediate execution DOS commands). Lines 230-290 request the user to select and define a series of special function keys (pressing the end-of-definition keystroke when requested to input a special function key will end the key definition mode). Lines 300-400 modify the addresses in the machine-language program prior to its move to another location in memory. Lines 410-440 move the program to a location just under DOS ($9500). Lines 450-520 allow the user to save this set of function keys in a file which may be easily used in the future (simply BRUN the saved file). Line 530 calls the machine-language program which "turns on" the special function key mode.

LISTING 2 is the machine-language program which checks the keyboard to see if one of the special keys, CONTROL-F, ESCAPE, or RESET, has been pressed. Memory location $7020 contains the machine-language value of CONTROL-F, $86. This can easily be changed if the user wishes to use a different key to initiate the special function key mode. For example, to use CONTROL-X, $98: (1) load the program into memory by typing BLOAD PROGRAM KEYS; (2) enter the monitor mode by typing CALL -151; (3) place $98 in memory by typing 9020:98; (4) save this version by typing BSAVE PROGRAM KEYS.

LISTING 1

```
10   REM  ********************
20   REM  *                  *
30   REM  *  MAKE SPECIAL    *
40   REM  *  FUNCTION KEYS   *
50   REM  *                  *
60   REM  ********************
70   REM
80   PRINT  CHR$ (4);"BLOAD FUNCTION KEYS"
90   TS = 28672:TL = 140
100  I = TL + TS - 2
110  HOME
120  VTAB 2: INVERSE : HTAB 6:
     PRINT "                              ": HTAB 6:
     PRINT " SPECIAL FUNCTION KEY MAKER ": HTAB 6:
     PRINT "                              ": NORMAL :
     PRINT : POKE 34,7
130  PRINT : PRINT :
     PRINT "THIS PROGRAM ENABLES YOU TO TURN THE":
     PRINT "ENTIRE KEYBOARD INTO A SET OF":
     PRINT "PROGRAMMABLE FUNCTION KEYS. PRESSING":
     PRINT "<CONTROL-F> FOLLOWED BY A PRESPECIFIED"
140  PRINT "CHARACTER CAUSES A PRESPECIFIED TASK TO":
     PRINT "BE CARRIED OUT.": PRINT :
     PRINT "BASIC OR DOS COMMANDS MAY BE EXECUTED,":
     PRINT "OR TEXT STRINGS MAY BE DISPLAYED ON THE
          SCREEN.": PRINT
150  PRINT "THE PROGRAM WILL ASK YOU TO SPECIFY AND":
     PRINT "DEFINE THE SPECIAL FUNCTION KEYS YOU":
     PRINT "DESIRE."
160  VTAB 24: INVERSE :
     PRINT "*** PRESS ANY KEY TO CONTINUE ***";:
     NORMAL : GET XX$
170  HOME : PRINT :
     PRINT "TO TURN OFF THIS SPECIAL FUNCTION KEY":
     PRINT "MODE, PRESS <ESCAPE>.": PRINT :
     PRINT "TO TURN THE SPECIAL FUNCTION KEY MODE":
     PRINT "BACK ON, PRESS <RESET>--<CONTROL-RESET>":
     PRINT "ON THE IIE."
180  VTAB 23: INVERSE :
     PRINT "***   PRESS ANY KEY TO RUN THE   ***":
     PRINT "*** SPECIAL FUNCTION KEY PROGRAM ***";:
     NORMAL : GET XX$
190  HOME
200  PRINT : PRINT "ENTER END INPUT SYMBOL  ";:
     GET EE$
```

```
210  PRINT : PRINT : PRINT
220  MM$ = ""
230  PRINT "SPECIAL FUNCTION KEY: ";
240  GET M$: IF M$ = EE$ THEN 290
250  PRINT M$;:I = I + 1: POKE I, ASC (M$) + 128
260  PRINT : PRINT " FUNCTION DEFINITION: ";
270  GET DF$: IF DF$ = EE$ THEN  POKE I, ASC (MM$):
     PRINT : GOTO 230
280  MM$ = DF$:I = I + 1: PRINT DF$;: POKE I, ASC
     (DF$) + 128: GOTO 270
290  I = I + 1: POKE I,0
300  L = I - TS + 1:DF = 9472 - L:S1 =  INT (DF /
     256):S2 = DF - 256 * S1
310  ZX = 17 + S2:Z = 112 + S1: IF ZX > 255 THEN ZX =
     ZX - 256:Z = Z + 1
320  POKE 28673,ZX: POKE 28680,Z
330  ZX = 28 + S2:Z = 112 + S1: IF ZX > 255 THEN ZX =
     ZX - 256:Z = Z + 1
340  POKE 28690,ZX: POKE 28800,ZX: POKE 28694,Z: POKE
     28804,Z
350  ZX = 106 + S2:Z = 112 + S1: IF ZX > 255 THEN ZX =
     ZX - 256:Z = Z + 1
360  POKE 28766,ZX: POKE 28770,Z
370  ZX = 139 + S2:Z = 112 + S1: IF ZX > 255 THEN ZX =
     ZX - 256:Z = Z + 1
380  POKE 28726,ZX: POKE 28730,Z
390  ZX = 83 + S2:Z = 112 + S1: IF ZX > 255 THEN ZX =
     ZX - 256:Z = Z + 1
400  POKE 28744,ZX: POKE 28751,ZX: POKE 28774,ZX: POKE
     28787,ZX: POKE 28745,Z: POKE 28752,Z: POKE
     28775,Z: POKE 28788,Z
410  GOSUB 420: GOTO 450
420  N = TS:LC = 60: GOSUB 440:N = TS + L - 1:LC = 62:
     GOSUB 440:N = 38143:LC = 64: GOSUB 440:N = 38144
     - L:LC = 66: GOSUB 440
430  POKE 768,160: POKE 769,0: POKE 770,76: POKE
     771,44: POKE 772,254: CALL 768: RETURN
440  POKE LC,N - 256 *  INT (N / 256): POKE LC + 1,
     INT (N / 256): RETURN
450  HOME : VTAB 9:
     PRINT "DO YOU WANT TO SAVE THIS SET OF":
     PRINT "SPECIAL FUNCTION KEYS? (Y/N) ";:
     GET XX$
460  IF XX$ = "N" THEN 530
470  IF XX$ <  > "Y" THEN 450
480  PRINT : PRINT :
     INPUT "NAME OF FUNCTION KEY FILE: ";NA$: PRINT :
     PRINT
490  PRINT  CHR$ (4);"MON CIO"
500  PRINT  CHR$ (4);"BSAVE ";NA$;",A";38144 -
     L;",L";L
510  PRINT  CHR$ (4);"NOMON CIO"
520  PRINT : PRINT :
     PRINT "TO USE THESE KEYS IN THE FUTURE,YOU":
     PRINT "DO NOT HAVE TO REDEFINE THEM. YOU CAN":
     PRINT "SIMPLY 'BRUN ";NA$;"'": VTAB 24:
     PRINT "*** PRESS ANY KEY TO CONTINUE ***";:
     GET XX$
530  POKE 34,0: HOME : CALL 38144 - L: END
```

LISTING 2

```
7000- A9 11 85 73 8D F2 03 A9
7008- 70 85 74 8D F3 03 20 6F
7010- FB A9 1C 85 38 A9 70 85
7018- 39 4C D0 03 20 1B FD C9
7020- 86 F0 0D C9 9B D0 32 20
7028- 89 FE 20 EA 03 4C D0 03
7030- 20 1B FD 85 08 A9 8B 85
7038- 06 A9 70 85 07 A0 00 B1
7040- 06 F0 17 C5 08 F0 16 20
7048- 53 70 B1 06 30 F9 20 53
7050- 70 D0 EC E6 06 D0 02 E6
7058- 07 60 4C 0C FD A9 6A 85
7060- 38 A9 70 85 39 20 53 70
7068- D0 02 91 28 A0 00 B1 06
7070- 10 0C 20 53 70 A4 24 C9
7078- 95 D0 DE B1 28 60 48 A9
7080- 1C 85 38 A9 70 85 39 68
7088- 09 80 60 00
```

CUMBER'S RANDOM

Bits, Bytes and Random Numbers

by James F. Cumber, Jr.

Wall Street as Chicken Little,
or,
How a Legal Gambling Casino is Fairer than the NYSE!

Wall Street has an aura all its own: the stock exchange, the "movers & shakers", the cool heads who determine the fate of U.S. companies, the "captains of industry". Unfortunately, the heads there are not always so cool. Our case-in-point is the report on earnings released by Apple Computer Inc. in mid-October.

Over the years, Apple Computer Inc. has had a growth rate of about 70% per year in the earnings/profit category. This is one reason for the popularity of such "high-tech" stocks. However, such stocks in "new" technology are (from their very natures) involved with the unfamiliar "rarified air" of science and engineering, where the financial and business moguls are untrained and unprepared to tread. Such being the case, most of these financial analysts must rely on technology "experts" (and as we all know, an "expert" is a former drip, under pressure!) to interpret the viability and soundness of such companies as Apple. The problem comes with the present glut of "high-tech" stocks; where do you get the men who know the answers, and how many do you need? Obviously, one needs at least one "answer man" specialist in each field of the new technology; you wouldn't ask a communications satellite specialist to render an opinion on genetic engineering...not and expect the opinion to be valid! Knowing the financial and big business types, to them, a computer is a computer, and they would not draw the lines between micros, minis, and main frames. Likewise, it is almost a sure bet that they would go for expertise to the one place that has meant "computer" to them for the past twenty-plus years; how much would you like to bet that most of the "computer specialists" in Wall Street advising circles come from the company with the three-letter name - IBM? This seems to be the prevalent opinion in some microcomputer circles to explain the strange happenings of mid-October.

In the middle of October, Apple Computer Inc. released a corporate report for fiscal 1983. In this report, it admitted that its 1983 growth rate would not be its normal 70%, due to increased market competition and the $50 million expended to bring "LISA" on-line. Instead of a 70% growth, they would only have a 30% growth. Show me any of the "classical" stocks (utilities, transportation, industrials, etc.) that come close to 30% growth! Nevertheless, the newspapers, without really reading the report, spouted headlines that Apple Computer Inc. was losing money (it wasn't.. it just wasn't INCREASING ITS PROFITS as fast as it had been)!

Wall Street panicked. Like Chicken Little running about screaming "the sky is falling", the "cool heads" of the Over-The-Counter (OTC) market started advising that folks sell their Apple shares. Merill-Lynch was one of the more restrained; they reduced their rating of Apple in the short-term, but maintained it over the long-term, and this could very easily have been the result of their knowing the true nature of the situation, but also being sensitive to the panic headlines and the vagaries of the OTC market. Apple Computer Inc. stock on the OTC market plummeted to around 18 within a couple of days. One Wall Street consultant (who MUST own stock in IBM) even predicted that Apple Computer Inc. would not survive the "computer shake-out" that has already claimed a few small companies, and is in the process of claiming Atari and even the mighty DEC.

One of the most interesting facets of the whole affair is that some of the same people who are prematurely trumpeting Apple's demise are still recommending Tandy (Radio Shack) and Commodore. A careful look at Tandy stock indicators seems to indicate that (despite its higher price-per-share) it is a "weaker" stock than Apple! Not only that, but Commodore is known to be having SERIOUS problems with their vaunted Commodore 64; No disk drives (and no sure word as to when they will), little software, lack of service facilities and support, and an "out-of-the-box" defect rate of over 25%! As one observer commented, "They go after Apple because it is the clear leader in the non-IBM microcomputer field and has high visibility thereby. They ignore such clear losers as Atari and incipient losers like Tandy (who is getting a reputation for low-quality and poor support) and Commodore. In reality, Apple Computer Inc. will be the last competitor of IBM to fall. Some of the "prophets of doom" hold such attention on Wall Street that what they predict becomes almost self-fulfilling prophecy, but Apple will not give them the satisfaction. You will note that Apple's stocks rallied back to about 21 within days of their bottoming out, and they are getting more agressive in their marketing of 'LISA'."

So all us Apple fans can take a hint from the "Hitchhiker's Guide to the Galaxy" and "DON'T PANIC". I just wish I had had enough free cash to have bought up some of Apple's 54.8 million shares when it was down to 18, but this reporter has that classical luck of being caught in a storm of chicken broth while holding a fork! By the way, your Apple will tell you that 54.8 million shares at $18 per share still means Apple Computer has assets of $986,400,000. At $21 per share, that amounts to $1,150,800,000 in assets! So you can boast that Apple Computer Inc. is a "billion dollar" corporation.

At this point, I went to see the "old codger" (a wise old bird that seems to know something about almost everything) and asked him to explain why all this had happened. His answer was interesting food for thought, "The stock market is probably one of the biggest legal gambling casinos in existence, only they don't call it that so as to avoid the controls usually placed on gaming parlors. With the present size of the market, as judged by total outstanding shares (and eliminating duplicate ownership) there's just too danged many folks 'playing the market'. Most of these yahoos know no more about the stocks they're foolin' with than a pig knows about court martials! As a result, they listen to a bunch of 'analysts', most of whom have to depend on some other 'consultant' in the high-tech areas to know if the company is doing something useful and saleable or just bakin' 'pie in the sky'; therefore, most analysts are no better than the consultants they consult, and most of the consultants

contd. on pg 41

Software City®

OUR APPROACH

- All Products Always Discounted
- Reference Literature & Guides For Browsing
- Demo Machines
- Special Orders Our Speciality
- Gift Certificates Available
- Rainchecks For Out-Of-Stock Specials
- Comfortable Showroom Environment
- Special Corporate, Government, Educational & User Group Accounts

SOFTWARE

- Business
- Scientific
- Education
- Recreation
- Programming
- Home & Personal
- Specialized

HARDWARE

- Monitors
- Printers
- Drives
- Interfaces
- Modems
- Expansion Boards
- Cables

LITERATURE

- Books
- Magazines
- Free Product Information

ACCESSORIES & SUPPLIES

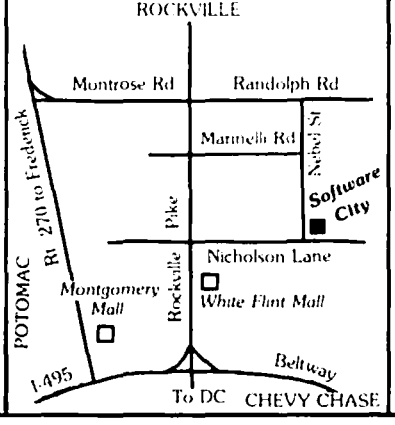
- Media & Media Storage
- PC Protection & Care Products
- Paper & Custom Forms

STORE HOURS

Mon-Fri	10-6
Thurs	10-8
Sat	10-5

468-1001

11621 Nebel Street (Extended)
Rockville, Maryland 20852



Complete coupon to be placed on Software City Special Mailing List.

Name _____

Address _____

_____

Phone _____

Type PC at Work _____

Type PC at Home _____

APPLE TRACKS

by Richard Langston II

Since Apple DOS resides in memory instead of ROM as it does in some machines, it is possible to make changes to the DOS program itself. This makes DOS very flexible, since many progammers can improve DOS, making it faster, easier to use, or adaptable to a particular situation. In this column, I will discuss some small but helpful improvements (?) that make DOS easier (or harder) to use.

One of the most useful (or useless) changes that can be made to DOS is removing the CATALOG command. One way to do this is to change the actual CATALOG command in the command lookup table, but it is very easy for most programmers to recognize and defeat this method.

Another way to defeat CATALOG is to modify the CATALOG function handler in DOS to simply not work. The easiest way to do this is to change the contents of memory location $A56E from A9 to 60 (RTS). If you want to see the directory, just change $A56E back to A9, do a CATALOG, and change it back to 60.

Have you ever wished the CATALOG wouldn't stop after 18 files to wait for a keypress? Changing that is easy, just change bytes $AE34-$AE35 into EA's (NOP). In BASIC, Poke 234 into locations 44596-44598.

On the other hand, sometimes during a CATALOG I will find the program I want, but still have to wait for six more screens of titles to scroll off the screen before I can RUN it, and by then I forgot how I spelled it in the first place. There is a solution, however, and that is to grab control from DOS after it prints each screen of files, and check to see if you want to display the rest of the titles.

To do this, a short machine language program must be written. There are several steps to this program: first, the CATALOG routine must be modified so it jumps to our patch instead of just waiting for a keypress. Then, a short program gets a keypress, compares it to the value of the ESC key, and either returns to the CATALOG or exits, depending on the outcome.

```
AE39: 20 DF BC     JSR $BCDF; GOTO UNUSED AREA IN DOS
BCDF: 20 1B FD     JSR $FD1B; GET KEYPRESS
BCE2: C9 9B        CMP #$9B ; IS IT ESC?
BCE4: F0 01        BEQ $BCE7; YES
BCE6: 60           RTS      ; NO GOTO CATALOG
BCE7: 4C 2C AE     JMP $AE2C; ABORT CATALOG
```

On the cosmetic side, changing addreses 44541 and 44559 will change the space after file type or the space after the number of sectors in a file to whatever ASCII code characters you want.

If you ever want to really confuse someone, change the file type characters around. The characters are stored in locations 45991-45998 in the order of TEXT, INTEGER, APPLESOFT, BINARY, "S", "R", "A", AND "B". Notice that the "A" and "B" files are different from Applesoft or Binary files. The characters are stored by ASCII screen code. Screen code is different from regular ASCII, and a chart for the values of each character in normal, inverse, and flashing is found on page 16 of the Apple II reference manual. An easy conversion formula is subtracting 64 from the ASCII value of a character to get inverse, add 128 to get normal, and use the regular ASCII code for flashing characters.

To change TEXT files from T to D (DATA), POKE 45991,196. One suggestion is to change the "A" and "B" file to lowercase "a" and "b" on the //e , so that telling the difference is easy.

One helpful feature is the ability to see the programs you accidentally DELETEd. To do this, POKE 44505,234 and POKE 44506,234.

Have you ever written a program using DOS commands by pressing CTRL-D inside quotes instead of the PRINT CHR$(4) method, then edited the line and forgot to type the CTRL-D? Here's the mod for you! Change location 43698 to any character to use as the "attention getter" for DOS. The logical choices are @, ^, or]. Simply POKE 43698, ASC("@")+128.

One of the things that bothered me most about DOS is the way it required Integer Basic to be loaded into memory every time DOS is rebooted, even if it is still on the RAM card. Well, no more! Simply change BF03-BF05 to EA's.

Every now and then, I initialize a disk and want to make the HELLO program a TEXT file, or, more likely, a Binary program. This requires that only one byte be changed. Byte $9E42 should be changed to $34 for Binary and $14 for Text. The HELLO file will still be Basic, but just DELETE it and subsitute the program you want to use as HELLO.

All of these changes will be saved by initilizing a disk after any of them have been made. If any of you have any patches you would like to share, give me a call. I can now be reached on the ABBS (WP2418).

THE 80-COLUMN SCREENWRITER FOR THE //e

by Bill Jacobson

I was asked by the editorial staff of this esteemed journal to compare the much beloved ScreenWriter word processor (nee Sierra On-Line, Coarsegold, California; $130) with a number of its major competitors. The request was predicated upon my knowledge of many processors -- perhaps 3 dozen or so.

There is, of course, nothing so subjective as objectivity, especially when it involves your children and computer software. So I will not claim total objectivity in this matter. I simply hope to be moderately successful in controlling my biases.

In prior articles I compared a number of popular programs. So I will begin with a revised version of that list, which now includes ScreenWriter. Only a few of the features listed will be discussed during the course of this article.

Figure A. COMPARISON OF FEATURES

	WORD PROCESSOR			
FUNCTION	Pie Writer	ScreenWriter	Apple Writer	WordStar 3.3
1. Help screens	One	Some	Many	Many
2. Form letters	Yes	Yes	Yes	MailMerge
3. Footnotes	No	Yes	Yes	/Utility
4. Indexing	No	Yes	No	StarIndex
5. Printer spooling	No	Yes	No	Yes
6. Page break line on edit screen	No	No	No	Yes
7. Cursor location indicators				
-- Line	Yes	No	No	Yes
-- Column	Yes	No	Yes	Yes
-- Page	No	No	No	Yes
8. Horizontal scrolling	Yes	No	No	Yes
9. Run other programs from menu	No	No	No	Yes
10. Draft print capability	No	Yes	No	Yes
11. Hard disk drive compatible	Yes	No	No	Yes
12. Copyable	Yes	No	No	Yes
13. Prog. files can be modified	Yes	No	No	Yes
14. What you see is what you get screen format	No	No	No	Yes
15. Uses 128K, if available	No	N/A	Yes	N/A
16. Ratings (scale of A-F)				
-- Learning ease	B-	D	A	B
-- Text editing	B-	D	C+	A
-- Form letters	C-	A	C-	A
-- Overall power	B+	B+	C	A

My earlier ratings for WordStar changed somewhat. Those used here reflect the features of the new version (3.3) of that program. WordStar now supports 20 function-type keys on the Apple //e that are user definable, and has a superb reconfiguration program. The function key arrangement makes learning and use of the program far simpler. In addition, WordStar executes much faster and MailMerge now permits conditional printing of form letter data (i.e., using "if" statements).

The version of ScreenWriter that I used also is the latest release. It permits an 80-column edit screen and presumably has a number of other refinements. Almost any Apple can be configured to use it, but only the //e can utilize its 80-column feature. I will not attempt to compare the new with the old, outside of the above comments. That information is not germane to the theme of my article.

As you may divine from this list, ScreenWriter is a very versatile program. It is capable of almost anything that sophisticated users could demand of a word processor. But capability to do many things and the facility with which processor functions are accomplished may differ remarkably. As you shall see, this comment is particularly relevant with ScreenWriter.

I used ScreenWriter to write the bulk of this article. My normal processors are WordStar, Palantir and Word Juggler. The equipment I used includes an Apple //e (128K), two standard floppy disk drives, an Apple Parallel Interface Card, and an IDS MicroPrism 480 printer.

THE SCREENWRITER MODUS OPERANDI

Once booted, the main menu appears. You may opt for the editing, printing or customization modes. If you select edit, you will be asked to enter the name of the "output file" (to which your document will be saved) and then the name of an existing "input file", if any. The catalog of the text files on a disk can be displayed by entering "C" at either of these prompts. The file names are listed, along with a number for each document on the logged disk drive. Document number may be entered in lieu of typing out the full file name, if the file already exists.

You are then transported to the edit screen, and may begin document creation or editing. From the moment of initial booting to the current juncture, the screen is 40-columns wide, even if you have an 80-column card in your //e. If you wish to use the full screen capabilities of your //e, enter the command "80c" and the screen will instantly be transformed. You also may elect to show only 65 columns or any other number which may approximate the line width of your printer output. To do this, substitute the revised number in the above command (e.g., "65c").

The 80-column screen is not available for previewing or printing to screen a fully formatted version of your document, when you are in the edit command mode. For these functions, the screen reverts to a 40-column format.

It is strange that Sierra On-Line did not automate the 80-column feature, so that separate commands (e.g., "80c") do not have to be entered each time the editor is used. If you have a //e with the proper card, chances are you will want to use the 80-column format each time you boot the program. In addition, a default setting should have been provided to set the screen to the desired width (80-columns for 12-pitch and 65-columns for 10-pitch). Despite the effort that went into the enhanced version of ScreenWriter, it appears that the obvious was overlooked.

At the bottom of the edit screen are a command line area, tab spacing numbers, input and output file names and a text buffer space indicator. There are no readouts for cursor position, page number, memory remaining or any other status information.

ScreenWriter editing may be executed at the Command and Text Edit levels. The cursor initially is located

contd.

on the "command line," from which disk I/O, entry to the Text Edit level, and system related commands are executed.

If you are using the 80-column feature, text entry is initially very, very slow. Even neophyte typists will find that they are pressing keys much faster than the screen is registering them. The more text you place in memory, the faster the "echoing" of keystrokes will become. These delays are not encountered in the 40-column mode.

Once you have completed text entry, you must return to the command line for saving text and other housekeeping chores. For example, you may preview a formatted version of the text in memory by entering the "L" (list) command and pressing RETURN. The document is then printed to the screen, but in the 40-column mode. Most cursor movement and block manipulations can be entered both in the command line and text entry modes.

After saving text, you may print the document by entering the command "X" to move to the RECALL or printing mode. You will then be asked if the document in memory has been saved. If you answer yes, the RECALL mode will be loaded. In this mode, you may print one or a succession of files. Here also, the document may be previewed on screen prior to hard copy production. In addition, you may review current printer defaults and modify these for the entire editing session. The number and type of default modifications possible for ScreenWriter is the most extensive that I have encountered.

The edit mode may be re-entered by repeating the output/input information mentioned above.

EASE OF USE

There is very little that you cannot do with ScreenWriter. Most users will have only occasional need for many of these features. Rather they have routine chores that must be accomplished with a minimum of fuss and feathers. Thus my review will not be predicated upon the capacity of ScreenWriter to do remarkable things, which it can, but how well one is able to accomplish normal word processing. In this regard, ScreenWriter gets mixed grades.

First of all, the command structure of ScreenWriter is hard to master. The Command/Text Edit mode dichotomy further exacerbates this problem. There is a comprehensive help menu for the program, but some of these screens are crammed with information attempting to explain the command/edit distinction. This makes them almost impossible to read. A single mode of operation would have been far preferable.

This confusion also exists in the user manual, where one must decipher not only what is "command" from what is "edit," but also must distinguish one drive users from "two drivers," and Apple II+ users from those with Apple //e's. What results is a form of organized chaos. Mayhap ScreenWriter was designed as a hobbyist's delight, rather than a versatile and easy to use workhorse.

Secondly, the character delete conventions of ScreenWriter are awkwardly designed. A key facet of a good computerized processor is document editing. The delete function is a critical element of the edit process. ScreenWriter does not even utilize the DELETE key of the Apple //e (it serves no purpose whatever). The only way to delete characters to the left of the cursor position is the key sequence ESCAPE, CONTROL-D, and this sequence must be repeated for each character. These sequences are also used for other delete actions, including word delete (Escape, CONTROL-Q).

Third, the cursor jumping capabilities of ScreenWriter are, for all of its mass of sophisticated commands, quite limited. Word jumping to the right is invoked by CONTROL-Z, and the key repeat feature can be used for successive word jumps. Word jumps to the left, however, require ESCAPE, CONTROL-Z for each word. This is extremely cumbersome. The same requirements apply to many other cursor commands, especially those entered in the command mode.

The block delete, copy and move functions are well designed. You simply move the cursor to the beginning of the text block and enter CONTROL-G; then place the cursor to the end of the affected block and enter CONTROL-D for delete/copy, or CONTROL-G for copy only. The text is stored on disk and can be retrieved by entering CONTROL-W at the appropriate spot in the text. WordStar, Palantir and Word Juggler embellish this function in one important way: the text defined by the block commands is shown in inverse video, so that it is delineated with great precision prior to a block command begin executed.

In sum, I did not find ScreenWriter easy to use. Writers should be able to lose themselves in composition, with the processor not intruding unduly in the creative process. I was unable to concentrate fully on composition because of the inherent distractions of the ScreenWriter command structure and cursor related conventions. This article would have been much easier to prepare using WordStar, Palantir, Word Juggler or an assortment of other processors.

SPECIAL FEATURES

ScreenWriter has a number of notable special features, three of which I will briefly discuss: footnoting, indexing and virtual files.

Footnotes may be multiline and there is a buffer of 3583 characters for storing footnotes and index entries. The syntax needed to invoke footnotes is fairly simple, but the screen is very difficult to read and edit if there is more than one per page. The example in the user manual displays a nightmarish case, where it is almost impossible to distinguish text from footnote on a "four footnote page."

Care must be taken to number footnotes properly, because ScreenWriter will not do this for you, unlike a number of highly sophisticated processors now on the market. This would be a significant problem if you have a lot of footnotes, and you insert new ones in the middle of existing text.

In contrast to footnotes, the index function is non-disruptive and extremely easy to use. Up to four levels of indexing or tables of contents may be specified, and the indexed information may be literal (as shown in the text) or special (non-printing entries inserted where needed in the text). The characters used to define each level of index are selected by the user. In addition, you may elect how you want them printed out (page format, alphabetized, U/L case letters).

This is one of the best index functions that I have encountered. While it does not have the sophistication of StarIndex of MicroPro ("from the team that brought you WordStar"), it is much easier to use.

The virtual file technique employed by Sierra On-Line worked well. Once edit function memory is filled, the text buffer space indicator at the bottom of the edit screen is displayed in reverse video. This means that the program will begin swapping data in memory to disk. Thus, the data drive will occasionally be activated as a swapping occurs. Files may be as large as the disk in use permits. This feature is used on

contd.

WordStar and most CP/M based processors, as a way of overcoming memory limitations.

I had no problems with this feature, but I have been told by long time users of ScreenWriter that care must be taken to ensure that disk space is at least equal to twice the estimated size of the document being edited -- in order to accommodate the final file and the temporary "swap" file. In addition, one must not inadvertently switch disks during this operation, as it will cause the temporary file to be split between the original and replacement disks.

DOCUMENTATION

You are supplied with a nicely tabbed and indexed user manual contained in a padded loose leaf binder, and two sets of reference cards: one set each for the Apple //e and all other Apple computers. There are two cards in each set, one for the MINI-WRITER and a general REFERENCE CARD. The MINI-WRITER is intended as a teaching guide, and a section of the user manual is set aside for this purpose.

While Herculean efforts were made through a variety of techniques to simplify the learning process, all was in vain. The problems mentioned previously are simply too overwhelming. It is nearly impossible to accomodate, in a single document, command/edit level complications and differing combinations of computer types and numbers of drives. Whoever wrote the manual should be complemented. They made the best of a difficult situation.

CONCLUSION

ScreenWriter, more than any processor I have used, should be given exhaustive testing by prospective buyers prior to purchase. On the surface, it is a marvelously capable program at an attractive price. The lure of its flexibility, however, should not blind you to its deficiencies.

Cumber's Corner contd. from pg 36

are so overworked that they can't always keep up with developments or even think through what little they get time to read...the stock market demands data NOW to make buyin'-and-sellin' decisions, so any consultant that wisely says 'let me check and get back with you' starts growin' cobwebs on his phone ringer. This results in two kinds of consultants on Wall Street: the 'supergenius' and the 'bull-shipper'. Only now we have so much data coming in that we have what may be called "information glut", meaning that even a good "supergenius" consultant can easily be overwhelmed and wind up having to shovel "pasture patties" labeled as good advice. And that, son, is how "a mover and a shaker" becomes "a shucker and a jiver", and it sometimes happens to the best of 'em. Unfortunately, whatever a prominent consultant or analyst says is accepted by so many people that it almost automatically comes to pass! The true test of a strong company is if it can 'swim upstream' against the pundits.

"The market is a gamble, and the Mafia just wishes it had an 'inside' piece of that action, because it's a 'no limits' game with billions and trillions of dollars at stake. Did you know that in most states that allow legalized gambling the 'fairness' rules require that the customer has at least a 45% chance of winning any of the games? If you want to do an interesting study sometime, dig into how many stockholders actually MAKE money on Wall Street, versus how many lose their shirt. If the market is so danged lucrative, how come these fancy 'account executives' for these brokerage firms ain't all millionaires? Son, if you want to gamble, the average Joe would do better playin' blackjack in Vegas than the stock market in New York; at least in Vegas he's got a 45% chance of winnin' - on Wall Street there's no guarantee. Of course, I don't advocate gamblin': my money's too hard come by for that sort o' nonsense."

(Do you think Atlantic City might give better odds than Vegas? - Ed.)

HOW TO GET INTO CP/M or PUT MORE FUN INTO YOUR APPLE

by Walt Mills

Have you ever wondered what everyone sees in CP/M? Do you wonder what it is all about. Well, this article is designed to take you from step one (a plain Apple) to a machine with all of the hardware to run CP/M.

First, some definitions. CP/M stands for Control Program for Microcomputers, and it is an operating system just as Apple DOS is for the Apple. CP/M is designed in a general manner so that it can be used on most any computer with a Z-80 or 8080 chip. This general manner design allows you to issue a command on your Apple (under CP/M) in the same way that you would on a Cromemco or IBM PC. There are many programs that will operate under the control of CP/M on the Apple, just as they would on the other machines mentioned. A few of the programs (like WordStar, dBase II) must be modified to work under the various systems, but in general a program that will run on one will work on all the others!

I will assume that you have at least an Apple II, disk drive, printer and monitor. The Apple does not have a Z-80 or 8080 chip and therefore the next basic step is to acquire a Z-80 card from any one of numerous sources. Microsoft designed and sold the original card which they sell with the Digital Research Disk CP/M. If you purchase a less expensive board, you will also have to buy the CP/M operating system and manual from Microsoft (the only source that I know about). Our CP/M library disk contains a control program written to run under CP/M called ZCPR, but this still requires a basic copy of CP/M by Digital Research. (See previous article on this subject in WAP Journal).

Installation of the Z-80 card is very simple. You must first move your cards into the proper slots required by CP/M (and Pascal). This is a must, since CP/M looks at specific slots during the boot-up sequence. The printer card must be in slot 1, any modem type card (D.C. Hayes or Apple Comm.) must be in slot 2, slot 3 must contain any terminal type card (normally the 80 column card). Slot 4 is a good place for the Z-80 card, and slot 5 is reserved for your next two disk drives (ha-ha-ha). Slot 6 is a must for the disk controller card and slot 7 is available for anything else that you desire (I use it for transient cards like my Eprom blaster).

The next step is to turn on the power, push reset (or PR#6) and boot the CP/M master disk (whurr, click, whurr). If all is well you should see the sign-on for Digital Research and the CP/M prompt of "A:" which means A-Drive is the current drive in use. To try out your new toy, type in the command "DIR <return>" and you should see a catalog of the disk. You will notice at this time that everything written for CP/M is designed for 80 columns!

You will notice that all of the lines begin normally, but wrap around to the the next line of text. This is because CP/M was written for the majority of machines which utilize 80 columns of text and therefore your next purchase will be an inexpensive 80 column card so that you don't have to figure out which line ends where! Note for Novice Users: You do not need an 80-column card to run CP/M, and a good way to get around this is to install ZCPR (previously mentioned) with the 40-column mode invoked which will allow you to see the directory in 40 columns. Most programs can be modified for 40 columns with the exception of totally screen oriented ones such as WordStar.

OK, now that we have CP/M installed our next step is to make a backup copy of the master diskette. We will need only one program to accomplish this task: COPY. If you are looking at your directory you will notice a number of programs that have a suffix of COM such as STAT.COM or PIP.COM. These programs are called command files and are said to be transient because like an Applesoft program they must be first loaded and then executed. CP/M has very few resident commands and unlike Apple DOS the INIT command is not a function of the Disk Operating System and therefore we must use a transient program to initialize the diskette. The most obvious program for this task is called FORMAT.COM and is invoked by using the command line of:

A:FORMAT.COM <return>

After a few seconds the program will be loaded and the first lines of text will display and instruct you to insert the disk to be formatted in drive A. Oblige by placing a fresh disk in the drive and hitting the <return> key. Listen for the noise which is the DOS looking for any data to read; if you have used an Applesoft disk, the program will ask you if you really want to re-initialize and destroy the data. (Note: CP/M will attempt to read an Applesoft disk since it is in the same format, but you must format the disk before you attempt to do any writing or serious results may occur.) This is a good point to mention that this procedure is used any time to create additional blank diskettes for CP/M use. To check your work, type DIR <return> and you will see the no-file message.

The next step in the procedure is to move the data from disk to disk and the transient program for this is called COPY.COM (who would imagine?). CP/M programs usually allow two methods of operation; by typing simply the name of the program (without the extend COM) the program is loaded and you are prompted with a character (usually an asterisk) for more input. If you know what actions you want the program to take you may add them to the command line and they are then called parameters. We are going to make a copy from drive A to drive A and therefore we could use either of the following methods:

A:COPY <return> A:COPY A:=A:<return>

For now, I suggest that you use the first method so that you may get used to the feel of the machine. When you receive the * prompt simply type in the directions A:=A* <return> and receive the prompt to insert disks. One of the most obvious benefits of CP/M is that all programs are supplied in a non-protected format and the basic COPY program will copy anything. I think the theory is that most CP/M commercial programs contain a great deal of documentation and supplier support and therefore do not need to be "locked up".

The most perplexing thing about CP/M is that file names may only be eight characters long with a three letter file extend (usually identified as filename.

contd.

MicroMaster™

the

MicroPower System

for

Applesoft Programmers

The Applesoft Answer for all Applesoft Programmers

From the wizards of MicroPower comes an enhanced Applesoft with all the convenience and power of the "the big" BASICs; and an easy, natural way of adding the speed and power of machine language to the Applesoft programs you write -- without having to know machine language. The MicroMaster library contains over 50 commands -- more than twice the number offered with any other package! Applesoft enhancements include a PRINT USING that is fully integrated with all Applesoft PRINT features, and actually remembers your formats; INPUT command accepts any string (including commas), and evaluates numeric formulas, as well as accepting numeric data. Other features include fast STORE and RECALL of full arrays, SUBSTRING searches and more!

MicroMaster does it all for you! Simply choose the commands you want and let MicroMaster make them available to your program. You call them by name, and can even rename them to whatever you want. And by the way, MicroMaster also eliminates the need for different RUN, BRUN, and EXEC commands .... simply mention the name and MicroMaster is smart enough to figure out what you want.

Commands include:

ADD	APEEK	APOKE	BEEP	BLEN
BOOT	CAT	CEOL	CEOP	CLEAR
CRAE	DEL	DL	DLIST	ERRMS
FIND	FIXS	FIX	FLEN	FP
FRE	GOSUB	GOTO	GPLE	HELP
HOLD	INPUT	LOAD	MAP	MEM
MENU	MERGE	MON	MPOKE	NEW
OFF	P	PRINT	RECALL	REN
RESET	RESTORE	RETURN	RUN	SAVE
SECTORS	SSQR	STOP	STORE	SUBSTR
SWITCH	TAB	TONE	TRUN	UNDIM
W	WAIT	*	hex/decimal	

A Revolutionary Operating System with Overlay Capability For Experienced Applesoft Users

Do NOT confuse MicroMaster with programs that simply play with the '&' vector. MicroMaster is a totally unique concept -- a co-resident operating system and dynamic subroutine library. MicroMaster allows you to create custom systems...easily. With MicroMaster, jobs that would be a real challenge to experienced machine language programmers can be easily done by a few simple commands, without machine language!

No more CHAINing for large programs. Only MicroMaster has full overlay capability -- just like large main-frame computers! Swap subroutines in and out and modify your operating system while your program is executing! Swap entire operating systems in and out while your program is executing -- just try that one, BIG BLUE! And the overlaying is done with simple LOAD and DELete commands ... actually much EASIER than CHAINing.

MicroMaster allows you to structure Applesoft programs using external subroutine libraries. You'll find that sturcturing programs into subroutines and modules makes programming easier and faster. In addition, you'll find that you're able to "borrow" subroutines from other programs more often, which will make programming even faster. MicroMaster also has a full error handling and trace-back capability -- just like on the large computers.

Those who write in machine language will find MicroMaster's ability to automatically relocate binary programs an added bonus! Simply write your program and tell MicroMaster to load it. Machine language programs do NOT have to be written in relocatable code (What a terrible restriction!), and relocation dictionaries are not used.

MicroMaster will make a difference in the speed and power of your programs, as well as make them easier to write. Considering its extensive capability and ease of use, you'll be amazed at the price. MicroMaster is available now for only $75 (plus $3 shipping & handling, Maryland residents add 5% sales tax). We even include a medium speed DOS for FREE! Consistent with the MicroPower policy, the MicroMaster system disk has no annoying copy protection schemes. All files are fully copyable and listable.

MicroMaster is available from your local dealer, or order directly from:

MicroPower, Ltd. ◆ 1100 East-West Highway ◆ Silver Spring, Maryland 20910
(301) 495 - 2933 MasterCard & VISA accepted

MicroMaster and MicroPower are trademarks of MicroPower, Ltd.
Apple and Applesoft are registered trademarks of Apple Computer, Inc.

ext) which does not allow one to quite see what a program will do before running. Most disks will contain some documentation on public domain programs called .DOC files or in the form of a file called READ.ME. You may display the contents of these files by using the resident command TYPE followed by filename.ext of the file to be read. Use Ctrl-S to stop the listing and Ctrl-Q to restart. ZCPR has a new resident command called LIST which will list the file to your print device. (Note: CP/M does not have a PR#1 command and just getting a file to the output device is a little tricky - read the CP/M manual!)

The greatest benefit of CP/M is the long list of public domain (non-copywritten) programs available. My library contains over 600 titles which represent about 400 programs of which only 10 are commercial products! The best source for these programs is our library or a dial-up Bulletin Board System. BBS systems have the ability to download programs in a usable format to your system if you have a modem and a file transfer program (ah, who will write this article?).

I will close by giving the novice a bare-bones description of the actual CP/M file structure. (I said that because after reading this paragraph you many not understand what I am trying to say!) All files are divided into two categories called TEXT files and COMMAND (or object) files. Text files will end with any number of file extend names such as .TXT, .ASM, .LST, .PRN, etc. Object files will usually end with file extensions such as .COM or .OBJ with the true test being that a text file may be listed by using the command TYPE (filename.ext) <return>. The listing may be aborted with Ctrl-C or stopped with Ctrl-S/Ctrl-Q much like any Applesoft file. If you attempt to TYPE an object file strange and weird things will happen to the screen and you may have to re-boot to regain control of your system. Re-booting is not quite as easy as good ol' Apple DOS and usually you must power down to get back to CP/M. Text files may be sub-divided into two: general is quite straightforward, but assembly files (when TYPEd) will reveal that they are made up of many lines of code which direct the CP/M system to do its various tasks. These assembly programs must be assembled to .COM files in order to be useful to us, and this is accomplished with the program ASM.COM. You do not need to be well versed in assembly language in order to do some customizing since most of these files are well documented within the text of the ASM file. We can compare the COM files to Applesoft binary files.

Well, if you are still with me, I hope that I have made some inroads into your knowledge of this wonderful system called CP/M and I trust my attempt has not killed your desire to learn more about Woz's great little "toy".

WORD HANDLER

by Jon Vaupel

I would like to see a show of hands; how many users out there pick their word processor because of the way the package works with their hardware? I like Wordstar, Applewriter II, Acewriter II and especially Word Handler. I like Word Handler because of its printer controls (I can get very nice correspondence quality printing with my dot matrix printer, an Epson).

How hardware deals with different software is of particular concern to me. If anyone else is interested in the hardware-software connection please contact me through the WAP office. If there is enough interest, a hardware or hardware-software SIG (HSIG or HSSIG?) could be formed.

Now to get on with some good news, Word Handler has come out with their long awaited 80 column version! One side of the disk is 40/66 (without hardware) and on the other side is 80 columns (with an 80 column board). Now some even better news! $59.95 for Word Handler and $49.95 for List Handler! After purchase, customer support is available (if desired) by contractural agreement (a separate $30.00). Word Handler, List Handler and "hand-holding" is available for LESS than the old price of Word Handler alone!

Word Handler uses logical mnemonics:

Ctrl-L for move cursor a line.
Ctrl-W for move cursor a word.
Ctrl-P for move cursor a page, etc.

I could go on, but Word Handler is easy to learn and use. Almost anyone can be using Word Handler within twenty minutes after they set up the program for their printer (remember the printing capabilities?). The manual is well written and explains all the features. It even creates form letters easily.

Anyone who gets the new version of Word Handler will want to contact me for the printer parameters. Just send a SASE to me and I'll send any user the printer parameters.

Future articles will cover both Word Handler and List Handler features.

Q & A contd. from pg 10

dumb terminal; that is characters typed on the keyboard will be sent directly to the modem, and received characters will be displayed on the screen. Usually you will want additional capabilities so you can save the incoming data in memory or to disk, edit your outgoing data, or send disk files/programs over the modem. A lot of the available software (ASCII Express, Data Capture, etc.) work only with the Micromodem, but Visiterm from Visicorp supports all of the standard communications cards. If you are willing or desire to work from a Pascal environment, Datalink from Link Systems is very easy to use once it is set up.

Q. I'd like to output my graphics to a Video Cassette Recorder (VHS). Is there a reasonably priced board or other solution that lets me do this?

A. The video signal emitted by the Apple does not exactly conform to NTSC specifications and broadcast quality equipment may not work properly with it. (Jim Hockenhull would probably claim this is the understatement of the year.) The solution is neither simple nor inexpensive. There are a number of companies making corrector boards. Adwar Video Corp. (100 Fifth Ave., New York, NY 10011) sells a board, the Proc Mod (approx. $300) to bring the signal within tolerance for 1/2" and 3/4" video tape recorders. For more information see Jim Hockenhull's article in the June 1982 issue of Call-A.P.P.L.E. and the follow-up article in December 1982.

. . . ,COM,MAS, . . .

by Richard Rowell

As the old (British) saying goes, "Leg over leg the dog went to Dover!" And so my use of displaying large numbers on the screen seems to be evolving.

For some time now I have been using a subroutine to insert commas into large numbers, since my students have difficulty reading such numbers without poking a pen against the monitor. The routine works fine - as presented here - however, because it converts numbers to strings and then works from right to left in placing commas into the string, it has been baffled by Apple's fetish for exponential notation. It would, for example, convert 1234567891234 to 1.,234,567,89E, +12!

Then, in the October WAP magazine, John Love's article appeared, suggesting a simple method of avoiding the exponential format. I spliced it onto my own routine and now all positive integers can be displayed in a proletarian format.

I have made the comma a string variable (line #35) because the new international notation calls for spaces before every third digit; I have not yet been able to force myself to adopt this innovation but all avant-garde numerologists may change line #35.

In order to merge my subroutine with John Love's, delete his line #120, and change the 'RETURN' in his line #40 to '120' or 'GOTO 120'. Also delete line #110 from my subroutine. It now only remains to add conditions to handle negative numbers and decimals. A simple task! ...but, alas, I have 3,000,007 simple tasks still waiting to be addressed.

```
  1  REM
  2  REM  COMMAS IN BIG NUMBERS
  3  REM  ======================
  4  REM
  5  REM       Richard Rowell
  6  REM       November 1,983
  7  REM
 35  DIVIDER$ = ","
110  N$ =  STR$ (NUMBER)
120  FOR I = 0 TO  LEN (N$) - 1
130  NUMBER$ =  MID$ (N$, LEN (N$) - I,1) + NUMBER$
140  IF (I + 1) / 3 =  INT ((I + 1) / 3) AND I <  LEN
     (N$) - 1 THEN NUMBER$ = DIVIDER$ + NUMBER$
150  NEXT I
160  RETURN
```

PUSHED KICKING AND SCREAMING INTO CP/M

by Leon H. Raesly

(Ed. Note: This confirms my opinion that mental telepathy exists. Both Walt Mills and Lee have independently written and submitted CP/M articles for this issue. There are many similarities. We are publishing both articles because they complement each other, and present two different viewpoints.)

My son tells me that CP/M means "Conspiracy to Protect the Ministry" (meaning the ministry of programmers), and others have stated that CP/M was developed to make small computers as difficult to operate as large ones. Either way, I think that I agree with them, even though the manual states that it stands for Control Program for Microprocessors.

I hope to make this a two or three part article for beginners on CP/M (like me), or individuals considering whether or not to get CP/M for their use. So, if you are already into CP/M, you are excused from reading this article! For the rest of you, there will be a quiz at the end!

Let's start out with what CP/M is not. It is not an operating system (I can hear the screams from the CP/M devotees already!). The most widely accepted definition of an operating system is the one that IBM uses, to wit: "A master control program inside the computer that parcels out all the resources of that particular computer and lies between the application programs or programs and the machine itself." An operating system could manage various peripherals such as printers, the CRT, input console, as well as manage files and disks, etc, and also control the use of compilers, interpreters and libraries of utilities and high level languages. CP/M does not do this.

What it is, is a disk and file manager, with the ability to access (but not control) various peripherals. It works with certain 8-bit microprocessors, the 8080 by Intel and the newer, more porwerful Z-80 by Zilog Corp. CP/M was first developed in 1973 by Gary Kildall, and is currently owned by Digital Research (and has been for quite a while). Microsoft's Softcard has a Z-80 8-bit chip on the board, thus allowing you to run CP/M on the Apple if you have their board.

It is also important to note that it is not a language (nor does it pretend to be). So your machine has to have available a language to program. The most common used is MBASIC, also from Microsoft. The better programs on CP/M, in my opinion, are written in machine language or assembly.

So what makes it so popular (almost a religion to its devotees)? Well, that answer has really two parts, as I see it. The first is the nature of the Micro computer business for the last 3 to 3 1/2 years, and the other is both the programs available for it, and some of the features of CP/M itself.

Consider, if you will, the dealer's view several years ago, via the following scene: July, 1980 in a local dealer's "showroom". In walks Bill Ding, and he's heard about the Apple, and thinks that maybe he could use one, so he is here to check it out. The salesman for the dealer, Jim Nasium, knows a good prospect when he sees one, and asks him what he does in his business. Bill, of course, replies that he does this and that, and also "I write some letters". Jim's eyes light up. He knows money when he smells it. "What you need", he says, "Is a Word Processor to do your work. Now Apple Writer won't do your job, it's just a file editor, and those other cheap programs can't really do your job. You need WordStar!" Jim has just added almost $2500 to the sale. For now Bill has to buy WordStar ($500) and a Z-80 card ($475) and an 80 column board ($375) and a monitor ($400) and softswitch ($55) and a 16K board ($295).

Not that WordStar is not a good program - it was then, and it has gotten better. But the question of whether the customer needs $2500 MORE of features than Apple Writer, Screen Writer, or Letter Perfect, never really became a question. CP/M was made popular, because it made dealers money! Well, the argument then goes, there are about 1,000,000 CP/M users, doesn't that make it a de facto standard? Well, there are also about 1,000,000 APPLE DOS users, and I never heard anyone state that this makes the APPLE DOS an industry standard!

So if all that is so, why get into it now? The first reason is that prices have tumbled. I have seen Z-80 cards as low as $95, and even WordStar, with a bundled (included with WordStar) Z-80 card at discount as low as $275. And the //e now comes with BOTH a built in 16K card, and an 80 column board. And monitors have fallen in price. Last week I saw a green screen 12" monitor advertised for as little as $89 at one of the downtown stores! Also, most people these days buy a monitor with their starter unit.

In my case, and for many of the older owners, I have over the last three years added a monitor, 80-column board, and a 16K card for other needs that I, and they, had as time went along. So my cost of getting into CP/M can be as little as $100 for the Z-80, or to get it bundled with WordStar for about $375. Also, one of the more powerful data bases, dBase II requires the CP/M environment on the Apple.

For me, there is an even more compelling reason. As you know, if you have read any of my articles in the past, I insist on being able to provide back-up (or use) copies of a program. I (and I believe you) am particularly vunerable if I lose a program disk that I need. And simply having one back-up is not enough. If something goes wrong with the Apple, and it inadvertently wipes a disk, I would not know the trouble, and would, of course, have to use my back-up disk. It would then be wiped out also, and now I can wait for as long as 3 or 4 weeks to get a replacement. Also, I use my Apple at two different locations, one at work, and one at home. These are about 25 miles apart. If I blow a disk, I must order a replacement, and then carry my one copy back and forth. Sometimes I don't go into the office as early as the staff that may need to use it, and time is wasted.

The interesting thing about CP/M is that CP/M programs are not copy protected. How it is that an Apple owner with a Z-80 card is seen as more trustworthy than an Apple owner without one escapes me, but that seems to be the case. And with copy protection schemes getting more difficult all the time, I need to switch as many of my applications as possible to those programs on which I can make back-up copies. And this means switching to CP/M.

O.K., if you're thinking of purchasing a CP/M system, let's look at some of the ways CP/M works. You boot the CP/M systems diskette, and on the screen you see Microsoft's Copyright, and then about three lines down

contd.

on the left side of the screen you see:

A>

You have now bumped into the first difference from APPLE DOS of the many you will see. CP/M will work with four (and only four) disk drives, and it labels them A, B, C, and D. So CP/M is telling you that it is ready, with it's own little prompt (>). This is the same as Applesoft does with the] prompt. However, it is also telling you one thing more. It is telling you which drive you are "logged " onto. In APPLE DOS, the last drive you accessed is the drive that the machine will access next, unless you give it a different drive designation by adding:

,Dn

(where n is the drive number). Unfortunately, APPLE DOS does not tell you which drive it will access next (or last one accessed either, for that matter). In CP/M, you always know which drive will be accessed, unless you specify differently. The command to access a different drive is simply the drive letter followed by a colon. And you have encountered the first backwards (in terms of APPLE DOS) command. There are others ahead. Rather than placing the drive deignation at the end of the command, you place it at the beginning.

Thus, if you wanted to access a file called FILENAME on drive B (drive 2 to APPLE DOS users), you would type:

B:FILENAME

as contrasted with APPLE DOS, where you would type:

FILENAME,D2

While we are talking about drive identification, let's take a short look at CP/M's file naming conventions. First, the file name may contain two parts, the FILENAME and the EXTension, separated by a period, or dot. The FILENAME may not exceed 8 characters, but may be less. The EXTension may not exceed 3 characters. The EXTensions are used to identify the type of file, thus BAS would usually be a BASic file, COM would be a COMmand file, TXT a TeXT file, etc. If I wished to specify the drive, an example might look like this:

A:MYFILE.TXT

If MYFILE.TXT was on the "logged" drive, I would not need to indicate the drive. As a program user (versus a programer) you will most probably use only a couple of the utilities on the disk. For convenience, I am not differentiating between utilities that are separate files on the disk, and routines within the primary CP/M system program. I have placed the similar Apple utilites in parentheses next to them. These are COPY (COPYA), PIP (FID), STAT (FID), DIR (CATALOG), ERA (DELETE), REN (RENAME), TYPE (No direct equivalent in APPLE DOS), and ED (no direct equivalent, but you can purchase editor utilities on the commercial market). Possibly you might get into using SUBMIT and XSUB utilities. These last two are similar to the EXEC commands and files in APPLE DOS.

In addition to the above, there are several utilities and routines that I think you will never use. These are: DUMP (displays the contents of a file in hexadecimal form to the screen or printer or both), ASM (converts an 8080 assemply language into source code), DDT (Dynamic Debugging Tool - used to test and debug machine language programs written with the ASM assembler). SAVE in CP/M is generally equivalent to BSAVE in APPLE DOS, which needs the number of pages in memory that are to be saved to be specified in hexadecimal notation, so the typical user of "canned" programs won't use that. Nor do I think that you will be using the esoteric (at least esoteric in terms of today's "state of the art") devices such as a paper tape punch, or a paper tape reader. These are a hangover from the early days of CP/M and were essentially all there was to use then.

The earliest interactive machines used teletypes to connect to the computer, and the computer printed back to the teletype. Data or programs were punched into paper tape, and then re-entered at a later date. I can remember as recently as 1978 (and I think they still do it) working with the mainframe at Maryland U. in their "computer lab" - a large room with teletype machines hooked to the Rem. Rand mainframe, and having to store my data on punched paper tape to take it with me. Teletypewriters with punched tape devices affixed were in much greater demand than those without!

Another feature from that era which is not very useful now, is the concept of USER area in memory, or on disk. CP/M allows you to have up to 16 USER areas defined. Each could use their own area, and not be read by another user. Today, with micros in each person's hands, you don't need to share space with another user. The other user is on his/her OWN machine! It does provide a low level of security, however. Since, when you boot the CP/M system, it defaults to USER area 0, you could change this to another USER number (from 0 -15) and thus if anyone else did a DIRectory on your disk, they would not see your files. Of course, if they then concluded that the disk was empty, and reformatted it, you've got problems!

Since we have been talking about disk and drives (at least I was about 7 paragraphs back!), I would like to add a small section on copying with CP/M. To copy a disk, you load a utility called COPY by typing COPY. The screen then shows an asterisk as the prompt:

*

And it just sits there! No explanation of what it expects, or anything. Remember the explanation that CP/M was written to make small computers as difficult as large computers? Well, here is another example! Let's look at how you do copy a diskette, and the differences with APPLE DOS. First, with APPLE DOS you run a program called COPYA (or COPY, if you have integer BASIC installed) and the program prompts you with which slot and disk drive contain the original, and which the copy, then formats the disk. Not so with CP/M. In CP/M you must format the disk FIRST, before you can copy files onto the disk. The command for this (with the COPY prompt showing) is:

/ F

and the program will prompt you which drive you want a disk formatted in, then proceed to format the disk. Then you can make the copy. To do this, you place the newly formatted, empty disk in drive B (2 on an APPLE), and the disk you want to have copied in drive A. Then the command to copy the disk on drive A onto the disk in drive B is simple (but again backwards from what you are used to on an APPLE. The command is:

B:=A:

Logical - you want the drive B disk to equal the disk in drive A, but it writes and feels backward at first. If you make a mistake and say A:=B: you get your blank formatted disk copied onto your program disk, and you are wiped out! There is a way to cheat on this, though! (I love to cheat on these little machines, and do things that you are not supposed to do. It is so satisfying!) If instead of typing the command above, you add / F to it, it then formats first, and then copies. The command is:

contd. on pg 61

FILEHANDLER UPDATE by Tom DeMay, Jr.

I have been informed of an error in FILEHANDLER.1. While using the (M)odify file option to delete headings from a file, FILEHANDLER.1 will always delete the last headings. To fix this, load FILEHANDLER.1, and enter the following lines. Don't forget to save the fixed version as FILEHANDLER.2

```
  500 IF FF THEN PRINT NN:REM 2
  501 IF NOT FF THEN 509:REM 2
  502 FOR K = 1 TO C + AH: IF HC$(K) = "N" THEN 505:
      REM 2
  503 PRINT CHR$(34); H$(K):REM 2
  505 NEXT K: GOTO 600: REM 2
  509 IF CF THEN NN = C: GOTO 520:REM 2
  560 FOR J = 1 TO C + AH:REM 2
  565 IF HC$(J) = "N" THEN 580:REM 2

 4042 FOR K = 1 TO C: HOME: VTAB 5: IF HC$(K) =
      "N" THEN NEXT K: REM 2
 4043 PRINT "ENTER NEW DATE FOR HEADING #";K:
      VTAB 9: PRINT "OR PRESS RETURN TO KEEP THIS
      HEADING AS ";H$(K):REM 2

60001 REM *  VERSION.2 OCT 83  *
```

A new copy of FILEHANDLER.2 has been donated to the WAP disk library. It will be available soon. I regret any inconvenience this may have caused .

A PAGE FROM THE STACK
by Robert C. Platt

Make a new year's resolution: share with your friends by combing through your programs and donating a disk to the WAP library. Remember, you get a free library disk for every disk which you donate. I will be at the library sales desk before the monthly meeting to discuss your contributions and answer your questions.

Two related articles are in this issue of the Journal. First, our series documenting older disks continues. Also, I offer a case-study in using SUPER FILE CABINET from the New Member Disk.

ALF MUSIC FILES

Bernie Benson has offered to compile a disk of song files for playing on the ALF Music Synthesizer Board. Files for both the 3 or 9 voice ALF boards (or ALF compatible boards) are welcomed. Submit your disk through the usual donation procedure and get a library disk in exchange. Contact Bernie Benson for further details.

CHRISTMAS LIBRARY SALE

In order to encourage Christmas giving (of WAP library disks), a special Christmas discount will apply from November 26 to Dec. 23: If you buy 5 or more disks, we'll take $1 off the price. Also, John Malcolm and the library staff are trying to simplify buying disks at the meeting. A blackboard now lists the new disks, and a notebook of disk writeups is available for the browsing shoppers. Please let us know of other ways to improve our service to you.

WAP'S CHRISTMAS DISK

Remember that we have an excellent Christmas disk (Vol. 103) in our sales library. There are a lot of fun holiday things on this disk - some swell Christmas graphics, a couple of Christmas songs, and a nifty demo-pak from Call-A.P.P.L.E. And, up until Christmas you can buy this disk for only $4.00 when you buy any five club disks.

Special thanks are due to Walt Francis who will combine the Comm Center Visicalc templates with others donated by Jim Hubbard, Al Merritt and Roy Rosfeld. Contact Walt or myself if you can help launch our template/spreadsheet utility collection.

Five disks premiered in November: Disk 702 GoForth, Disks 406-8 with the ZCPR modification to CP/M and Disk 143 Sports.

DISK 702: GO FORTH

This disk features an excellent tutorial on the FORTH language. To use, BRUN FIG-FORTH78 on Disk 105. Then type the following commands with Disk 702 in drive 1:

EMPTY-BUFFERS <cr>
1 LOAD<cr>

The tutorial will then be compiled. The tutorial comprises a series of screens. After reading the text, you can experiment with the various commands (or "words.") To end your experiments and advance to the next screen, type GO. GoForth includes an extensive on-line help file which describes the action of each Forth word.

Note that the 1 LOAD command will modify the copy of the Forth system in memory so that 140 screens can be read from the disk (instead of the usual 100.) As a result, do not access Drive 2 or save the modified system.

DISKS 406-08:ZCPR VERSION 2

ZCPR Version 2.0 replaces the Console Command Processor in CP/M. ZCPR offers several advantages over the unmodified CCP including (1) the TYPE command will automatically pause at the end of a screen, and (2) you can establish a search path accross several drives for the system to execute your COM files. (See Walt Mills' review in the March 1983 WAP Journal.)

A Z80 card and a copy of the CP/M56 Microsoft system are required. The installation procedure will patch a copy of your system (and will not work with the 60K version.) Use the SUBMIT file on Disk 406 to install the system.

Disk 407 has the documentation for the system. The files on this disk are squeezed Wordstar format files. You must first unsqueeze them with the utility on Disk 402. Then you can TYPE them to the screen or use WordStar for a formatted printout.

Disk 408 has utilities specially configured for ZCPR.

DISK 143: SPORTS

Sports is the topic of our first "theme" disk. This disk has all the software necessary to convert a sedentary, middle-aged Apple owner into a 3:18 marathoner. Programs marked with (I) are in Integer Basic.

{143.1} MARATHON PREDICTOR - The entrants to a major marathon were surveyed to learn the effects of training on their performance. This program is based upon a statistical analysis of the survey. The program will predict how long it will take to run a 26.2 mile race based upon the answer to four questions.

{143.2} DECATH HALL OF FAME - Olympic Decathlon by Timothy W. Smith is a popular commercially published computer game. This program will keep track of your family's top scores. To use the program, RUN DECATH BUILD to create the necessary data files. (12 sectors are needed.) Whenever you play Decathlon, write down the scores for each player at the end of the game. Then RUN DECATH HALL OF FAME and enter the scores into the data base. This program can be adapted to keep track of your best scores for any number of games.

{143.3} SUPER BOWL - by David W. McMullen offers seven possible offensive plays. Your position on the field is displayed in hi-res graphics. Based on a Univac Ubasic program by G. Baltz and M. McAmis. (I)

{143.4} FOOTBALL - by Rodney Nelson, a one-player Integer Basic game featuring lo-res graphics. You enter your plays by number (eg 1=run, 2=pass). (I)

{143.5} GOLF - The Apple Dayton Users Group invites you to try your skill over nine holes. A knowledge of golf clubs is required. Text only.

{143.6} PARACHUTE - by Len Laskowski, use your game paddle to steer the chute through shifting winds. The

contd.

goal is to land on the target area. Hi-res graphics (I).

{143.7} BASEBALL - guess a number to get on base. You play against the Apple. No graphics. From the San Francisco Apple Core via Novapple Disk #24 (I).

{143.8} RACE CAR - by John Norris, uses paddles to steer. Both the level of play and the width of the road can be selected. (I)

{143.9} ROAD RACER - paddles and files RACER and RACER MACHINE required. (I)

{143.10} THE SAINTS.TUNE - a melody for your half-time show: when the saints come marching in.

{143.11} LUNAR SURVIVAL - by Stewart F. Rush, from Jan. 1982 Creative Computing p. 142-53. The ultimate sport is being able to survive after your spaceship crashes on the moon. The author's best survival time is 385 minutes. Can you beat it?

{143.12} STOPWATCH - by Bob Huseldonk and Val Golding is a simple use of an Integer Basic timing loop to let your Apple function as an (inaccurate) stopwatch. (I)

{143.13} PINBALL - a great game based on Bill Budge's Pinball Construction Set. BRUN this file and then use your game paddles (or Apple keys on a //e) to control the flippers. (contributed by D. Seeley)

{143.14} CYCLES - by Dan Storch, pilot a motorbike through a jump over a selected number of buses. The game paddle controls your throttle. Hi-res.

{143.15} LOGGER - steer your swimmer through a lo-res river, but avoid the floating logs.

{143.16} BOXING - (from the San Francisco Apple Core) your Apple can do a convincing imitation of Howard Cosell. Occassionally, its narration of a three round bout will stop long enough for you to select a punch.

DOS 3.2 CONVERSION

We have been working for some time to convert our DOS 3.2 disks into 3.3 format. Many thanks to Fred Edwards for agreeing to take on this project. The library will begin selling the reformatted disks early next year. In the meantime, just follow the instructions for using DOS 3.2 disks on page 7 of the New Member Reference Book.

ULTIMAKER 2: A Review by Bob Oringel

Ultimaker 2 is a utility program which can be used to help game clods like me enchance the enjoyment of games like Ultima 2.

Ultimaker 2 is marketed by Amazing Software, 625 Wellington Street North, London, Ontario, Canada N6A 3R8.

Documentation: There are five pages of well printed and clearly written instructions, which adequately describe the operation of the program. It would be helpful if the pages were numbered and a cover page included - minor criticisms, indeed.

Program: The program is completely menu driven. The main menu provides three choices. One may edit a playing character in Ultima 2, print maps of Ultima's terrains, or look at playing hints. There are hints from A to Z (26 of them), ranging from basic to advanced, with the admonition of the author to use only those necessary to enjoy the game. The player editor permits giving a game character more spells, hit points or food than the game normally allows, thus heightening his abilities. The mapper menu gives the Ultima 2 player the option of printing individual Ultima maps on his printer, providing a wider viewpoint than the video screen allows.

Overall, this reviewer found Ultimaker 2 to be helpful indeed in enhancing the play of Ultima 2.

WINTER DISK ROUNDUP

by Robert C. Platt

Here is the second installment of the Documentation Team's efforts. They include a brief description of each program on the disk, known bugs, and hints on using the disk. Documentation for disks 12, 13, 19, 23, 25, 27, 100, 102, 105 and 122 appeared in the November WAP Journal. Descriptions of the remainder of the WAP Library can be found on pages 12 to 34 of the New Member Reference Book.

Each program has been given a unique serial number which is enclosed in brackets { }. The number is not a part of the program file name on the library disks.

You can buy these disks at our meetings, the WAP Office, or by mail using the form in the back of this issue.

DISK 11: GRAPHICS I AND II
(Reviewed by Ron Bernstein)

Note: At present the programs described here are on disks 11 and 17. These disks will be combined when we convert the library to DOS 3.3 format.

{11.1} CARDS MENU, CARDS, FAST SHUFFLE, FIFTY-TWO PICKUP, PLAYING CARDS - CARDS MENU uses these programs which demonstrate the use of hi-res graphics to display playing cards. The graphics are very nice, and the card displaying routines could be adapted by you for the creation of computerized card games.

{11.2} CIRCLES - A short but impressive hi-res demo that uses circles to create complicated designs.

{11.3} COLOR EATER I - A lo-res graphics demo, with sound, draws a colorful pattern on the screen and then eats it up.

{11.4} EASTER EGG - Draws a multi-colored easter egg.

{11.5} EIGHTS - Similar to CIRCLES but uses figure eights. An impressive display from such a short program.

{11.6} EXPANDED DUMP, EXPANDED DUMP.B, DRIVER - Graphics screen dump for IDS 440 printer. Untested, let us know if it works.

{11.7} FLAG - See our flag rise. Hear our Anthem.

{11.8} GRAPHIC CRAPS - Gamble your money away with this colorful dice game.

{11.9} HIDDEN LINES - Interesting hi-res demo with unusual 3-d effect.

{11.10} HIRES ART, HIRES END, HIRES SKETCH, HIRES.OBJ - some more hi-res demonstrations.

{11.11} IMPACT - Yet another hi-res demonstration.

{11.12} LINCOLN - See this famous president.

{11.13} OBJECT DRAWING - A menu driven lo-res demo with nice sound effects.

{11.14} SHAPE MENU, SHAPER, ASSEMBLER - Run shape menu to create Applesoft vector shapes and assemble them into a shape table. (Also on Disk 134.)

{11.15} T.CIRCLES - Hi-res demo. Answer question, see picture, uses paddles.

{11.16} TICKER TAPE - Display your message ticker tape style.

{11.17} WASHINGTON - See the father of our country.

DISK 16: UTILITIES V
(Reviewed by William Herrick)

{16.1} APPLE TYPER - Turns your APPLE and printer into an electronic typewriter.

{16.2} APPLE TYPER II - Additional subroutines for the APPLE TYPER program.

{16.3} CONVERTER - Will accept hexadecimal, decimal, or binary base numbers and display their values in all 3 BASES.

{16.4} HEX-ASCII.B - (For DOS 3.2 ONLY) When installed, this machine routine, will display hexadecimal numbers in ASCII. RUN 'HEX.ASCII.B INSTRUCTIONS' for more information.

{16.5} HEX-ASCII.B INSTRUCTIONS - Instructions for 'HEX-ASCII.B'.

{16.6} HEX-DEC CONV - Converts hexadecimal into decimal or decimal into hexadecimal.

{16.7} LOADMON - This program will load either 'OLDMON' or 'NEWMON' on a RAMcard at $D000.FFFF

{16.8} LOADMON INSTRUCTIONS - Documentation for 'LOADMON.'

{16.9} NEWMON - Binary image of new Autostart Monitor used by LOADMON.

{16.10} OLDMON - Binary image of old original monitor used by LOADMON.

{16.11} PERSONIFY - (For DOS 3.2 ONLY) Modifies DOS 3.2 so that the heading 'DISK VOLUME' in a CATALOG is changed to a string of your choice.

{16.12} SEQUENTIAL TEXT EVERYTHING - Allows you to manipulate sequential text files. It also provides summary statistics on the file such as avg record length and number of records.

THIS PROGRAM WAS MISSING LINE 70

{16.13} TRACK SECTOR READER - (For DOS 3.2 ONLY) THIS PROGRAM HAS BEEN SCRAMBLED !!!

{16.14} UPDATE DOS FAST INIT DOS 3.1 & 3.2 - Modifies DOS 3.1 or 3.2 to speed up the INIT command.

THIS PROGRAM HAS BEEN PARTIALLY LOST !!

DISK 20: MUSIC
(Reviewed by Bob Kosciesza)

(Ed. Note: Bob did a superb nine page documentation of this disk, which is available for copying at the WAP Office. Space permits only a summary of his write-up.)

{20.1} JOHANN.SEBASTIAN.APPLE - Johann Sebastian Apple (Version 4) written by F. Paul Wyman (copyright 1978), converts the Apple II keyboard into a piano keyboard. The top row (numerals) and the home row keys become

contd.

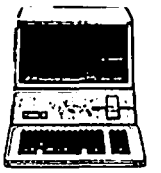
Titan / Sorcim Systems · NEC · COLUMBIA DATA PRODUCTS, INC. · EAGLE COMPUTER · QUADRAM CORPORATION · EPSON

SUPER DISCOUNTS

PRICES EFFECTIVE UNTIL DECEMBER 31st

APPLE COMPATIBLE PRODUCTS

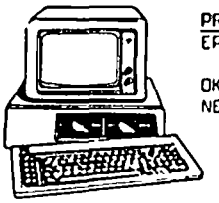
Amdisk III - dual 3-inch drives.....$441.00
Keytronics KB200 Keyboard.....$245.00
Videx Ultraterm 132 column board.....$280.00
Koala Graphics Touch Pad w/software...$95.00
Omega Microware Ramex 128.....$340.00
Kensington System Saver.....$69.95



IBM COMPATIBLE PRODUCTS

Portable Computer -
Columbia VP (128k, 2-320k drives, RX-80 Printer, cable and $3,000.00 worth of free software!).....$2,725.00

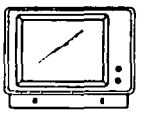
Desk Top Computer -
Columbia MPC 1600-01 (128k, 2 drives, 8 IBM expansion slots, Epson RX-80 Printer, Cable, Amdek 300G Monitor, Quadram Clock, additional 64k RAM, and $3,000.00 worth of software!).....$3,525.00



Peripherals -
Quadram QUAD 512+ (64k/serial).....$258.00
AST MegaPlus (64k/clock/serial).....$299.00
Tecmar GRAPHICS MASTER (600x400)....$586.00
Tallgrass 20meg hard disk w/tape..$3,220.00

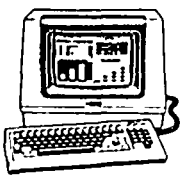
MONITORS

Princeton Graphics.....$495.00
Amdek 300A (Amber Hi-Res).....$149.00



SOFTWARE

LOTUS 1-2-3 (Version 1.A)..... $345.00
dbase II $435.00
Quickcode $203.55
Microsoft "Word".....$270.00



TERMINALS

TeleVideo 970.....$1,240.00
Qume 102 Green.....$548.00

MODEMS

Hayes Smartmodem 1200.....$495.00
Hayes Smartmodem 300.....$203.00
Hayes Micromodem //e.....$250.00

"""Special Offer from Hayes"""
With the purchase of either a Hayes Smartmodem 300 or a Micromodem //e between now and January 15th, you will receive a subscription to the SOURCE, one hour connection time, and a communications manual - a $140.00 value - FREE

PRINTERS

EPSON RX-80.....$285.00
RX-80 F/T.....$415.00
OKIDATA 93.....$715.00
NEC 2050 (IBM Compatible).....$999.95

PRINTER INTERFACES

Orange Grappler Plus.....$125.00
Buffered Grappler Plus (16k).....$182.85
Atari 800 to Parallel (Microbits).....$89.00

MISCELLANEOUS HARDWARE

Anti-Static Desk Mat (24x26).....$73.87
Backup Power Supply (200 watt).....$300.00
Practical Peripherals 32k Buffer.....$224.25

GIFTS UNDER $50.00

Ashton Tate Encyclopedia for IBM.....$49.95
Tech Design Magstick Joystick.....$49.95
Kraft Joystick for the IBM.....$49.95
Diskettes: Verbatim #550 for IBM-PC...$37.50
#525 for Apple....$26.00
PC Saver Surge Protector.....$35.00
Innovative Flip-n-File/50.....$25.95
Flip-n-File/25.....$19.95

SACON INCORPORATED

315 East Diamond Avenue, Suite J2
Gaithersburg, Maryland 20877

(301) 258-9505

Microcomputer System Integration

GIFT CERTIFICATES AVAILABLE

EXTENDED HOURS UNTIL DECEMBER 31

Monday, Wednesday, Friday: 9:30 - 6:00
Tuesday and Thursday : 9:30 - 8:30
Saturday and Sunday : 1:00 - 4:00

brother · LOTUS · ME Marvard Electronics · ORCHID TECHNOLOGY · Hayes Microcomputer Products Inc. · AMDEK CORP. · SANYO · OKIDATA · Videx · ALTOS · ASHTON-TATE · KENSINGTON MICROWARE · MicroPro · TeleVideo · NorthStar

Orange Micro · MICROSOFT · PRACTICAL PERIPHERALS · MICROCRAFT · key tronic

the black keys, and the remaining two rows the white keys of a piano.

Pressing any of the assigned keys will beep the Apple speaker. The other keys are mute. All the "printing" keys (including the mute ones) will place a lo-res color rectangle somewhere on the screen. The sound cannot be directed to the cassette port. The two-and-a-half-octave range of the program produces notes from G to E'''.

There is no duration control and no means of saving the "melody" to a disk. Pressing the space bar will produce a prompt asking if the operator wishes to continue or to exit the program.

{20.2} ANDY'S SYNTHESIZER - (Andy Hertfeld) Uses the Apple keyboard to output a number of different chords (arpeggios) and single notes. Number keys determine the figure, letters determine the pitch. Although all the numeral keys are live, numbers 6 through 0 produce the same effect as number 5. Only some of the letter keys are allowed; others produce a break in the program and an error message. Hitting the space bar stops the sound output. "Q", "R", "I", "O", "P", "K" and "L" are the "faulty" letters; symbol keys are not allowed. The duration of each note is set by pressing one of the bottom row keys from "Z" (the shortest) to "M" (the longest).

{20.3} SMALL.SMALL.WORLD - BRUNning the program will result in (sort of) variations on the William Tell Overture and on It's A Small World being played through the Apple speaker.

{20.4} MUSIC.FOR.A.CLOSE.ENCOUNTER - The "signature tune" of Close Encounters of the Third Kind rendered in various pitches, tempi, and articulations through the medium of the Apple built-in speaker. Color rectangles of a variety of sizes displayed in time with the sound.

{20.5} LUDWIG'S.FANTASY - More accurately described as Ludwig's Delirium Tremens, the program (ab)uses the Motif from the 5th Symphony in the manner used in the MUSIC.FOR.A.CLOSE.ENCOUNTER above.

{20.6} SCORE - A machine language program that plays the Dance of the Reed Flutes from Tchaikovsky's Nutcracker Suite in four part harmony. The output is to the cassette port. Part of the FOUR VOICES program below.

{20.7} FOUR VOICES - The program plays 5 different melodies in multi-voice harmony (up to four). The user has a choice of either the Apple speaker or the cassette port output. Literature references for this program are given at the end of the program listing.

The self prompting program provides a choice of: The Star Spangled Banner, Theme from the Exodus, Deck the Halls, Dance of the Reed Flutes, and Blues on the Down Beat.

{20.8} BACH 2 - A very rough approximation of a Bach Prelude (built-in speaker) accompanied by visual display of lo-res outline rectangles.

{20.9} MUSICPAK 1 - An A.P.P.L.E. program in three parts: (1) Two Voice Music--a selection of 5 melodies: Jesu, Joy of Man's Desiring; Bach (a two part invention methinks); Yankee Doodle; and Daisy, Daisy (Bicycle, not printer). (2) Synthesizer--almost identical with Andy's Synthesizer. Differences: (a) all "mute" keys in AS = "A" key in this program and (b) 5W = c''''''. (3) Keyboard Music: pressing a key produces a tone of preset duration. Tone duration is selected by keying-in a number (0 to 250). The name of the note is heightened on the monitor screen in the manner of staveless neums of yore.

{20.10} APPLEODIAN - (Garry J. Shannon) Has a number of interesting features. However, the program requires a binary file called BACH which is missing from this disk.

{20.11} THE HART PIANO - All the "printing" keys with the exception of "-" (the dash) toggle the Apple onboard speaker. The tonal range is from g♯ (";") to a♯'''' ("Q"). (Not included in the range is a very high, very noisy and very weak note sounded by pressing "1"). Most of the notes are fairly accurate, but g' ("Y"), e' ("U"), f♯' ("h"), and d♯' ("j") are slightly flat, while a ("P"), f♯'' ("d") and b''' ("z") are slightly sharp. The tone produced by pressing "k" lies between c' and c♯'. Left and right arrow keys shorten and lengthen the duration of the notes.

A number, approximating an inverse function of the frequency of the sounded note is displayed on the monitor screen.

{20.12} ODE TO JOY - Steve Schonberger has transcribed the Ode to Joy into pomaceous notation. The results can be heard by RUNning this program.

{20.13} APPLE PIANO DOC - No, this is not a program to heal the frailties of the Apple sound system. It is a documentation for the Binary file APPLE PIANO that follows it on the disk.

{20.14} APPLE PIANO - This program, accessed either by BLOADing it or from within the APPLE PIANO DOC, adds sound to the keypress without interfering with the normal functioning of the system (some CTRL characters are changed--see APPLE PIANO DOC for the list). The sound is toggled on and off by pressing <CTRL-N>. Try listing a program while the APPLE PIANO is operative. Asterisks and spaces are especially charming. Do not throw things at the computer, remember a simple <CTRL-N> will bring on instant silence.

{20.15} PHILA ORGAN - Identical with option #3 of the MUSICPAK 1 program above.

{20.16} TOGNAZZINI TUTORIAL - An introduction to mini-assembler. The user has three choices:

(1) To watch the program enter the monitor, call up the mini-assembler and type a short routine for input to the mini-assembler. The result is a program that uses the twiddling of the paddle knobs to change the pitch produced by the Apple speaker. Mercifully a reset will stop the sound continuum and leave the experimenter in the monitor.

(2) To let the program prompt the user him/herself in using the mini-assembler to enter a sound routine. A brief explanation of each mnemonic is provided. If you are not too hot on number systems and have forgotten about place values, the explanation of how 3072 decimal became C00 hexadecimal, will leave you a little dizzy. Seriously, while the program is not going to teach anyone assembly language programming, it will go a long way to help "conquer the fear of monitors," and may even whet an appetite or two for learning more.

(3) To quit.

DISK 34: SOLAR TUTOR
(Reviewed by Tom Riley)

This disk presents information about the use of solar energy in the home. The information is presented in the form of text, questions and answers, and graphics. This series of programs is a good example of the mix-

contd.

—— Operant Systems ——

-- HARDWARE --

DISK DRIVES—
- MicroSci A2 drive (100% Apple-compatible Shugart 390).. 239
- Rana Systems Elite One drive (40 track, 163K) 265
- Elite Two (40 track, double side, 326K) .. 425
- Elite Three (80 track, double side, 652K). 549
- TEAC Thinline drive (40 track, 100% Apple compatible).. 259
- Davong 5, 10, and 15-MEG Winchester drives .....(call)
- Corvus Winchester, Omninet, Mirror, Concept 68000 ...(call)

CP/M SYSTEMS--
- Applicard (6 Mhz Z-80, 64K to 192K RAM, 70-col video).. 260
- Microsoft Softcard IIe (Z-80, 80 col & 64K on one card) 335
- Softcard (includes CP/M 2.2 and MBASIC)..... 229
- ALS CP/M Plus System (6 Mhz Z-80, 64K RAM, CP/M 3.0) .. 275
- Saturn Systems Accelerator IC (3.6 Mhz 6502 processor). 445

MONITORS—
- Amdek 300G (12" green anti-glare screen, 18Mhz) 145
- 300A (12" amber anti-glare screen, 18Mhz) 155
- Color I (40-column text/color graphics) 295
- NEC JB-1201 (12" green anti-glare screen, 20Mhz) 159
- JB-1260 (12" green, 15Mhz, best value for money) .. 110
- JB-1212 (12" color, composite video) 279
- USI PI-2 (12" green anti-glare screen, 20 Mhz) 145
- PI-3 (12" amber anti-glare screen, 20 Mhz) 155

MODEMS--
- Hayes Micromodem IIe (tone dialing/speaker/Smartcom I). 225
- Smartmodem 300 (300 baud, RS-232, direct-connect) 199
- Smartmodem 1200 (300/1200 baud, as above) 479
- Novation Apple-Cat II (w/ Cowware; 1200 baud capable) . 245
- Smart-Cat 300 (RS-232, direct-connect) 189
- Smart-Cat 300/1200 (as above) 429
- J-Cat 300 (miniature RS-232, direct-connect) . 109
- SSM ModemCard (300 baud, audio monitor, emulates Hayes) 235
- US Robotics Password (300/1200 baud, auto-dial/answer). 355
- Anchor Automation Volksmodem (300 baud, RS-232)..... 59

PRINTERS—
- Epson FX-80 (160 cps, tractor/single sheet, graphics) . 545
- FX-100 (wide carriage version of the above) 739
- RX-80F/T (100 cps tractor/single sheet, graphics) 409
- MX-100 (wide carriage version of the above) 575
- Okidata 92 (160 cps, graphics, BEST print for price) .. 439
- 93 (132 column version of above) 719
- IDS Microprism (110 cps, prop spacing, excellent print) 479
- Prism-80 (200 cps, buffer, correspondence quality). 999
- Prism-132 (wide-carriage version of above) 1149
- NEC 8023 (120 cps, tractor/sheet, same as Prowriter) .. 385
- Gemini 10X (120 cps, tractor/single sheet, graphics) .. 315
- 15X (wide-carriage, same features as Epson MX) . 425
- Itoh F-10 Starwriter (40 cps daisywheel, Qume-compat). 1099
- Transtar 140 (40 cps daisywheel, same as Itoh F-10) .(call)
- 130 (18 cps daisywheel, BEST low-cost unit)... 669
- Silver-Reed 500 (14 cps daisywheel—goodbye typewriter) 439
- NEC 7710 (55 cps daisywheel, built like a tank) 1975
- Diablo 620 (25 cps daisywheel) 950
- Qume Sprint 11/40 (40 cps daisywheel) 1349

INTERFACES & BUFFERS—
- Ptaso printer interface (parallel w/ superior graphics) 135
- Pipeline buffer (8K to 129K w/merge-print & much more). 175
- Grappler+ printer interface (parallel w/ graphics) 129
- Buffered Grappler+ (up to 64K buffer plus graphics) ... 179
- CPS Multifunction (serial, parallel, and clock) 165
- Wizard BPO (16K-32K buffered parallel w/ graphics) 135
- IPI (graphics, text dump, page formatting) 69
- CCS 7710A (RS-232 serial for printers & modems) 115

VIDEO & KEYBOARD—
- Videx Ultraterm (160 column by 48 row display !!) 275
- Videoterm (80-column w/ softswitch & inverse) ... 229
- Wespercorp Wizard-80 (softswitch & inverse built-in) .. 155
- ALS Smarterm II (80 columns at a bargain price) 129
- MicroSci 80-col card w/64K RAM for IIe 125
- Keytronic KB-200 low-profile detached keyboard 235

MEMORY EXPANSION--
- Wespercorp Wizard 16K RAM card (2-yr warranty) 63
- STB Systems 64K RAM card (w/ disk emulation software).. 199

-- SOFTWARE --

WORD PROCESSING—
- Wordstar 3.3 (including 6 Mhz Z-80 Applicard !!!).. 399
- Wordstar 3.3 (program alone) 299
- ScreenWriter II (70 col display, spooling, more!!).. 85
- Super-Text Professional 79
- Bank Street Writer 49
- Word Handler (70 col display, easy to use) 129
- Letter Perfect 99
- Incredible Jack (word processing, data base, calc). 135
- Sensible Speller IV (checks ANY file type) 89
- The Word Plus (super spelling checker for CP/M) ... 119

SPREADSHEETS & FORTUNE-TELLERS—
- Multiplan (state-of-the-art spreadsheet) 169
- VisiCalc (IIe version available also) 165
- The Financial Planner (from the dBASE folks) 449
- SuperCalc 2 (powerful CP/M spreadsheet) 189

INFORMATION MANAGEMENT—
- dBASE II (w/ ZIP screen generator) 409
- Quickcode (dBASE program generator) 199
- dUTIL (time-savers for the dBASE programmer) 75
- The General Manager 2.0 149
- DB Master 149
- PFS: File, Report, or Graph 85
- Infostar (including 6 Mhz Z-80 Applicard !!!) 399
- Data Perfect 99
- VisiFile 165
- Condor III (powerful relational database system) .. 449
- VersaForm (business forms processor/DBMS) 199

BUSINESS & ACCOUNTING—
- BPI Accounting (AR/AP/PAYROLL/INVENTORY) ea module: 259
- Peachtree Peachpak (GL/AR/AP) ..... all three: 239
- Accounting Plus (GL/AR/AP/INVENTORY) .... all four: 695
- The Accountant (double-entry bookkeeping system) .. 99
- Home Accountant 55

COMMUNICATIONS—
- Ascii Express Professional (for DOS 3.3) 95
- Z-term Professional (for CP/M) 105
- P-term Professional (for Pascal) 95
- Data-Capture 4.0 59

LANGUAGES—
- Softech UCSD p-System 425
- Digital Research Pascal/MT+ 249
- Microsoft Fortran-80 129
- BDS C compiler 115
- Micromotion FORTH-79 79
- Terrapin Logo 109

ODDS & ENDS—
- Kensington System Saver Fan (w/surge protector) ... 66
- TG Joystick / Kraft Joystick 43/47
- Trace SoundTrap (acoustic enclosure for printers) . 99
- Wildcard (hardware antidote for copy protection) .. 99
- KoalaPad Graphics Tablet (with graphics software) . 95
- Verbatim, Maxell, Dysan, TDK, Wabash disks .... from 20
- Computer furniture (tables, printer stands, etc) (call)

Call for prices of items not listed.
We can supply HUNDREDS of other accessories, programs, and computer systems--most WITHIN 24 HOURS.
---) PLEASE COMPARE OUR PRICES (---
If you find a lower price, give us a chance to beat it.
Feel free to call for answers to technical questions.

TO ORDER: Call JEFF DILLON at (301) 434-0405
or
Mail cashiers/certified check or M.O. to:

OPERANT SYSTEMS, 7676 New Hampshire Ave, Suite 312
Langley Park, Md 20783

Md. residents add 5% tax. UPS shipping is available.
All items carry full manufacturer's warranties and are fully tested by us prior to delivery.

ing of text and graphics in an educational format.

The SOLAR TUTOR uses the technique of chaining one Basic program into the next, thus insuring that the graphic memory area is not overrun by the program. The user, however, sees the result as one long continous program.

An introductory level is maintained throughout this disk. An address is given where additional information may be obtained by mail for the more advanced user.

DISK 106: SCIENCE/ENGINEERING
(Reviewed by Tom Riley)

This volume contains miscellaneous engineering and math programs. These include a set for analyzing problems in the drilling of oil and natural gas wells, a Great Circle program to find the distance and direction to any place on earth, and two math utility programs.

{106.1} HELLO, CATALOG.OBJ0, CATALOGFILE, and ENGINEERING MENU - These programs give a little information about the disk, then assist you in selecting the program you want. Although this system is helpful, the general purpose menu program from Vol. 112 Utilities C is far superior.

{106.2} ANNULUS, DRILL, DXC, LOG, LOG PRGM, LOG PRGM.OPT, MUDLOG 5.1, MUDLOG.OPT 4, MUDLOG.OPT 5.1, PUMPS, and VARIABLES - This system of programs helps you solve the problems encountered in drilling oil and gas wells. It is an elaborate set of programs designed to do a specific engineering task.

Unfortunately, no documentation or references are given, so the programs are difficult to use unless you are already very familiar with deep drilling techniques.

{106.3} EXTERIOR BALLISTICS - Given the ballistic characteristics of a bullet or shell, this program calculates the sighting corrections for a number of different ranges. Historically, one of the first uses of digital computers was the calculation of gunnery ranging parameters.

For an example, enter the ballistic coefficient of .9, the muzzle velocity of 10000 ft/sec, zero range of 1000 yds, and range 1 of 10000 yds. If the gun's sites were set for a direct hit on the zero range, the program gives you the sighting corrections needed to hit the target on range 1.

{106.4} GRAPH POLAR FUNCTIONS - The common X-Y grid used for most graphing on the Apple is called the cartesian coordinate system. Many math functions, however, graph best on a circular or polar grid. This program graphs such functions, showing the attractive patterns they form.

For the example, try a step of 1 degree and a scale of 90 pixels. Then try the other examples given at the end of the listing.

{106.5} GREAT CIRCLE - The shortest distance between two places on a globe like the earth is not a straight line on a flat map. That is why the air route from London to Los Angeles crosses the Artic Circle. This program was written to help Ham radio operators calculate the bearing and distance to distant lands but is also of interest to airplane pilots, deep water sailors, and all long distance travelers.

For an example, enter Washington, D.C., with a latitude of 38.54 and longitude of -77.01. Then try the different menu entries.

{106.6} HARMONIC ANALYSIS - Another example of the use of the fast fourier transform to break a mathematical function into its periodic components. The author's address is given at the end of the listing, but no clear example is included of the intended use of this particular program.

The best general reference on the FFT is THE FAST FOURIER TRANSFORM, E. O. Brigham, Prentis-Hall, Inc.

{106.7} HI-RES POLYNOMIAL PLOTTING - A mathematical function entered in line 250 is plotted in hi-res graphics. For an example, enter the line 250 given, then rerun the program and use scale 3.

{106.8} LIFE OF A RESOURCE - The number of years a resource will last is calculated from the amount of the resource on hand, the annual consumption rate, and the increase in that rate. For an example enter 1000000 barrels of oil, 1000 barrels per year, and an annual increase of 1%. The reserve would then last 241 years.

{106.9} S/ROBOT MOTOR - The size of the motor needed for the traction wheels of a robot is calculated from the design requirements. A good example of the use of the computer to design other computer controlled devices like maze mice and robot warehouse workers.

For an example, enter 20 lbs load, 4 ft/sec speed, 6 inch wheels, 120 volts, and an 1800 RPM motor, which should be about right for a robot vacuum cleaner.

DISK 107: GAMES B
(Reviewed by Richard Langston II)

{107.1} APPLE TRIVIA - An Integer text game. Answer questions on sports, TV, books, and other topics.

{107.2} ARTILLERY - An interesting hi-res version of this popular game. Try to blow up your opponent by selecting the right angle and power for your shot.

{107.3} BRAIN TEASER - (by Dick Burson) A lo-res squares game. Get the blue in the center.

{107.4} CLUE - A well written Integer version of the popular board game.

{107.5} COLLISION (by Mark Pelczarski) - An Applesoft version of the arcade game Head On. Eat all the dots on the board without colliding with the computer's car. Use your paddle to change lanes.

{107.6} CONNECT-A-DOT (by Duane Barts) - Complete more squares than your opponent to win the game. A color monitor is needed to tell blue squares from violet.

{107.7} CRAPS - Place your bets and watch the hi-res dice roll.

{107.8} DARTS - Press the paddle button at the right moment and get a bull's eye; hesitate a moment and miss the board. An interesting lo-res graphic game.

{107.9} FOSSBALL - Is a two player Integer paddle game. Hit the ball past your opponent's paddle 15 times to win.

{107.10} FOOTBALL (by Massimo and Boczenowski) - Is a text simulation of NFL football. Play computer against computer, one player against the computer, or two players against each other.

{107.11} HIRES BLACKJACK (by Donald Kahler) - excellent hi-res graphics make this blackjack game very special.

{107.12} INTERNA-MAZE (Dennis Wards) - This is an

contd.

interesting lo-res graphic game. Find your way out of this 3-D maze. Written in Integer.

{107.13} KENO - Buy digits on the board and cross your fingers.

{107.14} MADLIBS 1 (by Jeff Noebner) - A computer version of the popular party game. You provide the words, the computer adds the story.

{107.15} METEOR STORM (by Garon and Pelczarski) - A lo-res translation of a TRS-80 game. Use your paddle to steer your way through a meteor storm.

{107.16} NOT ONE - A text game of chance.

{107.17} NUMBER GUESSER (by Jeff Huebner) - Guess the number between one and one hundred.

{107.18} ROCK, SCISSORS, PAPER (by Jeff Huebner) - Play the computer in a text game of Rock, Scissors, Paper.

{107.19} TV TRIVIA (by Lee David) - Answer 20 questions about old TV shows. Written in Integer Basic.

{107.20} WISHING WELL CODER (by Howie Mitchell) - Produce coded messages.

DISK 127: Math / Science
(Reviewed by Tom Riley)

This disk contains programs on zoology, astronomy, and mathematics.

{127.1} ARTHROPOD CLASSIFICATION, INSECT CLASSIFICATION - A series of questions are given to lead the user to the correct classification of arthropods and insects by the dichotomous key method. The computer guides the systematic study of animals and symplifies a mass of data into a series of questions.

This program will be of particular interest to students of biology and collectors of insects. The name of the author is given in the listing.

{127.2} CAL PI TO 1000 DIGITS, DIVISION, MULITPLY, and NUMBER BASE CONVERTER - These programs perform mathematical functions giving the answers to an enormous number of places. The method used is a little slow but it overcomes the accuracy limitations of the Apple (nine siginificant digits). Mathematicians will be most interested in these programs, but the Number Base Converter is generally useful in converting numbers to and from hexadecimal.

All these programs are written in Integer Basic but there should be no particular difficulity in converting them to Applesoft. The author's name and a magazine reference are given in the listing.

{127.3} CALCULATOR, TOTAL - The computer is made to function as a calculator, which you might find handy for quick calculations.

{127.4} CONSTELLATIONS - The Big Dipper is used to tell the time of night. Amateur astronomers will be most interested in this program, but it will be useful for campers and naturalists. The procedure is explained in detail and a graphic presentation is shown.

{127.5} FAST FOURIER TRANSFORM - The fast fourier transform (FFT) is used to break up time functions into their frequency components. Of interest primarily to engineers, this procedure is used to study the transmission of signals. It is also used to predict the future.

No references or explanations are given for the use of this particular version. The best general reference on the FFT is The FAST FOURIER TRANSFORM, by E. O. Brigham, Prentice-Hall, Inc., 1974.

{127.6} FUNCTION PLOTTER, GRAPHING RATIONAL FUNCTIONS - Mathematical functions entered on a program line are plotted on the hi-res graphics screen. This is helpful to math students in visualizing algebra problems.

{127.7} METRICS AREA, METRICS KITCHEN, METRICS LENGTH, and METRICS TEMPERATURE WEIGHT - A practical set of programs for converting English units to metric and vise versa. A wide variety of different English units are included, even those usually found in recipes, like a teaspoon, cup etc. This series will be of interest to anyone who deals with the antiquated English system of units.

{127.8} PLANT COMPETITION - A model of an enviroment in which two plant species compete for the same ground is depicted. You watch two plant populations grow and recede over many generations. Biology students, farmers, and gardeners will be interesed in watching the plants complete for space and light.

Suggested ranges are given for each of the characteristics that describe the plants. Try running the program with two plants that are alike except for one of the characteristics. Start with one plant from each of the two populations, putting the specimens near the middle of the screen so they can spread.

{127.9} SATELLITE POINTING - The correct compass bearings are given for pointing dish antennas at satellites in geosynchronous orbit. Such antennas three meters wide are currently available for home TV. A new system with one meter antennas is now available in Europe and will soon be available in the United States.

{127.10} SOLAR SYSTEM, SOLAR SYSTEM SIMULATION 2, SOLAR SYSTEM SIMULATION MOD, and SSS INFORMATION - The solar system is simulated first as seen from above and then as the planets are seen moving against background stars. Many excellent lessons in astromomy result, as well as striking examples of how powerful a calculating machine the Apple is. These programs will be of interest not only to amateur astronomers but to anyone who loves the night sky. The author's name, magazine references, and additional information is included.

DISK 132: IAC 19 - UTILITIES F
(Reviewed by Richard Langston II)

This disk contains several utilities that may be of use to some Apple owners. In addition to the information here, most of the major utilities on this disk have a file for instructions. For more info on using each of the programs, run these files. Many also include source code listings.

{132.1} ADDRESS INDEX - A listing of valuable memory locations and monitor routines.

{132.2} BIRTH/ANNIVERSARY LIST - A modified version of the PHONE LIST program. Use it to keep track of almost any dates to remember.

{132.3} CONVERT APPLE WRITER - Converts Apple Writer I files to normal DOS TEXT files.

{132.4} CRAE/APA - Is a utility that allows you to use the Co-resident Applesoft Editor from Highlands Computer and Applesoft Programmers Assistant from the DOS Tool Kit at the save time.

{132.5} DISK SECTOR MAP (by Jeff Alperin) - Gives infomation on track allocation on DOS 3.3 disks. Integer Basic.

contd.

{132.6} DISPLAY ASCII PAGE BY PAGE - Is a useful utility that allows you to examine each page of the Apple's Memory (256 bytes) in ASCII format. That is, as characters instead of numbers.

{132.7} HUFFIN (by Dana Schwartz) - Is a very important utility that allows the 48K Apple user to read a Pascal TEXT file into memory and then transfer it onto a DOS disk as a TEXT file. This makes it possible to load your Pascal programs into your Apple Writer II or ScreenWriter word processors.

{132.8} JOYSTICK - Gives a ton of information on building a joystick and a hi-res schematic. It also includes a text file and an Apple Writer I file giving additional information on the construction of a joystick. This is worth the price of the disk if you like to tinker.

{132.9} LC-KILLER (by Eric Lambrecht) - Changes programs written in upper/lower case to upper case only programs. This utility is especially important now, since the new //e's have U/L case capabilities and older Apples are restricted to upper case. This program makes it easy to trade user-written software between these machines.

{132.10} LOAN ADVISOR (by G. Jonas) - An aid to planning loans.

{132.11} MEMAP - Applesoft Memory Map. EXEC this file and it gives information on where strings, arrays, and variables are stored in memory.

{132.12} PADDLE TEST (by Peter Wyspianski) - Reads paddles and paddle buttons to help diagnose paddle problems.

{132.13} POKE 33 (by Harry Jones) - An ampersand (&) routine that does a POKE 33,33 to aid in editing Applesoft programs.

{132.14} 48K RAM TEST (by Philip Wasson) - Tests all 48K of RAM continosly for errors. If an error is found, the row and column of the defective chip is reported. It should be noted that this program will work on a //e, but the reports of defective chips will not agree with the placement of the chips on the motherboard.

{132.15} SECTOR LIST (by John Matusher) - Will tell you where on disk a file is located and its file type.

{132.16} TEXT TO APPLE WRITER - Transfers a TEXT type file into an Apple Writer I file.

{132.17} TRACK 35 (by Harry Jones) - Patches DOS to allow program storage on track 35, which is normally not used by DOS 3.3. Adds 16 extra sectors to a disk.

{132.18} UN-NEW - Recovers from accidental NEW or FP commands.

DISK PIG7: PASCAL
(Reviewed by Bob Platt)

{307.1} LISP - Dave Nuemann has provided the "essence of a LISP interpreter". As he points out it needs to be extended. Read LISPDOC.TEXT for documentation.

{307.2} NEWCLOCK.TEXT - (by Dave Nuemann) The clock routines are for the CCS 7224 clock/calendar card. They allow the CCS card to function essentially the same as a Mountain Hardware card. Two extra routines are provided for setting the clock and calendar (SETTIME.TEXT) and to allow automatic setting of the date when booting. (NEWSTARTUP.TEXT) See file CLOCKDOC.TEXT for details.

The balance of the files are from the Dallas Apple Corps - Fort Worth Apple User Group.

{307.3} QUADROOT - (by Jim Herman and Lee Meador) Asks for the three coefficients of a quadratic equation and then prints out in formatted columns the two roots (solutions) to the equation. It will find both real and complex roots.

{307.4} NEWTROOT - Uses the Newton method (pioneered by Sir Isaac himself) to solve an equation. You must add the equation to the program in the function F. You must also add the derivative of the equation in the function D. From the TI 990 Pascal manual.

{307.5} FILEBURP - From the October issue of Call-A.P.P.L.E., this program allows one to peruse the file structure of Apple Pascal by looking at any of the blocks of any file on the disk. You can print (on the printer or screen) the contents in Hex or ASCII mixed with Hex.

{307.6} BIKEPLUS - (Jim Herman) An implementation of the program from BYTE magazine that calculates information on gear ratios for 10-speed bicycles. But, this program has a plus in that Jim Herman has added his own artistry to first draw some pictures and play music.

{307.7} FIGURES - (Jim Herman) Uses screen and line erase features to allow the user a format similar to system programs for entering requests for information on the areas of triangles, squares and circles.

{307.8} DICE - (Jim Herman) As you watch, the results of 10 throws of a pair of dice is shown on the screen. Then a scaled bar graph is drawn showing the distribution of values so far. Pushing any key will end.

{307.9} PRNTDATE - (by John Strait and Pat McGee) The heart of this program is a PROCEDURE that looks up the date as stored on the system disk in device #4 and converts it to two different strings. One is of the form DD/MM/YY the other DD mon YY. Easy to add to your own programs.

{307.10} QUICKSORT - (by Jill David) Generates some random numbers and sorts them using HOARE's Quick Sorting method. This program is extremely modular and should be easy to incorporate into your own applications that require sorting. Can also be used to compare sorting speed with the SHLSORT program.

{307.11} SETDEMO - (by Jill David) A quick demonstration of some of the things you can do using Pascal SETs.

{307.12} SHLSORT - (by Jill David) Generates random numbers and sorts them using the Shell Sort method.

{307.13} VARXREF.TEXT - (Jill David) Produces a cross-reference listing of variables used in a Pascal source program. Uses file RESERVED.

{307.14} WRITERESR.TEXT - Writes a data file for VARXREF.

{307.15} HELLO.TEXT - Prints textfiles with upper & lower case.

{307.16} RACETEST.TEXT - Allows you to time input/output speed of Pascal files.

{307.17} PRECISION.TEXT

{307.18} DISKDUMP.TEXT - A mystery file that I could not get to list.

{307.19} BUF12.TEXT - Enter a text file one line at a time, and then send the file to the printer. Maximum line length is 80 characters.

GOSUB ROUTINES REVISITED

by C. Swift, Prop.

The underwhelming response to my article on "Printer GOSUB Routines" has given me so little concern that I wish to add a bit to the program presented there (see October, 1983, page 41).

By way of background, in his Q & A column in the June 1983 issue Bruce Field admitted his perfectly excusable ignorance on how to print subscripts and superscripts with the Prowriter. Instantly (well, in about six weeks) I wrote him the solution, but it seems that Steve Wildstrom was just a trifle faster (by about five weeks and six days). His article in the August issue (page 34) covers the problem admirably. Unfortunately he concentrated on solutions using assembler code and word processing programs. (In that same issue, Bruce suggested a "very cumbersome" Applesoft code to handle the problem.)

Perhaps a less cumbersome approach is to use the infamous "Printer GOSUB Routine" referenced above. Quite simply it runs this way:

To enter subscript mode:

```
XX PRINT CHR$ (27) CHR$ (91) CHR$ (27) "T08"
        CHR$ (10);: RETURN
```

To exit subscript mode:

```
XX PRINT CHR$ (27) CHR$ (114) CHR$ (10)
        CHR$ (27) "A" CHR$ (27) CHR$ (102)
        CHR$ (27) CHR$ (93);: RETURN
```

To enter superscript mode:

```
XX PRINT CHR$ (27) CHR$ (91) CHR$ (27) CHR$ (114)
        CHR$ (27) "T08" CHR$ (10);: RETURN
```

To exit superscript mode:

```
XX PRINT CHR$ (27) CHR$ (102) CHR$ (10)
        CHR$ (27) "A" CHR$ (27) CHR$ (93);:
        RETURN
```

The problem of replacing the "XX"'s with proper line numbers is left as an exercise for the student.

CURRENT AND EARTH BASE ONE
HIGH TECH PERFORMING ARTS CENTER

We are interested in providing workshops and performances of electronic and computer music, and/or graphics and new music groups. Call Rupert Chappelle, (301) 942-0995.

FILE CABINET GOES TO THE RACES

by Robert C. Platt

Could my Apple go the distance? I decided to find out by using SUPER FILE CABINET to compile the results for the National Capital 36 Mile Run. Here is a step-by-step case study in using this data base program.

THE CHALLENGE

The race is an ultramarathon sponsored by the Nike Shoes, who pays the winner's way to Scotland for (you guessed it!) another 36 mile race. With so much at stake, the race results must be accurate. In addition to finish times, "split times" for each runner are recorded at various intermediate distances. The time data is supplied on sheets from each mile checkpoint showing each runner's number and time. The goal is to produce reports showing all times for each runner, including separate reports for women entrants and male age groups.

GETTING READY

Originally, I planned on using Quickfile //e for this job, but that program will not work with my new EI-EN Super 5 disk drives. So, I used SUPER FILE CABINET from WAP Library Disk 134.

I booted up the program and created a new data base called NIKE36. The program then asked me for the "headers" to be stored in the file. I selected headers for NUM, the runner's race number; NAME; AGE; SEX; CAT, to hold a one letter code for the runner's age group; and a separate header for each split time. You're probably wondering why I need a separate field for a number when a REC# header is automatically included. Well, the REC# for each runner will change whenever I sort the file, and I needed to be able to retrieve records by the number that each runner wears during the race.

Before starting, I tested the program, and entered previously published corrections (Ref. 1):

```
9060 IF SO$="LT" THEN IF LEFT$(N$(J,S),LEN(SV$))<SV$
     THEN 9080

3260 SP=0:HOME:INPUT"DO YOU WANT SPACING BETWEEN
     REPORT RECORDS?";YN$:IF(YN$<>"Y") OR (YN$<>"y")
     THEN 3262

1904 J=VAL(YN$):IF(J<1)OR(J>NR)THEN 1902
```

In addition, lines 5230 to 5300 were modified for my control card and printer. (Change the POKE 1785 in lines 5240, 5260 and 5290 to whatever instructions, if any, your control card needs to set a line length.) I added a PRINT CHR$(29) to set my Okidata to 17 cpi 132 character line mode, and PRINT CHR$(30) to return it to 10 cpi mode.

File Cabinet allows you to predefine the format of printed reports. To specify a format you must first plan the number of fields from each record that will appear in the report. For example, my list of entrants displayed 4 fields: NUM, NAME, AGE and SEX. When using the report generator, I specified those 4 headers. When asked "ENTER # OF HEADER YOU WANT IN POSITION # 1", I typed in 1 because NUM is the first field in my data base. The TAB for the header is the column on the printed report where the field should appear. I continued to specify header numbers and tab positions for all four fields to appear in my report. After running a sample output, I saved the format on my disk for future use.

I then began to enter race numbers, names and ages for each entry form. Option 3, Add New Records, allowed me to type in each field (or "header") without the use of intervening menus. Since I was only entering four items for each runner, I thought that I would have plenty of room in my Apple's memory, even though File Cabinet warned that I had room for "about" 84 records. As I entered runner 085, I got a subscript out of bounds error. Why? File Cabinet dynamically allocates an array in memory to hold your entire data base at the same time. As a result, line 1170 finds out how much free memory is available and then calculates the number of records that can be stored, assuming that each record field has an average of 13 characters. Even if more memory is available, an array is DIMensioned based on this assumption, and any attempt to store more records causes the program to crash. I fixed this problem by removing this routine and typing: 1180 B=135, which was the number of expected runners. File Cabinet then stored the rest of my roster, and I was able to use the report generator (Option 5) to produce a list of entrants sorted by number or by age for the race registration staff. The mass change feature (Option 2) then set all the time fields to "9" for use in future sortings.

Two points will avoid errors when using these features. First, when asked to select a header, be sure to type its number rather than its name. Second, if you have a //e, be sure that your CAPS LOCK key is engaged so as to type capital Y or N in response to File Cabinet questions.

Because I would only be changing one particular field at a time, I wrote a special update program (listing 1) which allows you to type a record number and value without repeatedly selecting which field you are updating. (Customizing programs to process a File Cabinet data base is easy due to the simple file structure used. (Ref. 2)

RACE DAY

I was prepared for any catastrophy! I packed my Apple, extra copies of my program and data disks, and even a screw-driver, and set-up in the Alexandria City Hall. But I was not prepared for the fact that another 30 runners had entered that morning. I again changed the value of B in line 1180, and prayed that I had enough RAM. Worse yet, some of these runners where assigned non-consecutive numbers beginning with 300.

This latter fact is important because File Cabinet will allow you to modify a record only after you select it on your screen. The quickest way to select a record is to ask for it by record number (REC#). In all other cases, File Cabinet will loop through the entire file until it finds all records whose header matches the search value. (And in the process, it will use up some of the free memory with .temporary garbage strings.) By assigning runners sequential numbers, I could update records quickly by first sorting the data base in NUMber order and then selecting on record numbers knowing that in all cases (except numbers above 300) the internal record number would be the same as the runner's number.

I spent the morning typing in numbers and times. (In typing times, I was careful to avoid commas or colon,

contd.

as these give File Cabinet indigestion when the file is reloaded.) Every half hour, I would save my file, sort by the most recent split time (option 6) and then print out a report (option 5) which was posted before the eager fans.

HITTING THE WALL

As the runners drew nearer the finish, free memory was fading fast. My Apple began to freeze for 10 minutes at a stretch. It had not hit "the wall." Instead, it was executing the Applesoft "garbage collection" routine. Whenever a new value is assigned to a string, that value is stored at the edge of free memory, and the old value is left behind as unused "garbage." Only after Applesoft runs out of free memory does it take the time to clean up after itself and recapture all the unused memory it left behind. This reorganization process is called "garbage collection", and it can be slow. In fact, due to a bug in Applesoft, the routine can go into an infinite loop. -- It did, just as I was expected to enter the finishers' times. In such a case, your only cure is to press RESET and lose all the data since the last time you saved the file. You must then restart the program and reload the file from the disk. (At this point, my file was so large that I was stopping for a garbage collection during the middle of reading in my file.) Because of the press of time, I didn't have a chance to use some of the tricks recommended by David Eldridge to get more free RAM. (Ref. 3).

I finished entering my results, sorting them by finish times and then selectively printing reports for women and male age groups. (Option 5, the report generator allows you to either print out all records in the file, or just those records which meet a specified condition. For example, if CAT was the fifth header in my file, typing "5,EQ,D" would only print records with the value "D" stored in the CAT field.)

STRIDING TO THE FINISH

Back at home, I had to finish entering the split times for my final report. I had mistakenly allocated headers for the 1 Mile and 35 Mile times. I hoped that deleting these headers would reduce the number of garbage collection freeze-ups. Although File Cabinet does not have a provision for deleting headers, Tom DeMay's Filehandler program on Disk 124 does this very easily. (Ref. 4) Unfortunately, there is a bug in the program as originally distributed, which Tom fixed promptly. The corrected version will be in the Library soon.

In all candor, I could not get the reports looking up to race standards, so again I resorted to a custom-written Applesoft program to do the final formatting. (If you don't want to write a separate program, just insert PRINT statements at line 3615 to add headings.)

On the whole, File Cabinet proved to be a versatile tool, particularly if its memory limitations are respected. Next year, I will either use a custom program, or I will use a version that moves DOS to the RAM card.

REFERENCES:

(1) DeMay, File Cabinet Fixes, WAP Journal (June 1983).

(2) DeMay, Inspecting Text Files with a Word Processor, WAP Journal (Dec. 1982).

(3) Eldridge, File Cabinet Revisited, WAP Journal (April 1983).

(4) DeMay, Filehandler, WAP Journal (Sept. 1982) and (April 1983).

Pushed Into CP/M contd. from pg 48

```
B:=A:/F
```

However, CP/M does not put its operating system on a disk when you format or copy a disk, as APPLE DOS does. You must use the COPY utility to do this, and the command is:

```
/S
```

It is not possible to both copy the system and format a disk as one operation. One or the other must be done separately. Ah well, remember CP/M is C P M (remember what those initials mean!)

CP/M also has an EDitor, and you can use it as a Word Processing EDitor. In addition, there is a short "print formatter" program on one of the CP/M SIG's disk from the Pi, so that you could use it in conjunction with the EDitor, to have a rather complete (albeit awkward) word processing system!

Let's look at one last "utility" before closing. CP/M has the neat feature of letting you "TYPE" any file to the screen or to the printer (and screen). If you wish to print any text file on your printer, you type ^ P (that's Ctrl P) and you have turned your printer on. It's that simple! Now the command TYPE will do just that, TYPE your text file! The format of the command is:

```
TYPE DRIVE:FILENAME
```

where DRIVE is the drive designation we have seen before (A B etc.), and FILENAME is a filename plus an extension, if used. If it is a TeXT file (or a BASic program, CP/M will print it, to screen if you have not turned on the ^Printer, or to both the screen and the ^Printer if you turned on the ^Printer. Now if you have purchased the CP/M SIG disks from the Pi, you can immediately read the documentation. Just place the disk in the drive, do a DIR, and look for the DOCumentation. It will have the form of:

```
CPMSIGnn.DOC  or  CPMSIG#n.DOC
```

where nn is a two digit number, such as 01, and n is a single digit number, such as 3.

PIP is a utility on the CP/M disk to allow you to copy individual files from one disk to anotherarge a file is, and how much space is left on the disk. You can also assign a temporary "read only" STATus to the disk, so that you cannot write to disk, giving a low level of security in some cases. STATus will also tell you many other things you probably don't want to know, such as all USeR numbers for which there are files on the disk (usually it will be just yourself, and you would have automatically used the default USER number of 0), and other items of information.

Well, this has been a brief treatment of CP/M. If you are interested in the system, I recommend the book by Thom Hogan, and published by Osborne (yes, it is the same one. He was in publishing before the transportable microcomputer company). I found it very readable and even more important, extremely well organized.

In the next part of this article (hopefully next month), I will start with WordStar, which is usually the reason most people buy the CP/M system in the first place.

Thanks for listening.

THE GAME ROOM

by Jeff Bruner

This month we have two more new games of very different qualities as well as a new name for the column. To prove that there are some quality space games we have Stellar 7. Unfortunately, Wavy Navy does not come close to that category.

Wavy Navy, by Sirius Software, is a dull, below-average imitation of Galaxians. The game is set in the ocean, with your ship sitting on top of a wave. Life is not peaceful long for enemy planes and helicopters dive from the sky and bombard your tiny vessel. The planes sometimes take suicide missions and crash into the waves in hopes of sinking your ship.

Level one consists of a normal attack run without any extra added complications. After finishing the first level, you receive a promotion and a very out-of-tune song. The author of this game could not carry a tune if he had a swimming pool to hold it in--the music is that bad.

Underwater mines are an added nuisance in level two. Dip your ship too far below the waves and you'll find yourself sinking fast. The third level features a plane that drops bombs across the sea in addition to your "friends" at the top of the screen. Dodge their shots, and you'll make it through this one.

Promotions, as mentioned earlier, are granted with each victory over your enemies. The player starts as a boatswain, then cook, and so on up to Admiral. You remain at this rank for several screens and then receive the ultimate title of President.

The game allows up to four players and has three levels of difficulty at which the players can start. A joystick works fine with Wavy Navy as well as the paddle and the keyboard.

Wavy Navy is not exactly an original game--it gets boring very quickly. The graphics are average, nothing spectacular, and the music is horrid! Unless you've got money to burn, Wavy Navy is probably not the game for you.

Stellar 7 by Damon Slye is a very exciting new concept in arcade games. Not only does this game have great graphics, but they're 3-D. This gives you the feeling of being actually "in" the game, which is something game players have been looking foward to because they are tired of "looking from the outside"--now they're right in there.

The game is based on Atari's popular arcade hit, Battlezone, in which the player is placed inside a tank and is forced to defend himself against enemy attackers. Enemies in the game are of all types, each varying on the amount of mobility, speed, and thickness of armor. Thick-plated tanks tend to be slow, while their thin counterparts are very fast. Landers, which fly through the air (and sometimes set down right behind you) make life tough as well.

Equipped with shields and fuel, you set out to survive on the base planet, Sol. If you score enough points (flying objects are worth more than tanks), a warplink to the next planet will appear. Here, your tank also is refueled and receives a certain amount of shield repair. If you run your fuel supply or shields down in this game, the game ends, and you're left saying, "Where did I go wrong?"

Each planet introduces new and tougher foes. On the third planet, Rigel, there is a fuelbay where you can completely replenish your tank with shields and fuel. A player can play Stellar 7 from the keyboard, and with a self or non-centering joystick. The top seven scores are saved automatically onto the disk--a feature that is being used more in games. For the newcomer, there is a briefing on the mission, in which information about each enemy craft is presented while a picture of the object rotates 360 degrees.

Overall, Stellar 7 is a very good game which uses 3-D graphics to their limits. I highly recommend this game to anyone who enjoys playing Battlezone at the arcade. This game is almost of the same quality--a great use of Apple graphics.

CHEATS (aka, patches)

Before you do these, you must BLOAD the game and enter the monitor (CALL -151).

```
*Canyon Climber*
3300:# of men
3000G or
2600:# of men
2000G

*Wavy Navy*
Cntrl-1 to restart then reset
1E63:EA EA EA
FA7:60
ABC:A0 06-Helicopters don't shoot
803G

*Taxman*
522B:level
505C:EA EA EA-No Ghosts
89CB:# of men
8EE5:EA EA-Unlimited men
800G
```

WASHINGTON APPLE PI DISK LIBRARY MAIL ORDER FORM

Washington Apple Pi's library disks are available for purchase. This form is only for ordering disks that you want mailed to you.

PROGRAM DISKETTES: ** Special Sale Price - applies only to orders of 5 or more disks from November 26 - December 23 **

Mailed to you (4 or less) - Members $ 6.00 ea.; Non-members $ 9.00 ea. (same as before)
** " (5 or more) - Members $ 4.00 ea. + $5.00 postage; Non-members $ 7.00 ea. + $5.00 postage. **

DOS 3.2
( ) Volume 1 Utilities I
( ) Volume 2 Utilities II
( ) Volume 3 Games I
( ) Volume 4 Games II
( ) Volume 5 Games III
( ) Volume 6 Games IV
( ) Volume 7 Games V
( ) Volume 8 Utilities III
( ) Volume 9 Educational I
( ) Volume 10 Math/Science
( ) Volume 11 Graphics I
( ) Volume 12 Games VI
( ) Volume 13 Games
( ) Volume 14 IAC Utilities IV
( ) Volume 15 Games VII
( ) Volume 16 Utilities V
( ) Volume 17 Graphics II
( ) Volume 18 Educational II
( ) Volume 19 Communications
( ) Volume 20 Music
( ) Volume 21 Apple Orchard
( ) Volume 22 Utilities VI
( ) Volume 23 Games VIII
( ) Volume 24 Games IX
( ) Volume 25 Utilities VII
( ) Volume 26 Stocks/Investments
( ) Volume 27 Math
( ) Volume 28 Planetfinder
( ) Volume 29 Utilities VIII
( ) Volume 30 Games X
( ) Volume 31 Plot Utilities
( ) Volume 32 Games XI
( ) Volume 33 Accounting
( ) Volume 34 Solar Tutor
( ) Volume 35 Garden Management
( ) Volume 36 Games XII
( ) Volume 37 Utilities IX
( ) Volume 38 Games XIII
( ) Volume 39 IAC VII
( ) Volume 40 IAC VIII

DOS 3.3
( ) Volume 41 IAC 25 Mach. Lang. Util.
( ) Volume 42 One Key DOS
( ) Volume 100 Utilities A
( ) Volume 101 Utilities B
( ) Volume 102 Games A
( ) Volume 103 Merry Christmas
( ) Volume 104 Business A
( ) Volume 105 FIG-FORTH/Utilities
( ) Volume 106 Science Engineering
( ) Volume 107 Games B
( ) Volume 108 IAC 10 (Graphics)

DOS 3.3 contd.
( ) Volume 109 IAC 11 (Applesoft Tutorial)
( ) Volume 110 Personal/Education
( ) Volume 111 Games C
( ) Volume 112 Utilities C
( ) Volume 113 Business B
( ) Volume 114A Adventure-INIT **
( ) Volume 114B Adventure **
( ) Volume 115 IAC 12/13 Misc.
( ) Volume 116 IAC 14 MicromodemII
( ) Volume 117 Picture Packer
( ) Volume 118 Utilities D
( ) Volume 119 IAC 15 Misc.
( ) Volume 120 IAC 16 Misc.
( ) Volume 121 ABBS Program
( ) Volume 122 IAC 17 Misc.
( ) Volume 123 French Vocabulary
( ) Volume 124 Utilities E
( ) Volume 125 IAC 18 Misc.
( ) Volume 126 Sights and Sounds
( ) Volume 127 Math/Science
( ) Volume 128 Games D
( ) Volume 129 GLAQ
( ) Volume 130 Diversi-DOS
( ) Volume 131 Personal/Educ. 2
( ) Volume 132 IAC 19 - Utilities F
( ) Volume 133 IAC 20 - Hybrid
( ) Volume 134 New Members Disk
( ) Volume 135 WAP ABBS-Part 1 **
( ) Volume 136 WAP ABBS-Part 2 **
( ) Volume 137 IAC 21 Spreadsheet A
( ) Volume 138 IAC 23 Utilities G
( ) Volume 139 IAC 24 Education 3
( ) Volume 140 Education 4
( ) Volume 141 Special Data Bases
( ) Volume 142 Pinball Games
( ) Volume 143 Sports

Eamon Series
( ) Volume 180 Dungeon Designer
( ) Volume 181 Beginners Cave
( )*Volume 182 Lair of Minotaur
( )*Volume 183 Cave of the Mind
( )*Volume 184 Zyphur Riverventure
( )*Volume 185 Castle of Doom
( )*Volume 186 Death Star
( )*Volume 187 Devil's Tomb
( )*Volume 188 Caves of Treas.Isl.
( )*Volume 189 Furioso
( )*Volume 190 The Magic Kingdom
( )*Volume 191 The Tomb of Molinar
( )*Volume 192 Lost Isl. of Apple
( )*Volume 193 Abductor's Quarters
( )*Volume 194 Quest for Trezore
( )*Volume 195 Underground City
( )*Volume 196 Merlin's Castle
( )*Volume 197 Horgrath Castle
( )*Volume 198 Deathtrap
( )*Volume 199 The Black Death
( )*Volume 200 The Temple of Ngurct
( )*Volume 201 Black Mountain
( )*Volume 202 Nuclear Nightmare

Pascal
( ) Volume 300 PIG0: ATTACH/BIOS
( ) Volume 301 PIG1:
( ) Volume 302 PIG2:
( ) Volume 303 PIG3:
( ) Volume 304 PIG4:
( ) Volume 305 PIG5:
( ) Volume 306 PIG6:
( ) Volume 307 PIG7:
( ) Volume 308 PIG8:
( ) Volume 309 PIG9:
( ) Volume 310 PIG10:
( ) Volume 311 PIG11:

CP/M
( ) Volume 401 CPMSIG01
( ) Volume 402 CPMSIG02
( ) Volume 403 CPMSIG03
( ) Volume 404 CPMSIG04
( ) Volume 405 CPMSIG05
( ) Volume 406 CPMSIG06 } ZCPR-
( ) Volume 407 CPMSIG07 } Ver. 2
( ) Volume 408 CPMSIG08 }

Forth
( ) Volume 700 Assembler/ Disassembler
( ) Volume 701 Full Screen Editor
( ) Volume 702 GoForth

EDSIG
( ) EDSIG1 (Elem. Math)

* Volume 181 required with these disks.

**Both disks required.

(NOTE: ALLOW 2 TO 3 WEEKS FOR MAILING.)

Total Order = ___ disks. $_____

NAME _____

ADDRESS _____

CITY, STATE ZIP _____

TELEPHONE _____ WAP MEMBERSHIP NO._____

Make checks payable and send to Washington Apple Pi - ATTN: Librarian
8227 Woodmont Avenue, Suite 201
Bethesda, MD 20814

WAP TUTORIAL REGISTRATION

The following four WAP tutorials are being offered on Tuesday evenings from 7:30 to 9:00 PM, at the office, 8227 Woodmont Avenue, Room 202, Bethesda, MD. (The tutorials start promptly at 7:30; if you bring your computer please arrive 15 minutes early to set up.) You may sign up for any or all of the series. They are designed for the "beginner" and will be repeated monthly. A detailed outline of the tutorials was given on page 8 of the September Journal.

( ) January 10 - INTRODUCTION TO APPLE COMPUTER HARDWARE ( ) February 7

( ) January 17 - HOW TO USE YOUR APPLE SOFTWARE ( ) February 14

( ) January 24 - BEGINNING BASIC ( ) February 21

( ) January 31 - BITS, BYTES, NIBBLES ( ) February 28

The fee for each tutorial is $10.00 with an Apple, monitor and disk drive, $15.00 without. Please note that WAP does not have equipment for you to use; if you do not bring your own, you will have to look over someone's shoulder.

__ Tutorials at $10.00 (with equipment)
__ Tutorials at $15.00 (without equipment)

The following "non-regular" tutorials are being offered (also at the office). Full details will be in next month's Journal.

Wednesday January 11 and January 18 SOLDERING AND ELECTRONIC REPAIR - Tom Riley

Don't bring your Apple. Fee: ( ) $20 for both, members ( ) $25 for both, non-members

Saturday February 11 VISICALC AND VISIPLOT - Lee Raesly

Fee: ( ) $10 with Apple, member ( ) $15 with Apple, non-member
( ) $15 without Apple, member ( ) $20 without Apple, non-member

Saturday April 14 CP/M - Bob Fretwell

Fee: ( ) $10 with Apple, member ( ) $15 with Apple, non-member
( ) $15 without Apple, member ( ) $20 without Apple, non-member

The following tutorials are planned but no exact date yet:

Advanced Applesoft - Richard Untied - March.
dBase II - Lee Raesly - May.
Pascal - Pascal Sig - June.

Please check the desired tutorials and return this form with the proper fee(s) payable to Washington Apple Pi, Ltd. to:

Washington Apple Pi, Ltd.
Attn. Tutorials
8227 Woodmont Avenue, Suite 201
Bethesda, MD 20814

Name _____

Daytime Phone _____ Evening Phone _____ Total Enclosed $ _____

INDEX TO ADVERTISERS

GET YOUR HANDS-ON A COMPUTER!

at the
CLINTON COMPUTER LEARNING CENTER

NEW APPLE OWNERS COURSE. 4 hours. $150. Alternate Saturdays. 9am-1pm. Learn the basic operating procedures of the world's most popular small computer! Course includes five program disks.

NEW CP/M OWNERS COURSE. 4 hours. $150. Alternate Saturdays. 9am-1pm. Hands-on instruction in this standard operating system. A must for new owners of CP/M-based computers.

APPLEWRITER IIe. 2 hours. $60. 11/17 & 12/8. 6:30-8:30pm. Understand what a word processing system is and how it works. Learn how to create/revise letters and documents quickly and easily.

BASIC PROGRAMMING I. 6 hours. $65. 11/7, 14, and 21. 6:30-8:30pm. Hands-on instruction for computer novices in this simple programming language. Classroom exercises and optional homework assignments.

BASIC PROGRAMMING II. 6 hours. $65. 11/28, 12/5 and 12/12. 6:30-8:30pm. Learn new Basic commands and additional programming techniques. Classroom exercises and homeword assignments. Prerequisite: Basic Programming I or equivalent.

WORDSTAR I. 2 hours. $60. 12/7. 6:30-8:30pm. Learn how to create documents quickly and easily by using this popular word processing system.

WORDSTAR II. 2 hours. $60. 11/10 & 12/14. 6:30-8:30pm. Experiment with more advanced Wordstar commands, and learn file merging techniques. Prerequisite: Wordstar I or equivalent.

INTRODUCTION TO SPREADSHEETS. 2 hours. $60. 11/30 & 12/15. 6:30-8:30pm. Create useful financial models for your business using two popular spreadsheet programs.

COMPUTER CAMP FOR KIDS. 10 hours. $110. 1/7, 14, 21, 28 & 2/4. 2:00-4:00pm. Optional Lab with instructor, 4:00-5:00pm. Introduce your child to the world of small computers! Hands-on programming and instruction in practical applications.

CHOOSING APPLE EDUCATIONAL SOFTWARE. 2 hours. $20. 12/6. 6:30-830pm. Discussion and demonstrations of educational software. (Price of class may be credited toward purchase of educational software in our retail store)

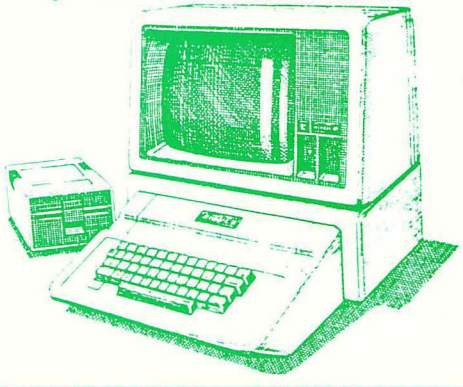
The Learning Center also provides custom-designed instruction on-site or in our classroom. Course discounts available with system purchases. Contact us at 301/856-2500 for details and inquiries.

Clinton Computer

apple computer
Authorized Dealer & Service Center

Beltway Exit 7A
Branch Ave. (Rt. 5) at
6443 Old Alex. Ferry Rd.
Clinton, Md. 20735

301/856-2500



WASHINGTON APPLE PI, LTD.
8227 Woodmont Avenue, Suite 201
Bethesda, MD 20814

ADDRESS CORRECTION REQUESTED

BULK RATE
U. S. POSTAGE
PAID
PERMIT #101
Glen Echo, MD
20812

[redacted]

FOR WAP MEMBERS ONLY. You can now buy an AJ 831 for $888. This includes a 90-day full warranty with any repairs being done at your home or office. Please call Sean Belanger at 840-5700 for details.