$2

Washington Apple Pi

The Journal of Washington Apple Pi, Ltd.

Volume 7 February 1985 Number 2

Highlights

HOW TO CHANGE FIRMWARE LEGALLY
P SYSTEM FOR THE MAC
THE NEW GUTENBERG SR
APPLEWORKS-COMPATIBLE UTILITIES

In This Issue

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

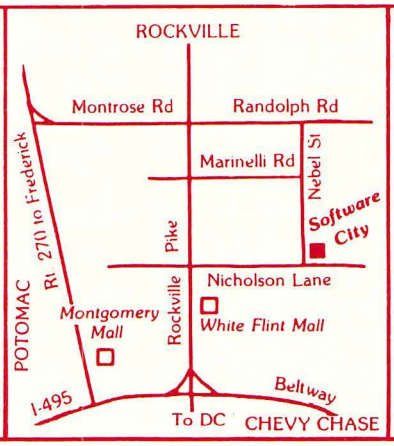
- Media & Media Storage
- PC Protection & Care Products
- Paper & Custom Forms

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 _____

Checkmate Technology presents 3 new peripheral cards for the Apple

The MultiView 80/160 Card™– the intelligent video card for the II, II+, //e, or Franklin. Perfect for Spreadsheets and Word Processing.

7 Screen Sizes Choose from among these highly readable screen sizes with a simple command: 80x24 80x32 80x48 96x24 132x24 132x30 160x24. Use with any monitor!!!*

Wide Angle Screens Stretch the screen with one command. An 80-column screen becomes as easy to read as a 40-column screen and a 132 column screen becomes as easy to read as a normal 80-column display. We call it the "Eye-Saver".

12 Attribute Sets Choose any one of 12 attribute sets for a screen display. Bold, underlined, inverse, and normal characters combine with normal and inverse backgrounds to provide 12 exciting new ways to view the Apple screen.

//e Compatible Works in slot 3 of //e. And if an extended 80-column card is in the auxiliary slot, use MultiView to program the auxiliary 64K memory with simple BASIC commands.

Software Support Compatible with all languages and operating systems used on the Apple.

Programmer's Aids Bring back into view your program or catalog listing that scrolled off screen with our hardware REVERSE SCROLLING command . . . or add a 25th, 26th, or 27th line to the screen with the PROMPT LINE command!

Money Back Guarantee 10 day money back policy if not delighted with MultiView.

Reg. Price $349.95

SPECIAL CLUB PRICE: $225.00

*12MHz or better

Applewriter //e Preboot™

Word processing in any of MultiView's sizes and attributes. See almost a full page on screen with an 80x48 screen size! Applewriter II and ProDOS version preboots available January 1985.

Reg. Price $19.00

SPECIAL CLUB PRICE $12.00

InfoBank][™

Simplified "user friendly" data base that even a child can do! 132 column format calendar functions and auto dialing with your modem. Special 240 column field for detailed comments. **Reg. Price $89.95**

SPECIAL CLUB PRICE $59.00

//e 80RAM CARD™

64K of memory + 80 columns for your //e!! Features double hi-resolution graphics!! Can be used with MultiView with no screen flicker on any monitor!!

Reg. Price $129.95

SPECIAL CLUB PRICE $85.00

Superworks PROM ™

20 Function keys, a program line-editor complete with auto-numbering, and a screen dump print command make your Apple a programmer's dream!

Reg. Price $39.95

SPECIAL CLUB PRICE: $25.00

Language Factory Character PROMS ™

See Engineering/Math or Foreign Language or Graphic characters on the same screen with standard ASCII characters using the appropriate Language Factory PROM™.

Reg. Price $44.95

SPECIAL CLUB PRICE $30.00

Universal Spreadsheet Preeboot™

See any MultiView screen size with VisiCalc, Multiplan, Magicalc! THE Spreadsheet, Acecalc, and IACALC. Use any attributes including underlining and bold face with your spreadsheet. Designed for use with MultiView only!

Reg. Price $49.95

SPECIAL CLUB PRICE $29.00

Zee 80A Card™

For II, II+, //e, and Franklin. Needed for CP/M programs like Wordstar, dBase II, Multiplan and other business programs. Software not included.

Reg. Price $89.95

SPECIAL CLUB PRICE $59.00

All products made in the U.S.A. featuring a 5 YEAR WARRANTY.

Manufactured by

Checkmate Technology, Inc.

509 South Rockford Drive - Tempe, Arizona 85281

™

Acecalc is the trademark of Artsci Inc
Apple is the trademark of Apple Computer, Inc.
Appleworks and Applewriter are the trademarks of Apple Computer Inc
CP/M is the trademark of Digital Research
Franklin is the trademark of Franklin Computer Inc
IACcalc is the trademark of the International Apple Corp
Magicalc is the trademark of Artsci Inc
Multiplan is the trademark of Microsoft Corp
THE Spreadsheet is the trademark of CALL APPLE
VisiCalc is the trademark of Software Arts

CALL the Club office at 654-8060 to arrange purchases or for more information.

OFFICERS & STAFF

President	- David Morganstein	(301) 972-4263
Vice Pres-Programs	- Tom Warrick	(301) 656-4389
Vice Pres-SIGs	- Bob Platt	(806) 378-1065
Treasurer	- Edward Myerson	(703) 759-5479
Secretary	- Nancy Little	(301) 762-3215
Directors	- Bernie Benson	(301) 951-5294
	- Peter Combes	(301) 251-6369
	- J.T. (Tom) DeMay Jr	(301) 779-4632
	- Bruce Field	(301) 340-7038
	- Nancy Philipp	(301) 924-2354
	- Jay Thal	(202) 244-3649
	- Rich Wasserstrom	(703) 893-9147
Editor	- Bernie Urban	(301) 229-3458
Associate Editor	- Genevie Urban	(301) 229-3458
Journal Staff:		
Store Distrbtn.	- Ray Hobbs	(301) 490-7484
Columnists:		
Apple ///	- Charlene Ryan	(703) 836-0463
Applesoft	- J.T. (Tom) DeMay Jr	(301) 779-4632
DisabledSIG	- Jay Thal	(202) 244-3649
EDSIG	- Peter Combes	(301) 251-6369
LISA SIG	- John Day	(301) 672-1721
Pascal (PIG)	- Mike Hartman	(301) 445-1583
Q & A	- Bruce Field	(301) 340-7038
Telecomm	- Dave Harvey	(703) 527-2704
VisiCalc	- Walt Francis	(202) 966-5742
Review Coord.:		
Hardware	- Scott Rullman	(301) 779-5714
Software	- Raymond Hobbs	(301) 490-7484
Group Purchases	- Rich Wasserstrom	*(301) 654-8060
	*(Call Kevin at office)	
Disketeria Staff:	- John Malcolm	(301) 384-1070
	- Dave Weikert, Joy Aso, Ed Lang,	
	- Jim & Nancy Little, Pat Foreman,	
	- Gordon Stubbs, Fred Edwards	
New Disks	- Dana Schwartz	(301) 725-6281
Pascal Lib.	- John Dyer	(703) 538-5636
SigMac Lib.	- Tony Anderson	(301) 277-0386
Head Reading Lib.	- Walt Francis	(202) 966-5742
Apple Tea Coord.	- Paula Benson	(202) 951-5294
Arrangements	- Jim Taylor	(301) 926-7869
Demonstrations	- Signe Larson	(703) 524-4541
General Counsel	- Jim Burger (Burger & Kendall)	
		day (202) 293-7170
Membership	- Dana Schwartz	(301) 654-8060
Program	- Adrien Youell	(301) 951-0838
Publicity Chairman	- Hunter Alexander	(703) 820-8304
Public Relations	- Lee Raesly	(301) 460-0754
Rules & Elections	- Bob Platt	(806) 378-1065
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.	- Sue Roth	(703) 356-9025
SIG Chairmen:		
Appleseeds	- Ian Thal	(202) 244-3649
Apple ///	- Jerry Chandler &	(703) 790-1651
	- Bill Rosenmund	(703) 941-5050
Apple //c	- Chuck Holzwarth	(703) 751-7575
CP/M	- Charles Franklin	(301) 997-9138
DisabledSIG	- Jay Thal	(202) 244-3649
EDSIG	- Peter Combes	(301) 251-6369
Forth SIG	- Kevin Nealon	(703) 280-1136
Frederick Slice	- Maj. Lynn Trusal	(301) 845-2651
GAMESIG	- Ronald Wartow	(301) 654-4439
LAWSIG	- John Weld	(301) 951-6484
LISASIG	- Gordon Stubbs	(703) 750-0224
LOGOSIG	-	
SigMac	- Steve Hunt	(301) 262-9080
NEWSIG	- Bernie Benson	(301) 951-5294
Pascal (PIG)	- Larry Taborek	(703) 960-2250
PI-SIG	- Raymond Hobbs	(301) 490-7484
STOCKSIG	- Robert Wood	(703) 893-9591
Telecomm. SIG	- George Kinal	(202) 546-7270

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

ABBS (301) 986-8085 - 24 hours/day
ABBS-Buy and Sell (301) 871-7978 - 7:30 PM to 7:30 AM

EDITORIAL

In early December this editor was a guest at the Boston Computer Society office in downtown Boston, courtesy of Jonathan Rotenberg, its founder and current President. The facility is most impressive, equipped with a number of personal computers, printers, modems, software and related paraphernalia. This equipment has all been donated to the Society, thanks to its enviable status as a 501(c)3 not-for-profit association and the persuasiveness of Mr. Rotenberg. One purpose of the visit was to review more deeply the style of operation that has evolved and made the BCS the success that it is. Inspiration for this was provided by the lengthy article which appeared in the November 26, 1984 issue of InfoWorld - interested parties should read it (a copy is available at the WAP office).

In making direct comparisons between their style of operation and those employed by WAP, several significant differences emerged. These were discussed at two WAP Board meetings and at least two actions have been initiated. First, the Board renewed efforts to obtain 501(c)3 status for WAP. Second, WAP policy has been changed to permit (and encourage) presentations by representatives of computer and hardware manufacturers and of software developers at any of the main meetings or those held by our SIGs.

While the BCS limits free access to its meetings by non-members to only one meeting, the WAP Board has decided against following this procedure, but will rather encourage guests to join our association. One exception - already in place but to be emphasized in the Journal - is the WAP Hotline. This service is intended for members only and volunteer hotliners will be encouraged to check callers and to recommend that they join WAP. The Board has already expressed a preference to maintain one multi-purpose Journal rather than follow BCS's example of one major publication and several lesser ones which specialize in particular areas, such as IBM PC, the Mac, consultants and entrepreneurs, science, etc.

All in all, this has been an instructive exercise, and should, in this editor's opinion, lead to other positive changes in the Washington Apple Pi, which subsequently lead to improved information and services to you, our membership.

PRESIDENT'S CORNER

by David Morganstein

THE COST OF UPGRADES. One of the topics most likely to raise emotions among computer owners is the issue of improvements. The two sides of the argument run like this: An early purchaser of a product ought to be "rewarded" for supporting a developer. This reward should take the form of free or very low-cost upgrades as they become available. One the other hand, the developer argues that the enhancements have a value over and above the cost of the original and they can not afford to lose money maintaining a product to its most current capability. This situation brings to mind the difference between an "explorer" and a "settler". The "settler" is an "explorer" without any arrows in his back.

The 512K RAM upgrade is a current hardware example of this issue. Thin MAC "explorers" who paid $2,500 are faced with a $1,000 price tag to obtain the capability of a Fat MAC which can be bought by a "settler" for $3,200. Apple has tried to add value to the $1,000 price tage by including MACPROJECT and MACDRAW in the package.

MBASIC version 2.00 for the MAC is a good software example. Original purchasers might have paid a list price of $150.00 for version 1.00 and an additional price of $25.00 for an "upgrade" to the somewhat less "buggy" versions 1.01 or 1.02. Now Microsoft is offering another "upgrade" to owners of earlier versions for $57.00. Anyone comparing the latest with the earlier versions will readily see that it is indeed quite a step up. However, buyers of version 1.00 will have spent a total of $232.00 for something which now sells for $99.00 through discount houses.

It is easy for the consumer to take issue with the developer argument that "You have had the benefit of the product all this time. Surely that is worth something!" The overriding point is that the developer needs people to believe in their product and buy it even though it be new and untried. No one is demanding unlimited support of the early buyer free of charge. But it does mean seeking a reasonable middle road to insure that the consumer does not feel "burned" by the experience. This is not a question of moral right and wrong but of good business sense. Studies have shown that, whereas, the happy consumer may tell eight or so acquaintences of his satisfaction, the unhappy consumer will tell twenty-two about his dissatisfaction. If the developer does not see to it that the consumer feels good about the costs paid for the value received the developer is dooming his or her own future.

SUCCESSFUL GARAGE SALE. A grateful thank you to Joe Fuchs for organizing yet another successful garage sale. Joe and his volunteers managed to shepherd over 500 people into and out of the USUHS auditorium at the December meeting. As usual, Joe helped sell off the remaining odds and ends, pleasing buyer and seller alike. The one dollar per attendee that we collected will cover the cost of the guards we must hire for the next six months. We appreciate everyone's patience on entering and contributing to cover our expenses. Joe, you and your volunteers host a swell auction!!!

HOT LINE NEEDS. Do you need help with a piece of hardware, a program or a language? Check our telephone hot line. The WAP volunteers listed there have answered many questions to bring members' frustrations to an end. If your problem is not covered in the list, write or call us. We will try to find a member who will add their name to cover that topic. Also, please note that the hotline is intended for use by WAP members.

MACINTOSH TUTORIALS. The SIGMAC has begun a few tutorials for Mac owners. The first topic was telecommunications, a tutorial held in January. The SigMac members plan other sessions for upcoming months. There has been some discussion of a regular twice a month series held perhaps two evenings a month at the office. Keep your eye on the Journal calendar, call the office or attend the SIG meetings to learn about dates and topics.

LAWSIG. Last month we asked for a volunteer to restart the LawSIG. John Weld, 951-6484, has stepped forward with an offer to help in that effort. He can not do it alone. If you have interests in legal applications of your computer please contact John. (If you have interests in illegal applications, please don't bother to call...) Look for an organizational meeting at our February meeting.

MEMBER 6000. The club continues to receive about 150 new members each month. In late December Robert Roeloffs joined the club and received member number 6000. Professor Roeloffs is the owner of an Apple][+ computer. We currently have about 530 Macintosh owner, 125 II/c owners and 27 LISA owners in addition to the thousands of Apple][and //e members.

We do continue to lose old members and wonder what the reasons for not renewing are. Certainly, many members live far from the area and may be able to use only a few of our benefits. If you are thinking of not renewing, we would like to hear from you. Our membership is a source of strength, both in its size and the revenue it produces. We do not have any particular goal about growth but are concerned that we serve as much of the membership as possible. Any thoughts would be appreciated.

BEST OF THE ABBS. What did you think of the "Best of the ABBS" column last month? We enjoyed it and found valuable tidbits. Hopefully, =Alexander= will continue pulling out the "Best" and sharing them with those who do not access our ABBS.

MACINTOSH POWER SUPPLY PROBLEMS? Three of our members had a MAC power supply self-destruct after installation of the 512K RAM upgrade (the three failures occurred out of 25 upgrades performed). Two of these have been covered as warrantee repairs by dealers; the third remains in "adjudication". We are concerned that there is a design or production problem. Has any MAC owner had a power supply problem of any kind? If you have, please call and then write us about the specifics. Tell us the conditions under which the failure occurred, size of MAC, date of purchase, serial number, and whether an Apple dealer covered the repair (if so, which dealer).

CHANGE IN SATURDAY OFFICE HOURS

Please note that the office hours on Saturday have been changed to 12:00 Noon to 3:00 PM on all Saturdays.

* February 1985 *

WAP

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
					1	2
3	4	5 Beginning Tutorial #1 7:30 PM Office	6 Deadline for Journal articles	7 SigMac 7:30PM-Lady of Lourdes; DisabledSIG 7 PM CCCC	8	9 SigMac 9:00 AM USUHS; LISASIG Noon-Office
10	11 PI-SIG 8PM Office; Apple /// Tutr.(SOS) 7:30 Office	12 Beginning Tutorial #2 7:30 PM Office	13 Executive Board 7:30 PM Office	14STOCKSIG 8:00PM Off; Apple /// 7:30PM Conv Center Inn	15	16 Forth SIG 1:00 PM Office
17	18 LAWSIG 7:30 PM Office	19 Beginning Tutorial #3 7:30 PM Office	20	21 Pascal SIG 8:00 PM Office Games and Graphics	22	23 WAP Meeting 9:00 AM USUHS - Tax Preparation
24	25	26 Beginning Tutorial #4 7:30 PM Office	27	28 EDSIG 7:30 PM Office		

* March 1985 *

WAP

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
					1	2
3	4	5 Beginning Tutorial #1 7:30 PM Office	6 Deadline for Journal Articles	7 SigMac 7:30PM-Lady of Lourdes; DisabledSIG 7PM CCCC	8	9
10	11 PI-SIG 8PM Office; Apple /// Tutr.(Util) 7:30 Office	12 Beginning Tutorial #2 7:30 PM Office	13 Executive Board 7:30 PM Office	14STOCKSIG 8PM Office; Apple /// 7:30PM Conv Center Inn	15	16SigMac 9AM-USUHS; LISASIG Noon-Off; Forth 1PM
17	18	19 Beginning Tutorial #3 7:30 PM Office	20	21 Pascal SIG 8:00 PM Office	22	23 WAP Meeting 9:00 AM USUHS ProDOS
24	25	26 Beginning Tutorial #4 7:30 PM Office	27	28 EDSIG 7:30 PM Office	29	30MD Apple Corps 2:30 Towson Lib. Gutenberg Word Proc.
31						

MINUTES

SUMMARY OF DECEMBER EXECUTIVE BOARD MEETING

The Executive Board of Washington Apple Pi, Ltd. met on December 12, 1984 at the WAP office. The Journal will be printed by P & R Printing, resulting in significant savings for WAP. Bernie Urban shared the information he had learned from his visit to the Boston Computer Society. Further study will be given to the structure and operation of the BCS to see if any of their methods would be useful to WAP. John Malcolm announced a special holiday promotion of the club disks at the December garage sale. A committee was appointed to establish policy and procedures for the affiliation of small groups of Apple users in remote locations to WAP. The next Executive Board meeting will be at 7:30 PM on January 14, 1985 at the WAP office.

DECEMBER GENERAL MEETING

Washington Apple Pi, Ltd. met a USUHS on December 15, 1984 at 10:10 AM, David Morganstein presiding. Members were asked to express their preference for funding an expanded bulletin board. The majority of members present favored the sharing of costs by users of the service with a subsidy from general funds. Members were in favor of the Pi sponsoring a commercial exhibit of Apple computer products. This will require an alternate meeting place because of restrictions at USUHS. LOGOSIG needs a new chairperson. Starting January 1 all new WAP members will receive a "chit" good for one free beginner's tutorial (they must register in advance and bring their own computer). Members expressed interest in having future tutorials on AppleWorks, modems and communication software, AE Pro, dBase II, and ProDOS. Reminder: Effective January 1, 1985 annual dues are $20.

CLASSIFIEDS

FOR SALE: Hayes Micromodem //e with its software and warranty. Best offer. Yakub, (202) 232-3386.

FOR SALE: Two Mac programs in mint condition with original packaging and documentation. MacForth, $75; MacPascal, $85, or best offer. Call Gary, 946-3782 after 5:00 PM weekdays or anytime on weekends.

FOR SALE: Fat Mac and Imagewriter. Best offer over $2000. 229-5207.

FOR SALE: Accelerator II. $250. George Motto, 948-1159 (home).

FOR SALE: Used PFS software for Apple //e. PFS:FILE and PFS:REPORT. Complete original packages with all documentation, backup disks, etc., virtually brand new. Also, PFS:SOLUTIONS - mail list, predesigned name and address file for use with FILE and REPORT. All three list for $270, discount around $150-175. Asking $100 or best offer. Call Ray evenings at (301) 869-5989.

FOR SALE: 128K Macintosh with 2nd disk drive, $1795. Call Linda, (301) 972-4263.

FOR SALE: Profile 5 meg hard disk with LISA cable, $700. With interface for][or //e, $850. Disk II, $200; with controller card, $250. Covered by Apple Care until April. 387-6022 (voice).

GENERAL INFORMATION

Membership dues for Washington Apple Pi are $27.00 for the first year and $20.00 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.

Current Office hours are:

Monday - Friday - 10 AM to 2:30 PM
Tues. & Thurs. - 7 to 9:30 PM
Saturday - 12:00 to 3:00 PM *

* Note change in Saturday hours.

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:

February 23 - Tax Preparation on Personal Computers
March 23 - ProDOS - Richard Langston

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. (Sometimes an alternate date is selected. Call the office for any late changes.)

COMMERCIAL CLASSIFIEDS

Mac Your Taxes! Tax preparation disk for Macintosh. Federal and CA 1040 forms and Schedules A, B, C, D, etc. Tax tables written into program and all forms and schedules linked together. (Requires Microsoft Multiplan.) Only $19.95. TORREY PINES SYSTEMS, 3132 East Fox Run Way, San Diego, CA 92111. (619) 279-9889.

FOR SALE: AJ 831 letter quality printer with tractor, cable and paper trays. Excellent condition. $475. Robert Cherouny, 229-0643 (home), 466-6093 (office).

SIGNEWS

APPLE /// SIG meets on the second Thursday of the month at 7:30 PM. There is a change in meeting place beginning in February. The meeting will be at the Convention Center Inn, 12th and K Streets, NW on February 14. See Apple /// SIG News elsewhere in this issue.

Apple //c SIG has been organized. They will meet after the regular Wap meeting on January 26. At this time a regular meeting date will be set. All SIG members wishing to have an input to the date selection should attend. The date selected will then be added the WAP Calendar in the monthly Journal.

APPLESEEDS is the special interest group for our younger members. They meet during the regular WAP meeting.

DISABLEDSIG - See the DisabledSIG column elsewhere in this issue. Call Jay Thal for details.

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

FORTHSIG will hold its next meeting on Saturday, February 16 at 1:00 PM in the WAP office.

GAMESIG is being revived. They will meet after the WAP meeting on Saturday, January 26.

LAWSIG will have a reorganizational meeting on Monday, February 18 at 7:30 PM in the WAP office. Lawyers and non-lawyers are invited. The purpose of the meeting will be to develop areas and programs of common interest to lawyers as well as general members of the Pi. For additional information contact John Weld, 966-4188, days.

LISA SIG meets after the SigMac meeting on the second Saturday of the month. See LISA SIG news elsewhere in this issue.

LOGOSIG - watch for further details in a later issue of the Journal.

NEWSIG will meet just after the regular Washington Apple Pi meeting and conducts a "drop-in" for new Apple owners on Thursday evenings from 7:30-9:00 PM in the office. They will answer questions and try to help new owners get their systems up and running.

PIG, the Pascal Interest Group, meets on the third Thursday of each month at 8:00 PM at the Club Office. The meetings are now structured roughly as follows:

8:00 to 8:30 - Q & A session
8:30 to 8:45 - PIG business, other news
8:45 to 9:30 - Main Presentation
9:30 to 10:00 - Further discussion.

PI-SIG (formerly ASMSIG) meets on the second Monday of each month at 8:00 PM in the WAP office. For further details, call Ray Hobbs at 490-7484.

SigMac meets on the 1st Thursday of each month (programmers's meeting) at 7:30 PM at Our Lady of Lourdes School, 7500 Pearl Street, Bethesda, MD; and on the 2nd Saturday (general meeting) from 9:00 AM to 12:30 PM at USUHS, in the auditorium. See SigMac News elsewhere in thia issue.

STOCKSIG meetings are on the second Thursday at 8:00 PM at the WAP office.

Telecomm SIG usually meets after the regular WAP meeting.

LAWSIG NEWS

by John Weld

Lawyers and non-lawyers are invited to a reorganizational meeting of the LAWSIG on Monday, February 18, 1985 at 7:30 PM in the WAP office. The purpose of this meeting will be to develop areas and programs of common interest to lawyers, as well as general members of Washington Apple Pi. These could include programs on computer product contracts, warranties and advertising, software and hardware development, proprietary rights, copyrights and business secrets, telecommunications and bulletin boards, computerizing small to large offices, and recent legal and legislative developments in computer law. For additional information, contact John Weld, attorney, at 966-4188, days.

Q & A

by Bruce F. Field

I have received a couple of letters from folks with an update on earlier questions. Bill Skeen of Hornbrook, CA, has obtained more information on keyboard encoder chips used in Apple][and][+ (not //e or //c) keyboards. Bill says:

"Manufacture of the 5740 encoder chip, as used in the old single-piece keyboard, has been discontinued. Apple Computer no longer stocks them. Furthermore, Apple Computer will not accept the single-piece board as a trade-in on the 2-piece board.

Although Apple Computer indicated to me in a letter that 2-piece keyboards have all used the same encoder chip - the KR-3600 - I have encountered two different versions of this chip that are not interchangeable, both in Apple keyboards. The KR-3600-70 seems to have been used in very early 2-piece boards and is not compatible with current boards."

The upshot of all this appears to be that there are several incompatible versions of the keyboard encoder chip floating around, so if you are considering replacing yours, make sure you get an exact replacement. It's possible that some Apple dealers may sell you the part, but it is more likely that you can get if from an electronics supply house.

Monte Midkiff wrote to respond to my solution of connecting a 16-pin paddle device to the 9-pin subminiature D connector on the back of the //e. "A very simple solution is the Paddle-Adapple Combo by So. Cal. Research (see ad page 19 same issue, December 1984). It has the 16-pin and the submini D sockets and a switch to choose which you want. Works great!" Too bad I don't see the ads before they appear.

I answered a question in an earlier column about why the Apple might "hang" when reset was pressed. Jack James of Winfield, IL has another answer to the problem.

"I had a similar problem and discovered that the switch on the back of one of my RAM cards was accidentally moved to the wrong position. This switch determines whether control goes to ROM or RAM when reset is hit and the RAM board is active." Good point. If you do not have a copy of the monitor ROM program stored in the RAM board, when you turn it on by hitting reset with the switch set wrong the Apple "hangs" in a infinite loop and probably nothing appears on the screen and it won't respond to any keyboard commands. See the next question also.

Q. I have an Apple //e and when I turn it on the disk in the drive doesn't boot and the Apple does a self test and prints out "KERNEL OK". If I press RESET I get the same thing again. What's going on?

A. I love this question; the problem seems so serious and the solution is so simple. You probably have paddles or a joystick plugged into the game I/O port and one of the pushbuttons is depressed. Usually the paddles have been pushed to the back of the desk and something is sitting on top of them or possibly they're defective.

Q. On page 207 of the BASIC Programming with ProDOS manual, in the section on INPUT, it says that the INPUT command if used with only one string variable will "read in any arbitrary string of characters". I tried it (under ProDOS of course), and I get Extra Ignored messages for colons, commas, or quotation marks! So it looks like it just ain't so. Have you tried it?

A. My first thought was that INPUT with commas would only work if you were reading from a ProDOS text file. I tried that and didn't get any Extra Ignored message, but I didn't get anything after the commas or colons either. I was using version 1.1.1 (the latest available). It looks like it just ain't so.

One reasonably simple way around this is to preface each text line with a quotation mark. This is somewhat inconvenient when entering text from the keyboard because you have to remember to type the ", but works quite well where you create disk text files from within a program. Just print a " at the beginning of each line. Adding a quote works with both ProDOS and DOS 3.3.

Q. I have just entered and attempted to EXEC Program Listing Formatter, by Robt. Clardy, All About Applesoft. What I got was TYPE FILE MISMATCH. Actually, I wanted only one of the many features found in the List Formatter Program - I wanted an 80-column printout of my program LIST. I used to be able to do this using a game-socket printer driver but have found no way to do this on an Epson.

A. To first answer your question on 80-column program listings: Applesoft produces a carriage return after about 40 columns have been printed IF the listing is printed to the screen. The solution is to send a command to your printer interface card to force it to send the printing only to the printer and not to the screen too. This command can be found in the slim (sometimes only 1 or 2 page) manual that came with your printer interface card. A command that works with a number of cards is CHR$(9)"80N". The CHR$(9) is the Ctrl-I character to signal the interface card that a command is coming, the 80 is the number of columns to print and the N turns off printing to the screen.

The Program Listing Formatter is a little confusing to get set up; I'll try to explain the procedure. Type in the Applesoft program starting on page 103 of All About Applesoft, and save it to disk with the name PROGRAM LISTING FORMATTER. Now type in the short program on the bottom of page 105 and save it as MAKE FP LIST. Run MAKE FP LIST and this will generate a text file called FP LIST. (After you have run MAKE FP LIST once you no longer need it.) When you want to list a program, load it into memory and then type EXEC FP LIST. Keep FP LIST and PROGRAM LISTING FORMATTER on the same diskette. I suspect that you were trying to EXEC one of the Applesoft programs and this produced the TYPE MISMATCH error. You can only EXEC text files such as FP LIST.

Q. I have an Apple][+ and two Legend Industries 64K RAM cards which came with software required to run them and am approaching the point where I need an additional disk simulation RAM card. I would like

contd.

to know if I can buy RAM cards by another manufacturer and expect either the software with the new card or my existing software to allow me to use all of my RAM cards, i.e. are the RAM cards by different manufacturers compatible? If the answer is no as I expect, then could I shift one of my existing cards to slot 0 to expand my Apple from 48K to 64K and buy a new card large enough to replace both Legend cards and not run into software problems? I am currently using DOS 3.3 and would like to go to ProDOS primarily to obtain the faster READ command, but after looking through my Legend manual I am fairly convinced that this would result in my inability to use the disk simulation features due to incompatible software. I think I should write to Legend for the answer to that particular problem but am not sure they are still doing business.

A. In general RAM cards for the Apple][(or][+) that are larger than 16K do not use the same convention for switching the memory banks around. Specifically, cards made by Saturn are not compatible with the Legend cards. Thus, your software won't necessarily work with cards by different manufacturers. You could move one of your 64K cards to slot 0 and buy another, bigger card. Although your existing software won't work with the new card most cards come with RAM disk emulation software. ProDOS requires an Apple with at least 64K of memory and will only use extended 64K memory cards that plug into the //e auxiliary slot. The //c comes with the extra 64K of memory built in.
You might also consider a hard disk in lieu of a RAM card now that hard disks can be had for less than $700.

Q. I have written a few engineering programs where it would have been nice if the user could use his own favorite equation rather than the one that I liked. I have not been able to figure out how to convert the user's input from a string to an equation in which the Apple will perform the indicated mathematical functions. I hope I haven't asked so simple a question that the answer will embarrass me.

A. This is definitely not a simple problem; however Cornelis Bongers wrote an article, "Execute Strings," that appeared in the September 1982 Call-A.P.P.L.E. that does exactly what you want. He included a machine language program that will accept valid Applesoft expressions, functions, variables, or whole program lines and execute them properly. His example showed how you could enter an equation in response to an INPUT prompt and have that equation be inserted in the currently running program for later use.

Q. I recently bought a clock card for my //e and would like to interface it with ProDOS, especially Appleworks. The card is made in Taiwan and comes with software, including machine code object files, on a DOS 3.3 diskette for reading the time and date off the clock in slot 5. Is there any practical way to modify either the card or the Appleworks boot to automatically read the time and date off the card?

A. When you boot up on ProDOS it automatically looks for and uses any clock card that is compatible with the Thunderclock card. Several of the clock cards on the market are compatible, but I assume yours isn't. It is possible however to modify ProDOS to read your clock card. Unfortunately you will need to program in Assembly language or machine code. After booting up with ProDOS you will need to modify ProDOS to jump to your clock routine when necessary. You do this by replacing the machine code at location $BF06 with a JMP instruction to the machine language routine that reads your clock, for example 4C 00 03. Your routine should store the year, month, day, hour and minute in locations $BF90 to $BF93. The year is stored in bits 1-7 of $BF91. The month is stored in bits 5, 6, and 7 of $BF90 and bit 0 of $BF91. The day is stored in bit 0-4 of $BF90. The minutes and hours are stored in bytes $BF92 and $BF93 respectively. Your clock routine must begin with a CLD instruction, end with an RTS instruction, and should be located in page three of memory ($300-$3CF).

Q. I have a 128K Apple //e with an Apple Super Serial Card in slot 2, and am using Apple Pascal V1.1 and V1.2. The problem is trying to UnitWrite a carriage return through the serial card. When I send a lone carriage return through the serial card a line-feed character is appended to the carriage return. I need a carriage return WITHOUT a line-feed. The switch settings on the card seem to operate correctly. If I set the SSC to 'line-feed enable' mode I get a double line-feed.

I've tried all the different mode parameters for UnitWrite, and even tried the Linefeed program on APPLE3:. So far no go.

A. I consulted some Pascal users and they are of the opinion that it might be necessary to modify SYSTEM.MISC INFO so the Pascal BIOS does not produce line-feeds. You should do this with the configuration program you used to originally set up the system. Of course this permanently modifies the BIOS to not produce any line-feeds, which may not be what you want. If anyone has a better solution I'll be glad to publish it.

Q. I am using THE Spreadsheet to do a lot of financial reporting and would like to buy an inexpensive graphics program to generate pie charts, bar graphs, and linear comparison charts. Can you recommend a program or two?

A. I can suggest a couple of programs but I'm not sure they meet your criteria for low cost. VisiPlot and VisiTrend by VisiCorp are probably the most popular programs. VisiTrend is an extension of VisiPlot and is marketed in a package combined with VisiPlot. VisiPlot alone lists for $200, and VisiTrend (with VisiPlot) goes for $300. A somewhat less expensive program is Versaplot by Spectrasoft for $99.50. Since THE Spreadsheet produces DIF files, any plotting program that accepts these files will work with it.

JOB MART

POSITION WANTED

Apple Computer instruction in the Frederick, MD area to include Apple][+, //e, Macintosh and assorted software. Personalized service and reasonable rates. Call Lynn Trusal, (301) 845-2651, evenings.

HELP WANTED

Wanted: Fast "typist" to input non-technical manuscript on my disks. Hourly rate. Emily, 362-0669.

WAP HOTLINE For Use by WAP Members Only

Have a problem? The following club members have agreed to help other members. 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	John Day		(301) 672-1721
	Dave Harvey		(703) 527-2704
	Robert Martin		(301) 498-6074
Accounting Packages			
Accountant(Dec.Sup.)	Mark Pankin		(703) 524-0937
Home Accountant	Leon Raesly	*	(301) 460-0754
APPLE SSC	Bernie Benson		(301) 951-5294
Apple TechNotes	Lance Bell		(703) 550-9064
	Shirley Weaver		(301) 761-2479
AppleWorks	Carl Eisen		(703) 354-4837
	J.J. Finkelstein		(301) 652-9375
	Jay Jones (Balt.)		(301) 969-1990
Communications Packages and Modems-Telecom.			
Anchor Mark 12	George Kinal(7-10)		(202) 546-7270
	Jeremy Parker		(301) 229-2578
ASCII Express	Dave Harvey		(703) 527-2704
BIZCOMP Modem	Jeremy Parker		(301) 229-2578
General	Tom Nebiker		(216) 867-7463
Hayes Smartmodem	Bernie Benson		(301) 951-5294
VISITERM	Steve Wildstrom		(301) 564-0039
XTALK CP/M Comm.	Bernie Benson		(301) 951-5294
Computers, Specific			
Apple //c	John Day		(301) 672-1721
	Scott Rullman		(301) 779-5714
Apple //e	Scott Rullman		(301) 779-5714
Lisa	John Day		(301) 672-1721
	Don Kornreich		(301) 292-9225
Macintosh	Jay Heller		(301) 948-7440
	Scott Rullman		(301) 779-5714
	Tom Warrick		(301) 656-4389
	Donald Schmitt		(717) 334-3265
	Rob Clark		(804) 850-2016
Corvus Hard Disk & Omninet	Tom Vier (4-11AM)		(202) 887-7588
Data Bases			
dBase II	Paul Bublitz		(301) 261-4124
	John Staples		(703) 759-3461
DB Master	Dave Einhorn		(301) 593-8420
Data Perfect	Leon Raesly	*	(301) 460-0754
Data Factory	Bob Schmidt		(301) 736-4698
General Manager	Normand Bernache		(301) 935-5617
	Leon Raesly	*	(301) 460-0754
List Handler	Jon Vaupel		(301) 977-3054
PFS	Bill Etue		(703) 620-2103
	Ben Ryan		(301) 469-6457
	Jenny Spevak		(202) 362-3887
QuickFile II	J.J. Finkelstein		(301) 652-9375
Expediter Compiler	Peter Rosden		(301) 229-2288
Graphics	Bill Schultheis		(703) 538-4575
Languages (A=Applesoft, I=Integer, P=Pascal, M=Machine			
A	Peter Combes		(301) 251-6369
A,I	Jeff Dillon		(301) 422-6458
A	Richard Langston		(301) 258-9865
A	Mark Pankin		(703) 524-0937
A	Leon Raesly	*	(301) 460-0754
A,I,P,M	Bill Schultheis		(703) 538-4575
A,I,M	Richard Untied		(703) 241-8678
A,I,M	John Love		(703) 569-2294
M	Raymond Hobbs		(301) 490-7484
P	Donn Hoffman	*	(412) 578-8905
Forth	Bruce Field		(301) 340-7038
LOGO	Ron Murray (eve.)		(202) 328-3553
LISP	Fred Naef		(703) 471-1479
Math/ O.R. Applns.	Mark Pankin		(703) 524-0937
Monitor, RGB Color	John Day		(301) 672-1721
Operating Systems			
Apple DOS	Richard Langston		(301) 258-9865
	John Love		(703) 569-2294
	Richard Untied		(703) 241-8678
CP/M	Robert Fretwell		(703) 971-2621
	Ray Hobbs		(301) 490-7484
ProDOS	Richard Langston		(301) 258-9865
	John Love		(301) 569-2294
Paddles	Tom Riley (eve.)		(301) 340-9432
Printers			
General	Walt Francis		(202) 966-5742
	Leon Raesly	*	(301) 460-0754
Apple Color Plotter	John Day		(301) 672-1721
Apple Daisy Wheel	John Day		(301) 672-1721
Apple Dot Matrix	Joan B. Dunham	*	(301) 585-0989
Daisywriter 2000	Bill Etue		(703) 620-2103
	Henry Greene		(202) 363-1797
IDS 460	Jeff Stetekluh		(703) 521-4882
Imagewriter	John Day		(301) 672-1721
	Scott Rullman		(703) 779-5714
MX-80	Jeff Dillon		(301) 434-0405
NEC 8023	Bill Mark		(301) 779-8938
Okidata	Fred Feer		(703) 978-7724
	Scott Rullman		(301) 779-5714
Silentype	Bruce Field		(301) 340-7038
Spreadsheets	Leon Raesly	*	(301) 460-0754
	Walt Francis		(202) 966-5742
Lotus 1-2-3	Walt Francis		(202) 966-5742
	Roy Rosfeld		(301) 340-7962
Multiplan	Terry Prudden		(301) 933-3065
VisiCalc	Walt Francis		(202) 966-5742
	Leon Raesly	*	(301) 460-0754
Spreadsheet 2.0 (MagiCalc)	Leon Raesly	*	(301) 460-0754
Statistical Packages	Jim Carpenter		(301) 371-5263
	Mark Pankin		(703) 524-0937
Stock Market	Robert Wood		(703) 893-9591
Tax Preparer-H.Soft	Leon Raesly	*	(301) 460-0754
Time-Sharing	Dave Harvey		(703) 527-2704
Word Processors	Walt Francis		(202) 966-5742
Apple Writer II	Dianne Lorenz		(301) 530-7881
	Leon Raesly	*	(301) 460-0754
Executive Secretary	Louis Biggie		(301) 967-3977
Format II	Henry Donahoe		(202) 298-9107
Gutenberg	Neil Muncy	Can.	(416) 298-3964
& Jr.	Harris Silverstone		(301) 435-3582
Letter Perfect	Cara Cira		(301) 468-6118
	Leon Raesly	*	(301) 460-0754
Magic Window and II	Joyce C. Little		(301) 321-2989
Peach Text	Carl Eisen		(703) 354-4837
PIE Writer/Apple PIE	Jim Graham		(703) 643-1848
ScreenWriter II	Peter Combes		(301) 251-6369
	E. E. Carter		(202) 363-2342
Supertext II	Peter Rosden		(301) 229-2288
Word Handler	Jon Vaupel		(301) 977-3054
	Christopher Romero		(703) 471-1949
Work Juggler //e	Carl Eisen		(703) 354-4837
Word Star	Christopher Romero		(703) 471-1949

*Calls up until midnight are ok.

DISABLEDSIG NEWS
by Jay M. Thal

* *

DISABLEDSIG FEBRUARY MEETING
Thursday, February 7, 1985
Chevy Chase Community Center
Connecticut Ave. & McKinley St.,NW, DC

SUBJECT: USE OF COMPUTERS FOR COMMUNICATIONS FOR THE DEAF AND HEARING IMPAIRED.
SPEAKERS: Richard Barth - Handicapped Education Exchange (HEX)
Barry Strassler - Deaf Factory
Esther Schaeffer - Telecommunications Exchange for the Deaf (TEDI)

AN INTERPRETER WILL BE PRESENT

* *

The short deadline for the January issue of the Pi made it impossible to report on the SIG's December meeting highlights. So here goes with a double feature.

On December 6, Dr. Larry Scadden addressed the SIG. Dr. Scadden is the Acting Director of the National Institute for Handicapped Research, and formerly was the National Science Foundation's Director for Science and Technology to Aid the Handicapped. He views computers as offering virtual equality to the handicapped for accessing information. Attitudinal problems are the main impediment to equality, he believes. The oral tradition gave way to the written word sometime ago, isolating the blind. While relatively recent improvements in literacy have allowed the deaf to acquire information, the blind have still been left out. In a sense the electronic storage of media, and speech synthesis techniques, are allowing greater access to the blind as well as to most other disabled people, though they may be physically unable to freely enter the "marketplace".

This electronic revolution opens up employment opportunities to the handicapped. Employment and self sufficiency are, after all, the central interests in Western society. This is even more important to the handicapped because nearly 90% of the new jobs created during the 1970s did not deal with manufacturing, or goods and products, but with information processing. The challenge, therefore, is not to just open these opportunities to the "beautifully" handicapped - those with strong intellectual and functional reserves, but to those less endowed. The time for this challenge is now since it will not be in the distant future when the curves of cost of equipment and salaries cross. Then, as some of us already have experienced, the job force will be decentralized through telecommunications.

The shift will not be without social conflict and sacrifice. The gains may be offset by losses such as personal contact. It may be argued that it will offer advantages to the orthopedically handicapped so that they may work at home. But, their recent acceptance into a society which has only begun to eliminate the architectural barriers that kept "them" separate could also take a step backwards. Electronically, at least, all people would be equal at 1200 baud.

The possiblities of home study and computer aided manufacturing will exact a toll. Initially there will be fewer jobs than before and the possibilities of decentralized exploitation may create the need for electronic "Unions". But, the disabled will still, hopefully, profit from the revolution.

Appropriately enough, the January SIG meeting in a sense followed up on Dr. Scadden's talk.

January's speaker was Mr. Bud Rizer of the Maryland Rehabilitation Center. The Center is one of only ten comprehensive rehabilitation facilities in the nation. Part of Maryland's Division of Vocational Rehabilitation, it serves over 1,500 people a year. Following up on the 1981 Johns Hopkins University search for Applications of Personal Computing to Aid the Handicapped, the Center began focusing on "available technology". This soon evolved into, by definition, microcomputers. And, in these few short years the technology has evolved so that much of the results of the Hopkins search have been surpassed by recent accomplishments in the field.

The Center itself is now viewing microcomputers as prosthetic or orthetic devices and is prescribing them for its clients. This means that, at least for vocational aims, State aid of between 10% and 100% is available for the purchase of the equipment. While it is acknowledged that comparable assistance would be helpful at a pre-vocational or even pre-school level, it is not currently available.

Nevertheless, the Center has expanded its focus. Initially, it attacked the vocational needs of people with Cerebral Palsy and Muscular Sclerosis - two greatly different problems which leave their victims with similar limitations. From that the Center has moved on to work with victims of Muscular Dystrophy and ALS "Lou Gerhig's disease". They also work cognitive retraining,

Micros, it is found, can be adapted despite the severity of the disability, and once the client has been trained in their use they improve the Center's ability to further assess the needs of the client. Among the problems that Mr. Rizer finds with micros is that the technology becomes obsolescent quickly -- so that he is prescribing devices which he knows to have been surpassed, and there is a tendency to apply complex solutions to simple problems (using Waldo when a BSR will do). Other problems are that individual needs are overlooked for generic solutions, individuals are asked to conform to the device rather than visa-versa, once people leave the Center local support systems are not in place, and the wealthy get the technology first rather than the most needy.

Rizer envisions lawsuits, on the part of the handicapped, on the basis of first amendment freedom to communicate - now that the technology exists they have an immediate right of access.

* * * * * * * * * *

CONFERENCE

March 20-23, 1985. COMPUTERS FOR THE HANDICAPPED. Omni International Hotel, Baltimore, MD. Contact Johns Hopkins University at (301) 338-8500.

(N.B. The information contained in this article is not necessarily representative of the opinion of WAP, and is intended to be reportorial in nature. Ed.)

PROGRAMS FOR USE WITH MORSE-CODE KEYS

by Boris Levine

The Morse serial code program was intended to improve access for disabled people to an Apple computer. (It was developed by Mr Wolfger Schneider and presented in the December 1983 Washington Apple Pi Journal.) This article describes an approach to applying the Morse program and shows how some available programs were modified and assembled on a single disk.

Note: With the original circuitry the program worked only with the][+. Changing the keying circuit, as described in the December 1983 newsletter, lets it work on the Apple //e as well as the][+.

The Morse program provides the interface between the user and the computer. What is discussed here are some of the lessons learned in applying it, including the kind of modification needed to let the user work with existing programs.

LESSONS LEARNED

How to start? I started by trying a few games (courtesy of WAP library). Not surprisingly, the lessons began right away. Using the programs - while not difficult for the ordinary user - presented many problems when the commands had to be keyed-in via Morse code. And the booting of one program after another, especially from different disks, requires far more manual effort than we realize. Similarly, the effort to get out of an on-going program is quite taxing. These, and other problems were found as I went along.

The prime lesson learned was that any such programming should GIVE THE USER SOME FAIRLY HIGH DEGREE OF INDEPENDENCE. Let's say that with the Morse program the user should be enabled to do the following:

- boot one program after another
- select a new program, change his mind, or correct his choice
- repeat the same program if desired
- write a letter or program
- quit the whole disk
- practice Morse code
- leave the practice session, without losing the other programs
- go to a printer, or leave the printer, at will.

CENTRAL MENU

To meet these requirements, I finally decided to place the Morse and the other programs on a single disk. They would be controlled through a central menu, through which everything else would be entered and to which the user would always be returned. This Menu (Listing 1) became the HELLO program and thus appeared whenever the disk was booted.

Note the following aspects of the Menu itself:

a. There is a little rigamarole that the user must go through each time he makes a selection. After he types in the number he is asked to confirm it and he is taken back to the menu if he makes a mistake or changes his mind. The need for such a protocol becomes evident very quickly, because the recovery from a wrong choice is both annoying and lengthy. 'Better confirm than squirm'.

(Note: There are no deliberate gender words. I use 'he' because it is neater than he/she, not as dull as a continuing repetition of 'user' and because 'shim' is an entirely different kind of thing.)

b. The routines are deliberately similar. Thus the structure for options 2,3,4 etc. follow the structure of option 1.(Lines 1100 to 1150). Adding additional programs to the menu is therefore quite simple. Note also that each subroutine presents the confirmation query before it loads the called-for program.

c. Similarly, 'traps' are used to protect the user from roadblocks like "syntax error".

d. The essential is the assembly language program which is BLOADed in the Introduction. To avoid having to go through the Introduction every time, the assembly-language program is BLOADed also by the menu program.

e. The Morse program comprises three parts: an explanation, a tutorial and an assembly language program which does most of the actual work. The Menu lists all three so that the user may practice the Morse code as well as use it.

SELECTED PROGRAMS

To be selected the games had to be interesting and provide interaction with the user. The candidate games differed in many ways and presented a wide range of complexity.

The common-sense approach was to see what could be made of existing programs and to make only minimal changes in them. Thus, in selecting from the WAP library I considered only those written in BASIC, because they could be modified quickly. Another requirement was that they must leave the assembly-language program unaffected. Several otherwise interesting programs were thereby excluded. The selected programs appear in the Listing (beginning at line 100). (A suitable word processor program can be added later.)

There were two changes that had to be made to each selected program: make sure that it could be exited at the desire of the user, and have it return the user to the menu. The modifications were simple enough but not always easy to make. The programs are too long to list here but the technique that worked was to look for an exit command or sequence and to alter that as needed.

a. The "Small World" program was easy because the end was a natural exit and it was enough to add:

```
xxxx CHR$(4);"RUN HELLO"
```

b. Modifying the BLACKJACK program was simple but not so easy: adding an extra option somewhere which would be a logical place to exit. The trick was to find that kind of place in a 40-sector program. Eventually it was done by adding an extra option to the betting statement - appropriately '0'. And, as in the Menu, the change included an option which permitted the user to leave or stay.

c. Similarly, modifying PRO FOOTBALL was also simple. But it's a long program -about fourteen pages in printout - and it took some time to find an appropri-

contd.

ate place.

COMMENTS

Emphasis was placed on giving the disabled user independent use of the available programs (once the disk was booted). This meant that each program, including the Menu, had to be tested against the criteria listed earlier.

Putting together this disk confirmed the importance of testing the final product before saying it's OK. Complex structures, especially a hodgepodge of programs from many sources, do not go together just because they are put together. Rather, it proved necessary to run the programs together with the menu and then to re-run them after the necessary de-bugging.

CONCLUSION

A copy of the disk and programs will be provided to the WAP library.

Listing 1

```
10  REM   MENU FOR MORSE KEY IS 'HELLO'.REV DEC 4,1984
15  REM   MODIFIED FOR SPEED CHANGES
20  REM   FOR BACKGROUND SEE 9100
25  REM   LOAD MORSE PROGRAM. USED SCHNEIDER
          HELLO'180, 290-310'
30  PRINT  CHR$ (4);"BLOAD MORSE.OBJ"
32  POKE 37495,48: POKE 37500,48: POKE 37502,16: POKE
    37571,16: POKE 37579,16
35  HIMEM: 37375
40  HOME : POKE 56,9: POKE 57,146: CALL 1002
45  PRINT "BEFORE WE START,DO YOU WISH TO CHANGE
    SPEED?...Y/N..."
50  INPUT A$: IF A$ <  > "N" THEN  GOSUB 700
90  HOME
100  PRINT "THE FOLLOWING PROGRAMS ARE ON THIS DISK:
105  PRINT
111  PRINT "1.   MORSE TUTOR"
112  PRINT "2    PRO FOOTBALL"
113  PRINT "3    BLACKJACK"
114  PRINT "4    IT'S A SMALL,SMALL WORLD"
115  PRINT "5    (TO BE ADDED LATER)."
116  PRINT "6    INTRODUCTION"
117  PRINT "7    EXIT THE PROGRAM"
220  PRINT : PRINT
235  PRINT "KEY-IN THE NUMBER OF THE PROGRAM"
240  PRINT "YOU WISH..."
245  INPUT "FOLLOWED BY 'ENTER'...";A: PRINT : PRINT
250  ON A GOTO 1100,1200,1300,1400,1500,1600,1700
260  IF A < 1 OR A > 7 THEN  PRINT "THERE IS NO
    PROGRAM ..."A: GOTO 280
270  PRINT : PRINT "YOU DID NOT CONFIPM YOUR CHOICE.";
280  PRINT "PLEASE  RE-ENTER.": GOTO 100
290  GOTO 270: REM   NEITHER Y OR N
700  HOME
720  PRINT "SELECT A PRACTICE SPEED BY PRESSING"
730  PRINT "THE MORSE KEY WHEN THE DESIRED SPEED"
740  PRINT "IS FLASHING."
750  PRINT ""
760  PRINT "           VERY FAST"
770  PRINT "           FAST
780  PRINT "           MEDIUM"
790  PRINT "           SLOW"
792  PRINT "           SLOWER"
794  PRINT "           MUCH SLOWER"
796  PRINT "           SLOWEST"
800  I = 0
810  HTAB 9: VTAB (5 + I)
820  INVERSE : PRINT " ";: NORMAL
830  J = 0
840  : IF ( PEEK (49249) > 127 OR  PEEK (49250) > 127
    OR  PEEK (49152) > 127) GOTO 910
850  J = J + 1
860  : IF J < 30 GOTO 840
870  : PRINT  CHR$ (8);" ";
880  I = I + 1
890  : IF I < 7 GOTO 810
900  : GOTO 800
910  POKE 37376,I + 3
915  VTAB (14)
920  INPUT "TRY THIS SPEED. IS IT OK?..Y/N?.";A$
930  IF  RIGHT$ (A$,1) <  > "Y" GOTO 700
950  RETURN : REM     BACK TO MENU
1100  HOME
1110  INPUT "YOU DO WISH TO PRACTICE MORSE ! Y/N..";A$
1130  IF A$ <  > "Y" GOTO 290
1140  PRINT "BEFORE WE START, DO YOU WISH TO CHANGE
    SPEED?...Y/N..."
1150  INPUT A$: IF A$ = "Y" THEN  GOSUB 700
1170  PRINT  CHR$ (4);"RUN MORSE TUTOR.P"
1200  HOME
1210  INPUT "YOU DO WISH TO PLAY PRO FOOTBALL!
    Y/N..";A$
1230  IF A$ <  > "Y" GOTO 290
1240  PRINT "BEFORE WE START,DO YOU WISH TO CHANGE
    SPEED?...Y/N..?
1250  INPUT A$: IF A$ = "Y" THEN  GOSUB 700
1260  REM  RETURN FROM 700
1270  PRINT  CHR$ (4);"RUN PRO FOOTBALL REV 5"
1300  HOME
1310  INPUT "YOU DO WISH TO PLAY BLACKJACK! Y/N
    .....";A$
1330  IF A$ <  > "Y" GOTO 290
1340  PRINT "BEFORE WE START,DO YOU WISH TO CHANGE
    SPEED?...Y/N..?
1350  INPUT A$: IF A$ = "Y" THEN  GOSUB 700
1360  REM
1370  PRINT  CHR$ (4);"RUN HIRES BLACKJACK REV 2 "
1400  HOME
1410  INPUT "YOU DO WISH TO PLAY 'ITS A SMALL,SMALL
    WORLD!   Y/N...";A$
1420  IF A$ = "Y" GOTO 1450
1430  IF A$ <  > "Y" GOTO 290
1450  PRINT  CHR$ (4);"RUN IT'S A SMALL WORLD"
1500  HOME
1510  INPUT "YOU DO WISH TO SEE WHAT IS TO BE ADDED
    LATER?  Y/N...";A$
1520  IF A$ = "Y" GOTO 1540
1530  IF A$ <  > "Y" GOTO 290
1540  VTAB (10): PRINT "THIS SPACE HELD FOR A WORD
    PROCESSOR"
1542  VTAB (12): PRINT "MEANTIME, PLEASE CHOOSE
    ANOTHER OPTION"
1570  PRINT  CHR$ (4);"RUN  HELLO"
1600  HOME
1610  INPUT "YOU DO WISH THE INTRODUCTION! Y/N
    .....";A$
1630  IF A$ <  > "Y" GOTO 290
1640  PRINT "BEFORE WE START,DO YOU WISH TO CHANGE
    SPEED?...Y/N..?
1650  INPUT A$: IF A$ = "Y" THEN  GOSUB 700
1660  REM
1670  PRINT  CHR$ (4);"RUN INTRODUCTION"
1700  HOME
1710  INPUT "YOU DO WISH TO LEAVE THIS PROGRAM!
    Y/N..";A$
1720  IF A$ = "Y" GOTO 1750
1730  IF A$ <  > "Y" GOTO 290
1750  HOME : HTAB (10): PRINT "SO LONG": FOR X = 1 TO
    1000: NEXT X
1760  HOME
1770  VTAB (10): PRINT "INSERT NEW DISK"
1780  PRINT : HTAB (10): PRINT "OR": PRINT
1790  HTAB (10): PRINT "TURN OFF COMPUTER
1800  END
9100  REM  FOR BACKGROUND
9105  PRINT : PRINT "THE GAMES ON THIS DISK HAVE BEEN
    MODIFIED ";
9107  PRINT " FOR USE WITH THE MORSE KEY ";
9110  PRINT "PROGRAM DEVELOPED BY W. SCHNEIDER (SEE
    'INTRODUCTION).
9120  PRINT "THE GAMES WERE SELECTED FROM THE DISK
    LIBRARY ";
9125  PRINT "OF WASHINGTON APPLE PI."
```

contd. on pg 38

CLOSING THE GAP

by Kathleen Abrams

The Closing the Gap Conference held in Minneapolis September 13-16 provided an extensive collection of presentations as well as exhibits focusing on "Computer Technology for the Handicapped". The premise guiding the development of this conference was to bring ". . .together professionals in the fields of special education and rehabilitation, as well as handicapped and disabled individuals. . .in order to explore microcomputer technology. . .that can enable handicapped and disabled persons to meet the everyday needs of education, communication, vocation, recreation and independent living."

PRESENTATIONS

The nearly 75 different presentations given by educators, specialists, rehabilitation engineers and product developers afforded a really informative overview of the applications of microcomputer technology being used all over the country.

Some Examples

Of Applications in General--

--A group at Western Illinois University working through a grant, "Activating Children Through Technology". Using the computer and LOGO with young children - 3 to 5 years - who have learning disabilities and/or physical handicaps, these researchers are finding ways for these children to learn problem-solving. The physically handicapped children are able to experience some control of and interaction with their environment by using the computer and TOPO, the robot.

--Several presentations given by special educators and administrators showing how their school systems are incorporating the use of the computer in their programs. Applications include use by: learning disabled children and how various software programs assist in their education and skills learning; physically handicapped individuals and how the computer enables the students to communicate and participate in their classroom programs; administrators and educators to develop their IEP's (Individualized Education Plan) and to assist in evaluating vocational skills.

--A presentation from the Maryland Rehabilitation Center in Baltimore demonstrating the extent and potential computer technology allows users in a rehabilitation setting to become more functional and independent in their lives with an eye toward vocational applications.

--A project which the National Federation of the Blind is sponsoring enabling blind persons to use a computer and fit into any office situation.

Of Augmentative Communication--

--Various peripherals such as switches, the Unicorn Expanded Keyboard, touch pad and voice synthesizers were discussed as part of making the computer accessible to the severely physically handicapped individual for use as a communication system. Use of LOGO and other software programs assist in developing communication systems.

Of Uses of Specific Hardware/Equipment--

--Several pieces of equipment developed by Prentke-Romich demonstrated by users show how severely physically handicapped individuals are able to control electronic devices such as radios, TVs and lights. Through the same systems these individuals can communicate, work through a computer and operate their electric wheelchairs.

--A local company, Cosmos Corporation, is studying the application of robotics, artificial intelligence and computer simulation to special education.

--Use of a color printer for the Apple called the Color Plotter and LOGO allows a person to reproduce an exact copy of their drawing without the distortions usually found on printed copies. This provides a permanent and satisfying copy in color of an individual's ideas.

--A large-print display peripheral for use with the Apple and IBM PC made by Visualtek along with a word processing program can provide a work setting for a partially-sighted user.

--A company is developing an interactive use of the Video Disk with the computer to provide some really fine software programs for educational use.

Of Uses of Software Programs--

--A graphics program called Fingerspeller I was written for Apple computer to assist in learning the manual alphabet.

--A group of software programs have been developed by Sunburst Communications to help develop memory. Their philosophy is that there are many memory strategies and that "memory is the first step in problem solving."

--A workshop discussing the multiple uses of word processing by handicapped students.

--A group from Peabody College of Vanderbilt University is developing software which takes advantage of artificial intelligence. Their package called AIMSTAR II incorporates diagnostic and decision-making components with the ability to interact directly with student data collected using CAI software.

--Use of LOGO with hearing impaired children helps them develop concepts of directionality, explore geometry, learn to follow and give spoken and written directions and improve language ability.

EXHIBITS

Exhibitors from all over the country displayed and gave hands-on experience with a wide range of computers, software, communication systems and technological aids designed to improve the quality of life for individuals with handicaps.

Following are a few of the exhibits but is by no means inclusive of all products which were exhibited and have valuable applications.

--SpeechPac by Adaptive Communication Systems, Inc. in Pittsburgh. This system uses a battery-run portable HX-20 Epson computer with additional memory and voice synthesis. The user can store communication up to 23,000 characters as well as type in text to speech

contd.

messages. Pre-programmed messages are accessed with one, two or three letter codes of the user's choosing. The company has developed a scanning version of the communication system called ScanPac. This comes with a scanning board allowing adaptation for use by lower functioning individuals as well as for assessment of individuals difficult to test.

--Special Friend developed by Shea Products, Inc., in Michigan. A portable communication aid with voice that can be purchased with either direct or scanning access. The keys located on a membrane type board can be used to spell, to activate permanently stored often-needed messages. Special Friend has 26 programmable pages each with 26 keys for storage. Several teaching/diagnostic functions are present including letter and sound recognition, word synthesis, music, spelling and math activities.

--Lifestyle Personal Communicator from AudioBionics in Minnesota. This is a very small, 18 oz. device similar to the Memowriter. It has a 40 character liquid crystal display and voice synthesizer allowing a non-speaking person to interact in conversation. It connects to telephones to communicate with hearing persons, computers, TDD's and TTY's. Included are a changeable, 253 message memory, 1700 word vocabulary, and alarm clock, calendar and caculator functions. This device would appear to have applications for people with speech or hearing problems with little or no motor involvement.

--Eyetyper. This communication device from Sentient Systems Technology, Inc. in Pittsburgh operates solely on eye contact. Individuals who can only move their eyes are able to focus on individual keys which an "eye" registers. The board adapts to the user's speed of eye movement and control allowing for individual differences from day to day. Included are a two-line, 40-characters-per-line display, an RS-232C Serial Computer Port allowing Eyetyper to be used with other computers and printers and options of voice synthesis and external remote display. It can be wheelchair mounted, placed on a table or mounted over a bed. A newer development allows the user to program up to 40 characters in any given position (I think there are 60 available) for immediate recall.

--Words+. This company in Sunnyvale, California assembles several types of communication systems including portable and non-portable systems, some with environmental controls. An attempt is made to customize the particular combination of hardware and choice of software to meet an individual user's needs. One example is the Words+ Portable Voice II which uses an Epson HX-20 computer with modified Votrax Personal Speech System voice synthesizer and rechargeable power supply. To this can be added an external switch version for Morse Code or an expanded keyboard for those who have difficulty with a standard keyboard. Another example is the Words+ Living Center which uses basically off-the-shelf available hardware and software with customizing limited to switches and some software. This system functions in communication, entertainment, drawing and environmental control. This company offers a 14 day trial period for using their systems.

--ITS (Information Through Speech). This computer workstation handled by Maryland Computer Services, Inc., is designed for individuals who are blind or visually impaired. Information appearing on the visual display is spoken in synthetic voice. Another product this company has developed is the Ready Reader. This is an optical character recognition device which translates typewritten documents into computer readable information. A third product is a low cost Braille printer "Perky". This is similar to a printer and plugs into the Apple, allowing anything to be printed in Braille. Having graphics capability as well allows the user to produce maps, math symbols and any figure in tactile form.

--COPH-2. The Committee on Personal Computers and the Handicapped, a consumer group fromed two years ago in Chicago, Illinois, strives to influence how much computer technology will benefit people with disabilities. It is a non-profit organization with 420 members in 44 states staffed by volunteers. Some of the products and services include: a quarterly magazine; free personal computer loans; active subcommittees focusing on young people with disabilities; a list of computer aids for the visually impaired.

--Career Development Specialists. A program matching jobs to individuals using the Computerized Career Analysis System.

--MicroVideo Corporation. Video Voice - a computer-aided speech training system for the individuals with hearing impairments.

--Touch Technologies, Inc. Computerized Lesson Authoring System - CLAS - software designed to enable parents and educators to create their own courseware without any computer experience.

TELECOMM SIG NEWS

by George Kinal

Since the Telecommunications SIG has not met in several months (what with the Thanksgiving weekend and the WAP garage sale), I thought I would keep the membership posted on happenings of interest by means of this article.

First, a correction. Through an apparent misunderstanding, Dave Harvey reported in the December 84 WAP that the Seri-All and CCS 7711 interface cards do not support carrier detect. This is not the case. Carrier detect is supported. However, unlike the Apple Super Serial Card, there is no DIP switch on either card to "force" the carrier detect high, as is desirable with "smart" modems such as the Anchor Mark 12.

Serial Interface Cards for the II+ or //e: I will be reporting more extensively on several new cards in the near future. The CCS 7711 (not, repeat NOT the old 7710) and the Practical Peripherals Seri-All are functionally identical with the Apple Super Serial Card (they use the same 6551 I/O chip and the same register locations). Therefore any software that works with the SSC should work with these cards as well. The Seri-All has one advantage over the others: it supports the modem speed indicator signal on pin 12. Thus, in answer applications, such as for a BBS, a 300/1200 baud modem may be used without special software tricks or hardware modifications.

Another card I'll be writing about is the Intra-Computer PSIO. It has been around for a few years, but is still unique in several ways. It comes with software to support the five bit Baudot code. This might be of interest to the hearing-impaired Apple user. Also on the card is a current-loop interface, and software is provided for pulse dialing. These three features together allow you to use the Apple/PSIO combination as a Telex machine replacement. AE-Pro can be configured for this interface card.

Joe England, WP2136, has completed the collection of a number of versions of the public domain MODEM7 program for several popular modems/interfaces, mostly for the Microsoft CP/M card environment. We think it would be appropriate to make copies of these programs available at the standard Disketeria price of $5. Joe can be reached at 953-1949, or at Anderson-Jacobson in Rockville (see WAP back cover ads).

Apple //c Communications Problems: I continue to receive reports of //c owners experiencing difficulties with communications. I have the distinct impression that, contrary to Apple's original reluctant announcement of a motherboard problem, it is not just non-Apple modems and 1200 baud that cause problems. Even 300 baud Apple modems sometimes do not work properly with the //c. Again, the only proper cure is to have an Apple dealer swap out the motherboard. This will be done even if your warranty has expired, providing you can convince a dealer that you really have a problem. I suggest all //c owners have this done, even those not using modems. Otherwise, the future value of your //c is reduced. Even some printers do not work properly with the old motherboard version. (The original circuit design resulted in I/O port baud rates being some 3% off, even though industry standards are for .01% accuracy. Another example of Apple Computer's unfortunate lack of attention to telecommunications!).

Interface problems of a less esoteric level seem to plague many][, //e, //c, and Mac owners, especially those that are just now adding modems to their computers and therefore cannot demand that a dealer configure a fully operational system. The Telecomm SIG is considering holding an "interface workshop," where members could come and bring their modems, I/O cards, cables, etc. for any modifications, or to learn how to make interface cables (this would not be a soldering class, but hopefully enough people in attendance would have the necessary skills to help). A limited supply of DB-25, DB-9, and DIN-5 connectors would be aailable for hands-on work. The time and place for this workshop will be announced.

Anchor Automation continues to make news on the modem front. A 300/1200 baud Volksmodem has been announced, at a list price of $299, or $100 less than the Mark 12, yet with essentially the same features! The Mark 12 is available via mail order for $229. A fancier version of the Mark 12 has also been announced; this new modem has memory for a some number of telephone numbers, and automatic redial capability. Price and availability unknown.

For Mark 12 owners who miss the ability to listen-in on what's happening on the line, I have found several possible solutions. One is an inductively-coupled gadget which is simply placed on top of the Mark 12 (see, the plastic case does have some advantages...). I have also discovered that small surplus Dictation machines can be easily modified to serve as monitoring amplifiers. The cost of either of these solutions is under $10.

VOLUNTEERS NEEDED FOR COMPUTER LITERACY COURSE

Volunteers are needed to assist with a Computer Literacy Course that is being planned for visually impaired professionals in the Metropolitan Washington area. The course is scheduled to take place at the Columbia Lighthouse for the Blind, 1421 P Street, NW, Washington, DC. Each class will be from 10:00 AM to 3:00 PM on five consecutive Saturdays beginning on February 23 and ending on March 23, 1985.

The purpose of the course is to provide visually impaired professionals with basic orientation and understanding of personal computers and the adaptations that have been developed to make this technology and its functions accessible to the visually impaired user.

Two of the sesions will be hands on with three IBM PCs and three Apple //e's, and these are the two sessions where WAP volunteers are needed. Each volunteer is expected to be available for two Saturdays, March 9 and 16. One Saturday will be devoted to visual display users and the other to braille users. There will be an orientation session for the volunteers on Sat., February 9 at the Columbia Lighthouse for the blind.

If you can participate, it will provide an essential service to these sessions and will be a learning experience for all. Edward T. Ruch, Regional Consultant, 429-0358.

EDSIG NEWS
by Peter Combes

EDSIG Calendar

Thursday, January 24, at 7.30 p.m.: "Current Developments in the Use of Microcomputers in Education" - David Wyatt.

Thursday, February 28, at 7.30 p.m.: "Recent Educational Software" - Reviews and demonstrations of new educational material for the Apple.

All EDSIG meetings are now held in the Washington Apple Pi offices at 8227 Woodmont Ave., Bethesda, MD.

Meeting Report

Tuesday, December 4, 1984.

Program Reviews

"States and Capitals" - This commercial program came to us from S.A. Softwares, of Edgewater, Maryland, and was written by two Washington Apple Pi members. It offers an information mode and a high resolution guessing game. Disappointingly, the information mode seems little more than long screens of written data, but the guessing game shows attractive state outlines and invites the player to guess which state is represented. Help screens show the position of the state relative to others, and give other kinds of clues. Some sophisticated checking criteria are built in, allowing the program to discount some spelling errors. Student motivation is a problem in this kind of program, and the program attempts to arouse interest by using scoring routines that reward accurate guessing without recourse to the clues. Some of us were uneasy about the teaching objectives, however. Is it that important to be able to recognise state outlines?

"Shapes and Patterns" - Learning Well, of Roslyn Heights, NY, have often sent us attractive graphics based programs, and this program starts with an impressive animation display. Oddly, it is the first commercial program we have met that defied all attempts to get past the opening screens! All the combinations of keys, including the "Apple" keys, were to no avail. We imagine that this could lead to frustrating situations with the small children to whom the program is directed, particularly since the opening sequence has very strident sound effects. Once we got it going, with the help of the instruction manual, we were impressed by the smooth moving graphics, reminiscent of "Graphics Magician" animations. The program includes exercises in which one is invited to complete sequences of shapes. Various skill levels were available, some of the later exercises leaving us baffled. However, there is little in the way of feedback, and the given solution was often a subject for argument. High scores were rewarded by pictures of presents from the "Gift Machine"; whether this would be motivational in practice was the subject of some discussion. Learning Well provides "Special "Utilities" to enable teachers or parents to control the skill level and review the user's performance.

Authoring Systems

The meeting also included a "sneak preview" of some unpublished programs. These included authoring systems for language teaching, one of which controlled a slave audio tape recorder.

HOW TO CHANGE FIRMWARE LEGALLY

by Bill Guion

Recently I found it desirable to modify the firmware on my Micromodem peripheral interface card. This led to several interesting challenges which have been met successfully. This article relates my experiences to the WAP membership so you might benefit from them.

The Challenges

I ran into three basic problems, two technical, the other legal/moral. One technical problem was to understand the Apple's peripheral I/O slot memory assignment scheme, disassemble the firmware on the Micromodem card, and learn the program well enough to be able to modify it successfully. The other technical problem was to figure out how to replace the firmware with my updated software.

The legal/moral issue arose around the question of distributing copies of my work. I am not the least bit interested in violating any copyright laws, or distributing any software that I shouldn't distribute. On the other hand, the modified software won't work unless you have a Micromodem, in which case you already own the Micromodem software. I believe that I may publish/distribute listings of my modified software, but other potential users might not have the tools needed to implement the change. So the legal/moral question is simply how to make the results of my efforts available to others in a directly useable form without violating any copyright or piracy laws. I think the solution to this problem is most ingenious.

The Solutions

Problem 1

The memory address space from $C100 to $CFFF is reserved for I/O card usage. In fact, the bare Apple][+ has no memory in this range. Addresses from $C100 to $C7FF are uniquely assigned to the various I/O slots following this scheme: $C100 to $C1FF are assigned to slot 1; $C200 to $C2FF are assigned to slot 2; and so forth. Each I/O card may provide its own memory in addresses $C800 to $CFFF. Since there may be up to 7 I/O cards each using the same address space, there is a technique for selecting one of the memory sets. This selection method is rather straight forward: any reference to $CFFF turns off all I/O card's $C800 - $CFFF addresses; then any access to an address between $C100 and $C7FF will turn on the $C800 range associated with that address.

Let me be a little more specific. Assume peripheral cards in slots 2 and 6. The card in slot 2 may use addresses $C200 through $C2FF and $C800 through $CFFF. The card in slot 6 may use addresses $C600 through $C6FF and $C800 through $CFFF. Any access (LDA, STA, etc.) to $CFFF turns off all memory in the $C800 to $CFFF range. Then any access (e.g., executing an instruction) in the range $C200 to $C2FF will turn on the memory on the slot 2 card in the range $C800 to $CFFF.

With this understanding, it then became easy to disassemble the Micromodem firmware. First, I had to disassemble the program in $C200 - $C2FF, being careful not to go past $C2FF. (Before starting the disassembly, I made a reference to $CFFF. This assured me that all peripheral I/O cards addresses in the $C800 to $CFFF area were turned off.) The act of disassembly assured that the Micromodem's $C800 - $CFFF was selected, so that when I disassembled $C800 - $CFFF I got the correct data.

As it turns out, understanding the code was helped immeasurably by Tom Warrick, the WAP ABBS SYSOP. In the May 1983 issue of the WAP Journal, Tom published an article in which he included a commented listing of the Micromodem firmware. His comments, which I have incorporated into my listing, made it very easy to understand the code, at least to the point of being able to modify it. I do not believe that I could have been successful in my attempts if it were not for Tom's listing. Thanks, Tom.

I have included with this article a fully commented listing of the results of this work. Listing 2 shows what results from executing the EXEC file contained in Listing 1.

Problem 2

The next technical problem was to figure out how to use the code after I figured out how to modify it. I don't have a PROM burner, and really wouldn't want to burn a new PROM anyway until I had checked out the changes. So replacing the ROM on the Micromodem card with a reprogrammed PROM wasn't feasible. Nor would it be an acceptable way to share the results of my work. The obvious solution was to move the code to another area of memory. This turned out to be somewhat more involved than I had originally expected. The Micromodem has code designed to determine which slot it is located in by determining where the code is being executed. When I moved the program, that code would no longer work properly. That code had to be isolated. I replaced it with code which assumed that the Micromodem is in slot 2, where mine is. Most of the address references resolved themselves by use of the assembler and simply redefining the origin to be $800, vice $C800.

In order to progress in a straight forward manner, my first step was to simply move the code, replace that which needed replacing, and get the original program running again. Only when this was successfully completed did I move on to the task of making the desired changes. In this way I was able to isolate any problems I encountered to the move process or the change process. This, in turn, facilitated finding and fixing the problems. (The changes themselves are discussed later in this article.)

Legal/moral issue

As I indicated earlier, the last dilemma I faced was how to be able to make a copy of my work available to the average Apple][owner without violating any copyright or piracy laws. The solution to this dilemma was provided by a good friend of mine, Mr. Jerry Taube. Jerry pointed out to me one day that, since I now knew what the final product should look like, I could start out using only the Apple keyboard, enter monitor and use monitor's move command to move the code from the Micromodem card to main memory, and then make the appropriate changes. He further pointed out that, if I could do all this from the keyboard, I could create an execute (EXEC) file which would do the same thing. And there should be no concern about distributing the EXEC file, since it was entirely my original work. And that is precisely what I did. The EXEC file has been developed and is included with this

contd.

—— Operant Systems ——

-- HARDWARE --

PRINTERS—
- Epson FX-80 (160 cps, tractor/single sheet, graphics).. 435
- FX-100 (wide carriage version of the above)..... 625
- RX-80F/T (100 cps tractor/single sheet, graphics) 305
- LQ-1500 (200 cps, fantastic letter-quality mode) 1095
- Fingerprint (pushbutton font selection for RX/FX).... 39/49
- Okidata 92 (160 cps, graphics, BEST print for price)... 379
- 93 (132 column version of above)..... 629
- Toshiba 1340 (144 cps draft, BEST letter-qual matrix).. 749
- Texas Instruments TI-855 (150 cps draft, 35 cps NLQ)... 795
- NEC P2/P3 (high quality matrix printing)..... 695/919
- Panasonic 1090/1091/1092/1093 matrix printers..... (call)
- Gemini 10X (120 cps, tractor/single sheet, graphics)... 269
- 15X (wide-carriage, same features as Epson MX).. 375
- Powertype (18 cps daisywheel)..... 335
- PCPI Laser Printer (8 pages/min, uses Canon mechanism) 2825
- C.Itoh F-10 Starwriter (40 cps, office quality)..... 949
- F-10 Printmaster (55 cps, same as above)..... 1095
- Silver-Reed 550 (18 cps daisywheel, BEST at this speed) 439
- 500 (14 cps daisywheel, same as above)..... 335
- NEC 8830 (55 cps daisywheel, built like a tank)..... (call)
- Diablo 620 API (25 cps daisywheel)..... 775
- Qume Sprint 11/40 (40 cps daisywheel)..... 1295

MODEMS—
- Hayes Micromodem IIe (tone dialing/speaker/Smartcom I). 239
- Smartmodem 2400 (2400/1200/300 baud, RS-232)..... 595
- Smartmodem 1200 (1200 baud, RS-232, auto-dial)... 469
- Smartmodem 300 (300 baud, as above)..... 199
- Novation Apple-Cat II (w/ Comware; 1200 baud capable).. 235
- Smart-Cat 300 (RS-232, direct-connect)..... 175
- Smart-Cat 300/1200 (as above)..... 389
- Prometheus Promodem (300/1200 baud, RS-232, auto-dial). 365
- Microcom ERA 2 (300/1200 baud card with software)..... 359
- Zoom Telephonics Networker (300 baud card w/software).. 149
- US Robotics Password (300/1200 baud, auto-dial/answer). 335
- Anchor Volksmodem 12 (300/1200 baud, RS-232)..... 199

DISK DRIVES—
- MicroSci A2 drive (100% Apple-compatible Shugart 390).. 199
- A.5 (half-height, 100% Apple compatible)..... 199
- A.5c (half-height for Apple IIc)..... 215
- Rana Systems Elite One drive (40 track, 163K)..... 219
- Elite Two (40 track, double side, 326K)... 350
- Elite Three (80 track, double side, 652K). 425
- 10-MEG Winchester drive..... 1125
- Davong, Corvus, and Corona Winchester drives..... (call)

CP/M & 6502C SYSTEMS—
- Applicard (6 Mhz Z-80, 64K to 192K RAM, 70-col video).. 249
- Microsoft Softcard IIe (Z-80, 80 col & 64K on one card) 265
- Softcard (includes CP/M 2.2 and MBASIC)..... 225
- DR Gold Card (6 Mhz, 80-col, 64-192K, CP/M 3.0, CBASIC) 259
- Titan Accelerator IIE (3.6 Mhz 6502C coprocessor)..... 249
- Speed Demon (6502C high-speed coprocessor)..... 219

MONITORS—
- Amdek 300G/300A (12" green/amber anti-glare, 18Mhz).125/145
- NEC JB-1201/1205 (green/amber anti-glare screen, 20Mhz) 130
- JB-1260 (12" green, 15Mhz, best value for money).... 99
- USI PI-2 (12" green anti-glare screen, 20 Mhz)..... 125
- PI-3 (12" amber anti-glare screen, 20 Mhz)..... 125

INTERFACES & BUFFERS & CLOCKS—
- Phasa/U printer interface (superior graphics & more !!) 129
- ShuffleBuffer (32K—128K w/cut & paste/ser and par).... 269
- Grappler+ printer interface (parallel w/ graphics)..... 109
- Buffered Grappler+ (16K to 64K buffer plus graphics)... 169
- CCS 7711 Super Serial (for printers & modems)..... 95
- Practical Peripherals Graphicard (parallel w/ graphics). 75
- ProClock (ProDos compatible)..... 109

VIDEO BOARDS—
- Videx Ultraterm (160 column/48 row display !!!)..... 259
- Videoterm (80-column w/ softswitch & inverse).... 215
- MicroSci 80-col card w/64K RAM for IIe..... 119

MEMORY EXPANSION—
- Microtek 16K RAM card..... 75
- Titan Technologies 128K RAM card..... 209

-- SOFTWARE --

WORD PROCESSING—
- Wordstar 3.3 (including 6 Mhz Z-80 Applicard !!!).. 299
- ScreenWriter II (70 col display, spooling, more!!... 85
- Super-Text Professional..... 115
- Bank Street Writer or Speller..... 45
- pfs: Write IIe or Proof IIe..... 85/49
- Pie Writer..... 99
- Word Handler + List Handler + Spell Handler..... 109
- HomeWord or HomeWord Speller..... 45/35
- Sensible Speller IV (checks ANY file type)..... 85
- The Word Plus (super spelling checker for CP/M)..... 99

SPREADSHEETS & FORTUNE-TELLERS—
- Multiplan (state-of-the-art spreadsheet)..... 129
- FlashCalc (VisiCalc gets a facelift)..... 75
- SuperCalc 2 (powerful CP/M spreadsheet)..... 179

INFORMATION MANAGEMENT—
- dBASE II (w/ ZIP screen generator)..... 299
- pfs: File, Report, or Graph..... 85
- The General Manager 2.0..... 149
- Thinktank (electronic thought organizer)..... 99
- DB Master 4.0 (latest version)..... 225

BUSINESS & ACCOUNTING—
- Dollars & Sense (accounting w/graphics)..... 69 & 79
- Peachtree Peachpak (GL/AR/AP)..... all three: 229
- Back to Basics Accounting (GL/AR/AP)..... 129
- BPI Accounting (AR/AP/PAYROLL/INVENTORY) ea module: 249

COMMUNICATIONS—
- Ascii Express Professional (for DOS 3.3)..... 89
- Z-term Professional (for CP/M)..... 99
- CompuServe Starter Kit (password & 5 free hours).... 29

LANGUAGES—
- Microsoft TASC Applesoft compiler..... 119
- Microsoft Fortran-80..... 129
- Terrapin Logo..... 69

ODDS & ENDS—
- Kensington System Saver Fan (w/surge protector)..... 66
- Kraft Joystick / TG Joystick / Hayes III..... 35/35/40
- KoalaPad Graphics Tablet (with graphics software)... 85
- Maxell, Verbatim, Dysan, Memorex, Wabash disks.. (call)

MACINTOSH
- Filevision (graphics database system)..... 129
- Odesta Helix (database for the serious user)..... 249
- Main Street Filer (yes...yet another database)..... 145
- Dollars & Sense (accounting w/graphics)..... 99
- Microsoft Word (what MacWrite should have been).... 129
- Chart (presentation business graphics).... 85
- File 129
- Basic (new version)..... 99
- Lotus Jazz (word proc, database, graphics, more) (call)
- Assimilation Process Memory Disk..... 25
- Iomega Bernoulli Drive (5 MEG removable cartridge) 1395
- Optimum MacTote (send your Mac to camp)..... 79
- Kensington MacModem (300 baud)..... 99
- Surge Protector (replaces power cord).... 39
- Tecmar, Davong hard disk systems..... (call)

CALL FOR PRICES OF ITEMS NOT LISTED

—— 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

Write or visit:

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

Md. sales add 5% tax. UPS shipping is available.
All items carry full manufacturer's warranties.

article as Listing 1. For those of you who would like to use this technique to produce a modified Micromodem program, but whose Micromodems are in a slot other than 2, the changes which have to be made to the EXEC file to get it to work on your system will be found at the end of the article. For those who would like a copy of the EXEC file and who do not wish to do the typing yourself, I will provide you with a copy on a 16 sector disk if you will send me a mailing envelope, your name, complete mailing address, and $5.00 to cover the cost of a disk and mail. An EXEC file may be created or modified by any word processor which produces a standard Apple text file (such as Apple Writer).

The Changes

My wife spends her days working with an IBM 3033. On occasion she will come home having experienced a problem with one of her programs. She would then, reluctantly, use our Apple to dial up and sign on to the 3033 to edit her program.

I say reluctantly because at work her terminal has "full screen edit" (FSE) capabilities, a feature she really likes. However, the 3033 doesn't support FSE from a dial-up terminal. So when she uses the Apple, she must use the 3033's line editor, which is certainly less user-friendly than the full screen editor.

One day she came home excited with the knowledge that a recent implementation at work would permit full screen editing from our Apple. She quickly loaded the communications package she had been using and .... Disaster. The screen was not being formatted properly. We have the Hayes Micromodem which has a "dumb terminal" program in ROM. So my first suggestion was to try the Micromodem firmware. After we corrected a few minor problems associated with getting it configured properly, it worked perfectly. Well, almost perfectly. My wife uses three characters which are not available on the Apple][+ keyboard: the underscore, vertical bar, and tilde. And the Micromodem firmware doesn't make any provision for character substitution. I decided that it shouldn't be too hard to modify the Micromodem firmware to provide the needed capability.

Using a disassembler, I then proceeded to disassemble the code located between $C200 and $C2FF (my Micromodem is in slot 2) and the Micromodem code between $C800 and $CFFF. With the help of the commented listing in Tom Warrick's article, I was able to decipher the code and begin the process of modifying the program.

According to Tom's article, the code from $C800 to $C8FF is a duplicate of the code at $C200. The $C200 code is not needed if the program is run in RAM instead of ROM. That saved having to look at a big chunk of code twice.

Next I had to reorigin the assembly. I chose $800 as the new home for the code formerly at $C800. One major effort, and one minor one, and the relocated code would be ready to run. The minor problem was correcting the CSW. When you type in IN#n, the number $Cn00 is placed in the CSW and control is transferred to $Cn00. One of the first things the code in $C200 does is to replace the $00 in the CSWL with a $07, so that future entries will be to $C207. The value at CSWH is unmodified. I had to add code to set the CSWH to $08. The major effort is connected to the efforts made by the firmware to discover what slot the Micromodem is in. While running in $C200, the firmware performs a JSR to an RTS instruction. This gets the address of the JSR onto the stack. The firmware then recovers that address and thereby learns which slot the Micromodem is in. Obviously, this will no longer work when the code is moved out of $C200. I simply replaced this with code which simulates recovering $C2 from the stack. This permits most of the rest of the firmware to run as designed. The last change is to the code between $CB05 and $CBFF. Once again, some effort is expended to push onto the stack an address related to the slot the Micromodem is in. The RTS in location $CBE3 is to an address where the character to be output is stored in a slot sensitive location. All of this code is replaced with code unique to the fact that my Micromodem is in slot 2.

With all of these changes installed, the code was reassembled, loaded, and successfully executed. The last step was really easy. Code was added to convert three control characters ([Ctrl-V], [Ctrl-W], and [Ctrl-T]) into the vertical bar, underscore, and tilde.

The EXEC file

The EXECute file listing which follows merits some explanation. Everything after the / is comments. If you should decide to type this in, you should not enter any of the comments. The first six lines enter the monitor, set up the Micromodem interface card, and move the firmware code to $0800. This is done in three steps, leaving room between step 1 and 2, and step 2 and 3 for new code which must be inserted. The majority of the rest of the listing contains address changes necessitated by the relocation of the code. (No comments are provided for those changes.) A few of the changes are related to the fact that the code is no longer located in firmware, and that I have fixed the slot location to slot 2. Except for the line starting at $BF1, these lines are commented. (This line replaces some complicated code in the firmware which stores the character in a slot dependent location. Since I know what slot my modem is in, I have replaced this logic with a direct store.) The remainder are the changes that I wanted to make in the first place. These are in locations $843 and $A38. The new code starting in $A38 is the code that checks for [CTRL-V] ($96), [CTRL-W] ($97), and [CTRL-R] ($92) and replaces them wih the vertical bar ($FC), underscore ($DF), and tilde ($FE) respectively.

Slot Dependency

The following locations are dependent on the slot your micromodem is installed in. If your micromodem is in slot 2, no changes are necessary. If it is in any other slot, make the change indicated.

Address	Contents	Change to
$0821	$C2	$Cn where n = slot (1-7)
$0BF7-$0BF8	$C0A7	$C097 for slot 1
		$C0B7 for slot 3
		$C0C7 for slot 4
		$C0D7 for slot 5
		$C0E7 for slot 6
		$C0F7 for slot 7

The Execute File - Listing 1

```
CALL -151          /enter monitor
CFFF               /reference $CFFF to make sure that
                      all cards are off
C200L              /list $C200, turning on the MM card
                      $C800 - $CFFF
0800<C800.C89AM    /move the contents of the card, loc
                      $C800 - $C89A to $800
089F<C89B.CA33M    /move the contents of the card, loc
                      $C89B - $CA33 to $89F
0A50<CA34.CBD4M    /move the rest of the card, loc
                      $CA34 - $CBD4 to $A50
81A:B7 0A
820:A9 C2 EA       /Load Cn (n=slot number), EA is NOP
                      to replace an unused byte
```

contd.

```
82A:6D 0B
843:09              /MM control code, 7 bits/char, even
                       parity
84A:CA 0A
862:3C
867:4D
869:17 09
86E:60 0A
87A:ED
888:D6 0A
893:F1 0B
89B:A9 09 85 39    /Set up KSWL
8A7:B0 09
8AC:18 0A
8B1:51 0B
8B4:D5
8BB:B1
8BD:01 09
8C0:C9
8C4:84 0B
8D2:01 09
8D5:4F 0B
8D8:B0 09
8DD:18 0A
8E2:17 09
8E7:60 0A
8EF:51 0B
8F8:6D 0B
8FD:82 0B
904:BB 0A
909:84 0B
90C:74 0B
92E:ED
935:74 0B
95D:76 0B
965:84 0B
968:C1 0A
992:D1 0A
9A7:CA 0A
9AC:84 0B
9BF:84 0B
9C9:BB 0A
9CC:62 09
9F2:6A
A08:06 0B
A12:D1 0A
A26:84 0B
A34:06 0B
A38:C9 96 D0 05 A9 FC 4C 50 0A C9 97 D0 05 A9 DF 4C 50
                                  0A C9 92 D0 02 A9 FE
A57:BD
A5C:AF
A8E:C1 0A
A91:F1 0B
AAB:F1 0B
AB2:76 0B
AB5:D3 09
AB8:BA 0A
AD4:84 0B
AD9:84 0B
AFA:E2 0A
B0F:D6 0A
B44:E9 0A
B47:F0 0A
B88:8C 0B
B8D:9B 0B
B93:ED
BF1:AD 78 07 29 7F 8D A7 C0 60
[CTRL-C]    /This is a control C to exit the monitor
BSAVE MICROMODEM II MOD,A$800,L$3FA
```

```
:ASM
                        1   *  MICROMODEM II $0800  12/24/84
                        2   M0      =   $06F8
                        3   RI      =   $C085
                        4   CR1     =   $C086
                        5   CR2     =   $C085
                        6   KEY     =   $C000
                        7   MON     =   $FF65
                        8   ACIA    =   $0738
                        9   CHAR    =   $0778
                       10   COUT    =   $FDED
                       11   DATA    =   $C087
                       12   HOME    =   $FC58
                       13   SLOT    =   $C2
                       14   WAIT    =   $FCA8
                       15   CRDLY   =   $0538
                       16   FLAGS   =   $0688
                       17   LOCSE   =   $0638
                       18   MC0A7   =   $C0A7
                       19   MCFFF   =   $CFFF
                       20   MFF58   =   $FF58
                       21   MODEM   =   $05B8
                       22   MSLOT   =   $07F8
                       23   STATUS  =   $C086
                       24   STROBE  =   $C010
                       25           ORG  $0800
0800: 18               26   ENT0    CLC             ;From PR#n or IN#n
0801: B0 3B            27           BCS  M083B      ;Never taken
                       28   *(0802  OUTA  SEC)      ;Special entry, not used by micromodem
0803: B8               29           CLV
0804: 50 18            30           BVC  M081E      ;Always taken
                       31   *(0805  OUT CLC)        ;Normal entry for half- or full-
                       32   *                       ;duplex output
0806: B0 38            33           BCS  M0840      ;Never taken
                       34   *(0807 IIN   SEC)       ;Entry for input
0808: 2C 58 FF 35              BIT  MFF58      ;Set overflow
080B: B0 03    35      M0808   BCS  M0810      ;Taken for OUTA and IIN
080D: 8D 78 07 37              STA  CHAR       ;Only for ENT0 and OUT
0810: AD FF CF 38      M0810   LDA  MCFFF      ;Turn off all peripheral cards
0813: 8A               39              TXA             ;Save X, Y, and P
0814: 48               40              PHA             ;Now these flags are set:
0815: 98               41              TYA             ;ENT0:  C & V both clear
0816: 48               42              PHA             ;OUTA:  C set, V clear
0817: 08               43              PHP             ;OUT:   V set, C clear
0818: 78               44              SEI             ;IIN:   C & V both set
0819: 20 B7 0A 45              JSR  M1A9B      ;Set overflow
081C: EA               46              NOP
081D: BA               47              TSX
081E: 50 EB    48      M081E   BVC  M080B      ;If entered from 804, go back
0820: A9 C2    49              LDA  #SLOT      ;Load Cn (n = slot no.)
0822: EA               50              NOP
0823: AA               51              TAX             ;X reg = Cn
0824: 0A               52              ASL
0825: 0A               53              ASL
0826: 0A               54              ASL
0827: 0A               55              ASL
0828: A8               56              TAY             ;Y reg = n0
0829: 20 6D 0B 57              JSR  SAVEREGS
082C: 28               58              PLP             ;Restore C and V
082D: 70 32    59              BVS  M0861      ;Taken for OUT or IIN
082F: B0 61    60              BCS  M0892      ;Taken for OUTA only
0831: B9 86 C0 61              LDA  STATUS,Y   ;If entry was ENT0
0834: 29 08    62              AND  #$08       ;1 = APPLE has been reset
0836: F0 1C    63              BEQ  RESET      ;Branch if Apple has been reset
0838: A9 20    64              LDA  #$20
083A: 9D               65              NEI  9D         ;STA LOCSE,X
083B: 38               66      M083B   NEI  38         ;Set up for lowercase
083C: 06               67              NEI  06
083D: A9 02    68              LDA  #$02       ;KDBE
083F: 9D               69              NEI  9D         ;STA FLAGS,X
0840: 88               70      M0840   NEI  88         ;KBDE set
0841: 06               71              NEI  06
0842: A9 09    72              LDA  #$09       ;7 bits/character, even
0844: 9D 38 07 73              STA  ACIA,X     ;    parity, 1 stop bit
0847: A9 09    74              LDA  #$09       ;SET, BRS
0849: 20 CA 0A 75              JSR  M1AAE      ;Writes to MODEM & CR2
084C: A9 03    76              LDA  #$03       ;Initialize CR1
084E: 99 86 C0 77              STA  CR1,Y
0851: 9D 38 05 78              STA  CRDLY,X    ;Carriage return delay
0854: A5 36    79      RESET   LDA  $36        ;CSWL
0856: D0 3F    80              BNE  INSUPR     ;Taken if entry not from ENT0
0858: E4 37    81              CPX  $37        ;Is CSWL = $Cn?
085A: D0 3B    82              BNE  INSUPR     ;Taken if output not to modem
085C: A9 05    83              LDA  #$05
085E: 85 36    84              STA  $36        ;Set up CSWL
0860: 18               85              CLC
0861: B0 3C    86      M0861   BCS  CHECK1     ;IIN & OUT enter here; IIN branches
0863: BD B8 05 87              LDA  MODEM,X    ;OUT & ENT0 do this
0866: 10 4D    88              BPL  CTRLQ      ;Taken to 'pick up phone'
0868: 20 17 09 89              JSR  DIAL1      ;Handles dialing
086B: D0 1D    90              BNE  EXIT       ;Always taken
086D: 20 60 0A 91      OUTSUPR JSR  OUTCHAR    ;Outputs a character
0870: BD B8 06 92              LDA  FLAGS,X
0873: 2A               93              ROL             ;C set if full-duplex
0874: AD 78 07 94              LDA  CHAR
0877: B0 03    95              BCS  M087C      ;Taken if full-duplex
0879: 20 ED FD 96              JSR  COUT       ;Screen output for half-duplex
087C: C9 9A    97      M087C   CMP  #$9A       ;Ctrl-Z
087E: D0 0A    98              BNE  EXIT       ;Exit if not
0880: BD B8 06 99              LDA  FLAGS,X
0883: 29 04    100             AND  #$04       ;1 = transparency
0885: D0 03    101             BNE  EXIT       ;Exit if set
0887: 20 D6 0A 102             JSR  M1ABA      ;Print 'HUNG UP' and hang up
088A: 68               103     EXIT    PLA             ;Restore X and Y regs
088B: A8               104             TAY
088C: 68               105             PLA
088D: AA               106             TAX
088E: AD 78 07 107             LDA  CHAR       ;Load A-reg with char
0891: 60               108             RTS             ;and exit
0892: 20 F1 0B 109     M0892   JSR  SENDATA    ;Loads CHAR and sends out DATA
0895: 90 F3    110             BCC  EXIT       ;Always taken
0897: A9 07    111     INSUPR  LDA  #$07       ;Set up for input
0899: 85 38    112             STA  $38        ;KSWL
089B: A9 09    113             LDA  #$9
089D: 85 39    114             STA  $39
089F: BD B8 06 115     CHECK1  LDA  FLAGS,X    ;IIN enters here
08A2: 29 03    116             AND  #$08       ;1 = terminal pgm running
08A4: D0 18    117             BNE  TERMPGM    ;To term pgm if set
08A6: 20 B0 09 118     CHECK2  JSR  LISTEN     ;Phone ringing, carrier lost?
08A9: 30 05    119             BMI  M08AC      ;Taken if char received
08AB: 20 18 0A 120             JSR  READXBD    ;Read keyboard
08AE: 10 EF    121             BPL  CHECK1     ;If no key read
08B0: 20 51 0B 122     M08AC   JSR  NOFLASH    ;Stop char flashing and LDA CHAR
08B3: D0 D5    123             BNE  EXIT       ;Always taken
```

```
0885: AD 78 07 124  CTRLQ   LDA  CHAR       ;Answer phone, output character
0888: C9 91    125          CMP  #$91      ;Ctrl-Q
088A: D0 B1    126          BNE  OUTSUPR   ;Taken if dialing not desired
088C: 20 01 09 127          JSR  PICKUP    ;Prints 'DIALING'
088F: D0 C9    128          BNE  EXIT      ;Always taken
0891: A9 40    129  TERMPGM LDA  #$40
0893: 20 84 0B 130          JSR  PRINTMSG  ;Prints 'BEGIN TERM'
0896: BD B8 06 131  TERM1   LDA  FLAGS,X
0899: 29 48    132          AND  #$48      ;1 = dialing and term pgm running
089B: F0 2F    133          BEQ  ENDTERM   ;Taken if neither set
089D: 29 40    134          AND  #$40      ;dialing only
089F: F0 03    135          BEQ  HOBDO     ;Taken if dialing not set
08A1: 20 01 09 136          JSR  PICKUP    ;Prints 'DIALING'
08A4: 20 4F 0B 137  HOBDO   JSR  FLASH     ;Read screen and flash
08A7: 20 B0 09 138          JSR  LISTEN    ;Carrier lost? char received?
08AA: 30 12    139          BMI  TERM2     ;Taken if character received
08AC: 20 18 0A 140          JSR  READKBD   ;Read keyboard & store in CHAR
08AF: 10 E5    141          BPL  TERM1     ;Taken if keyboard not pressed
08B1: 20 17 09 142          JSR  DIAL1     ;Dials CHAR as digit if dialing
08B4: D0 E0    143          BNE  TERM1     ;Taken if dialing still in progress
08B6: 20 60 0A 144          JSR  OUTCHAR   ;Output a character
08B9: BD B8 06 145          LDA  FLAGS,X
08BC: 30 D8    146          BMI  TERM1     ;In term mode, 0 = half duplex
08BE: 20 51 0B 147  TERM2   JSR  NOFLASH   ;Stop char on screen from flashing
08C1: 20 ED FD 148          JSR  COUT      ;Output char through CSWL
08F4: 8D FF CF 149          STA  HCFFF     ;Turn off all boards
08F7: 20 6D 0B 150          JSR  SAVEREGS  ;Restore X & Y
08FA: D0 CA    151          BNE  TERM1     ;Always taken
08FC: 20 82 0B 152  ENDTERM JSR  PRNTMSGS  ;Prints 'END TERM'
08FF: D0 A5    153          BNE  CHECKX2   ;Always taken
0901: A9 46    154  PICKUP  LDA  #$46
0903: 20 BB 0A 155          JSR  UDMODEM   ;Set flags ON, SET, MODE
0906: A9 1E    156          LDA  #$1E
0908: 20 84 0B 157          JSR  PRINTMSG  ;Prints 'DIALING'
090B: 20 74 0B 158          JSR  H1B58     ;Wait for dial tone
090E: BD B8 06 159          LDA  FLAGS,X
0911: 49 41    160          EOR  #$41      ;1 = dialing in progress
0913: 9D B8 06 161          STA  FLAGS,X
0916: 60       162          RTS
0917: BD B8 06 163  DIAL1   LDA  FLAGS,X
091A: 29 01    164          AND  #$01      ;1 = dialing in progress
091C: F0 43    165          BEQ  H195D     ;Taken if dialing not in progress
091E: AD 78 07 166          LDA  CHAR
0921: C9 9A    167          CMP  #$9A      ;Ctrl-Z
0923: F0 6C    168          BEQ  HANGUP    ;Taken if ctrl-Z
0925: C9 8D    169          CMP  #$8D      ;Carriage return
0927: F0 39    170          BEQ  WAIT4CAR  ;Taken to wait for carrier
0929: C9 8A    171          CMP  #$8A      ;Line feed
092B: F0 67    172          BEQ  DLGOFF    ;Taken if line feed
092D: 20 ED FD 173          JSR  COUT      ;Prints number dialed
0930: C9 AA    174          CMP  #$AA      ;'*'
0932: D0 03    175          BNE  NOPAUSE   ;Taken if pause not desired
0934: 20 74 0B 176          JSR  H1B58     ;Wait
0937: C9 BA    177  NOPAUSE  CMP  #$BA      ;':'
0939: B0 24    178          BCS  CONTDLG   ;Taken if not a digit
093B: E9 AF    179          SBC  #$AF      ;Isolate the digit
093D: 90 20    180          BCC  CONTDLG   ;Taken if not a digit
093F: D0 02    181          BNE  H193F     ;Taken if not zero
0941: A9 0A    182          LDA  #$0A      ;Make into a 10
0943: AA       183  H193F   TAX            ;Digit to X-reg
0944: 4A       184  DIAL2   LSR            ;Zero MSB of A-reg
0945: 99 85 C0 185          STA  CR2,Y     ;Hang up phone
0948: A9 98    186          LDA  #$98
094A: 20 A8 FC 187          JSR  WAIT      ;Monitor wait $98 times
094D: A9 8C    188          LDA  #$8C
094F: 99 85 C0 189          STA  CR2,Y     ;Pick up phone
0952: A9 79    190          LDA  #$79
0954: 20 A8 FC 191          JSR  WAIT      ;Wait $79 times
0957: CA       192          DEX            ;Reduce digit count
0958: D0 EA    193          BNE  DIAL2     ;Taken if dialing not through
095A: A2 3C    194          LDX  #$3C
095C: 20 76 0B 195          JSR  H1B5A     ;Wait between digits $3c times
095F: A9 FF    196  CONTDLG  LDA  #$FF      ;Only if dialing in progress
0961: 60       197  H195D   RTS            ;Exit
0962: A9 2C    198  WAIT4CAR LDA  #$2C
0964: 20 84 0B 199          JSR  PRINTMSG  ;Prints 'AWAIT CARR'
0967: 20 C1 0A 200          JSR  UDCRS
096A: A9 1E    201          LDA  #$1E
096C: 48       202  OUTER   PHA            ;Save outer loop count
096D: A2 64    203          LDX  #$64      ;Inner loop count
096F: B9 86 C0 204  INNER   LDA  STATUS,Y
0972: 29 04    205          AND  #$04      ;1 = no carrier
0974: F0 27    206          BEQ  CARRDET   ;Taken if carrier detected
0976: B9 87 C0 207          LDA  DATA,Y    ;Clear DATA
0979: AD 00 C0 208          LDA  KEY       ;Read keyboard
097C: C9 9A    209          CMP  #$9A      ;Ctrl-Z
097E: D0 03    210          BNE  NOTZ1     ;Taken if not ctrl-Z
0980: 68       211          PLA            ;Restore outer loop count
0981: D0 0E    212          BNE  HANGUP    ;Taken by ctrl-Z
0983: A9 3C    213  NOTZ1   LDA  #$3C
0985: 20 A8 FC 214          JSR  WAIT      ;Monitor wait $3c times
0988: CA       215          DEX            ;Decrement inner loop count
0989: D0 E4    216          BNE  INNER     ;Taken if count = 0
098B: 68       217          PLA            ;Restore outer loop counter
098C: 38       218          SEC
098D: E9 01    219          SBC  #$01      ;Decrement outer loop counter
098F: D0 DB    220          BNE  OUTER     ;Taken if outer loop not finished
0991: 20 D1 0A 221  HANGUP  JSR  DISCON    ;Prints 'NO CARR' and 'HUNG UP'
0994: BD B8 06 222  DLGOFF  LDA  FLAGS,X
0997: 29 FE    223          AND  #$FE      ;Delete 'dialing' bit
0999: 9D B8 06 224          STA  FLAGS,X   ;Turn off dialing
099C: 60       225          RTS
099D: 68       226  CARRDET PLA            ;Remove outer loop counter
099E: AE F8 07 227          LDX  MSLOT     ;Cn
09A1: BD B8 05 228          LDA  MODEM,X
09A4: 09 02    229          ORA  #$02      ;Turn on TXE
09A6: 20 CA 0A 230          JSR  H1AAE
09A9: A9 26    231          LDA  #$26
09AB: 20 84 0B 232          JSR  PRINTMSG  ;Prints 'CONN'
09AE: D0 E4    233          BNE  DLGOFF    ;Always taken
09B0: BD B8 05 234  LISTEN  LDA  MODEM,X
09B3: 29 02    235          AND  #$02      ;TXE
09B5: D0 20    236          BNE  MODEMIN   ;Taken if TXE set
09B7: B9 85 C0 237          LDA  RI,Y      ;Ring Indicator
09BA: 30 5A    238          BMI  CLEARN    ;Taken if not ringing
09BC: A9 19    239          LDA  #$19
09BE: 20 84 0B 240          JSR  PRINTMSG  ;Prints 'RING'
09C1: B9 85 C0 241  H19BD   LDA  RI,Y      ;Ring Indicator
09C4: 10 FB    242          BPL  H19BD     ;Taken until phone stops ringing
09C6: A9 45    243          LDA  #$45
09C8: 20 BB 0A 244          JSR  UDMODEM   ;Set ON, SET, answer mode & TXE
09CB: 20 62 09 245          JSR  WAIT4CAR  ;Waits for carrier
09CE: BD B8 05 246          LDA  MODEM,X
09D1: 10 D0    247          BPL  LISTEN    ;Taken if phone hung up
09D3: A9 8D    248  H19CF   LDA  #$8D      ;Carriage return
09D5: D0 36    249          BNE  H1A09     ;Always taken
09D7: B9 86 C0 250  MODEMIN LDA  STATUS,Y
09DA: 4A       251          LSR            ;Move RRF to C
09DB: 29 02    252          AND  #$02      ;1 = no carrier (?)
09DD: D0 32    253          BNE  NOCARR    ;Taken if carrier lost
09DF: 90 35    254          BCC  CLEARN    ;Taken if char not arrived
09E1: B9 87 C0 255          LDA  DATA,Y    ;Data in
09E4: 09 80    256          ORA  #$80      ;Set MSB
09E6: 48       257          PHA            ;Push char onto stack
09E7: BD B8 06 258          LDA  FLAGS,X
09EA: 29 04    259          AND  #$04      ;1 = transparancy
09EC: D0 1E    260          BNE  STORE     ;Taken if TRANS set
09EE: 68       261          PLA            ;Remove char from stack
09EF: C9 99    262          CMP  #$99      ;Ctrl-Y
09F1: F0 6A    263          BEQ  H1A41     ;Taken for ctrl-Y
09F3: C9 8A    264          CMP  #$8A      ;Line feed
09F5: F0 1F    265          BEQ  CLEARN    ;Taken if char is line feed
09F7: C9 FF    266          CMP  #$FF      ;Rubout
09F9: F0 18    267          BEQ  CLEARN    ;Taken if rubout
09FB: C9 E0    268          CMP  #$E0      ;Check for lower case
09FD: 90 03    269          BCC  UPCASE    ;Taken if not lower case
09FF: 5D 38 06 270          EOR  LOCSE,X   ;Convert to upper case
0A02: 48       271  UPCASE  PHA            ;Push converted char onto stack
0A03: 29 7F    272          AND  #$7F      ;Mask off MSB
0A05: F0 0E    273          BEQ  H1A11     ;Taken for null char
0A07: 20 06 0B 274          JSR  CTRLCK    ;Check for control chars
0A0A: 90 09    275          BCC  H1A11     ;Taken if ctrl char found
0A0C: 68       276  STORE   PLA            ;Pull converted char from stack
0A0D: 8D 78 07 277  H1A09   STA  CHAR      ;Return with MSB and N set
0A10: 60       278          RTS
0A11: 20 D1 0A 279  NOCARR  JSR  DISCON    ;Prints 'NO CARR' and 'HUNG UP'
0A14: 48       280          PHA            ;Needed because next line is entry
0A15: 68       281  H1A11   PLA            ;Entry from above
0A16: 4A       282  CLEARN  LSR            ;Clear MSB and N
0A17: 60       283  H1A13   RTS            ;No interesting char received
0A18: C6 4F    284  READKBD DEC  $4F       ;Random number counter
0A1A: AD 00 C0 285          LDA  KEY       ;Read keyboard
0A1D: 10 F8    286          BPL  H1A13     ;Exit if no key pressed
0A1F: C9 81    287          CMP  #$81      ;Ctrl- A
0A21: D0 15    288          BNE  NOTA      ;Taken if not ctrl-A
0A23: A9 54    289          LDA  #$54
0A25: 20 84 0B 290          JSR  PRINTMSG  ;Prints 'MICROMODEM II: ?'
0A28: 8D 10 C0 291          STA  STROBE    ;Reset strobe
0A2B: AD 00 C0 292  H1A27   LDA  KEY       ;Read keyboard again
0A2E: 10 FB    293          BPL  H1A27     ;Wait for keystrike
0A30: 8D 10 C0 294          STA  STROBE    ;Turn off strobe
0A33: 20 06 0B 295          JSR  CTRLCK    ;Check for control chars
0A36: 90 0E    296          BCC  CLEARN    ;Taken if no ctrl chars found
0A38: C9 96    297  NOTA    CMP  #$96      ;Control V
0A3A: D0 05    298          BNE  NOTV      ;Taken if not ctrl-V
0A3C: A9 FC    299          LDA  #$FC      ;Vertical bar
0A3E: 4C 50 0A 300          JMP  CONT      ;Continue with program
0A41: C9 97    301  NOTV    CMP  #$97      ;Control W
0A43: D0 05    302          BNE  NOTW      ;Taken if not ctrl-W
0A45: A9 DF    303          LDA  #$DF      ;Underscore
0A47: 4C 50 0A 304          JMP  CONT      ;Continue with program
0A4A: C9 92    305  NOTW    CMP  #$92      ;Control R
0A4C: D0 02    306          BNE  CONT      ;Taken if not ctrl-R
0A4E: A9 FE    307          LDA  #$FE      ;'Not'
0A50: 48       308  CONT    PHA            ;Push char onto stack
0A51: BD B8 06 309          LDA  FLAGS,X
0A54: 29 02    310          AND  #$02      ;1 = keyboard enabled
0A56: F0 BD    311          BEQ  H1A11     ;Taken if keyboard disabled
0A58: 8D 10 C0 312          STA  STROBE    ;Turn off strobe
0A5B: D0 AF    313          BNE  STORE     ;Always taken
0A5D: 4C 65 FF 314  H1A41   JMP  MON       ;To system monitor
0A60: BD B8 05 315  OUTCHAR LDA  MODEM,X
0A63: 29 02    316          AND  #$02      ;TXE
0A65: F0 53    317          BEQ  H1A9E     ;Taken if xmtr not enabled
0A67: BD B8 06 318          LDA  FLAGS,X
0A6A: 29 0C    319          AND  #$0C      ;1 = terminal mode & transparancy
0A6C: D0 18    320          BNE  RDY2TR    ;Taken if TERM or TRAN set
0A6E: B9 86 C0 321          LDA  STATUS,Y  ;Ready to receive?
0A71: 4A       322          LSR            ;Move RRF to C
0A72: 90 12    323          BCC  RDY2TR    ;carry clear = receive reg not full
0A74: B9 87 C0 324          LDA  DATA,Y    ;Data in
0A77: 0A       325          ASL            ;Move MSB to C
0A78: C9 32    326          CMP  #$32      ;Ctrl-Y
0A7A: F0 E1    327          BEQ  H1A41     ;Taken if ctrl-Y
0A7C: C9 26    328          CMP  #$26      ;Ctrl-S (break)
0A7E: D0 06    329          BNE  RDY2TR    ;Taken if not ctrl-S
0A80: B9 86 C0 330  H1A64   LDA  STATUS,Y
0A83: 4A       331          LSR            ;Move RRF to C
0A84: 90 FA    332          BCC  H1A64     ;Taken until RRF is set
0A86: B9 86 C0 333  RDY2TR  LDA  STATUS,Y  ;Ready to transmit?
0A89: 29 02    334          AND  #$02      ;1 = transmit register empty
0A8B: F0 D3    335          BEQ  OUTCHAR   ;Taken if TRE clear
0A8D: 20 C1 0A 336          JSR  UDCRS     ;Updates control registers
0A90: 20 F1 0B 337          JSR  SENDATA   ;Writes char to DATA
0A93: C9 0D    338          CMP  #$0D      ;Carriage return
0A95: D0 23    339          BNE  H1A9E     ;Taken if not cr
0A97: BD B8 06 340          LDA  FLAGS,X
0A9A: 29 10    341          AND  #$10      ;1 = insert line feeds
0A9C: F0 1C    342          BEQ  H1A9E     ;Taken if no need for lf
0A9E: B9 86 C0 343  H1A82   LDA  STATUS,Y
0AA1: 29 02    344          AND  #$02      ;TRE
0AA3: F0 F9    345          BEQ  H1A82     ;Taken until cr sent
0AA5: A9 8A    346          LDA  #$8A      ;Line feed
0AA7: 8D 78 07 347          STA  CHAR
0AAA: 20 F1 0B 348          JSR  SENDATA   ;Writes if using DATA
0AAD: BD 38 05 349          LDA  CRDLY,X   ;CR delay counter
0AB0: AA       350          TAX            ;Set up X for delay
0AB1: 20 76 0B 351          JSR  H1B5A     ;Waits
0AB4: 4C D3 09 352          JMP  H19CF     ;Sets CHAR = cr, then RTS
0AB7: 2C BA 0A 353  H1A9B   BIT  H1A9E     ;Set V if bit 6 of A-reg set
0ABA: 60       354  H1A9E   RTS
0ABB: 7E B8 05 355  UDMODEM ROR  MODEM,X   ;Move BRS to C
0ABE: 2A       356          ROL            ;Move BRS to bit 1 of A-reg
0ABF: D0 09    357          BNE  H1AAE     ;Always taken
0AC1: BD 38 07 358  UDCRS   LDA  ACIA,X    ;Update control registers
0AC4: 99 86 C0 359          STA  CR1,Y
0AC7: BD B8 05 360          LDA  MODEM,X   ;Needed because next line is entry
0ACA: 9D B8 05 361  H1AAE   STA  MODEM,X
0ACD: 99 85 C0 362          STA  CR2,Y
0AD0: 60       363          RTS            ;Exit
0AD1: A9 10    364  DISCON  LDA  #$10
0AD3: 20 84 0B 365          JSR  PRINTMSG  ;Prints 'NO CARR'
0AD6: A9 38    366  H1ABA   LDA  #$38
0AD8: 20 84 0B 367          JSR  PRINTMSG  ;Prints 'HUNG UP'
0ADB: BD B8 05 368          LDA  MODEM,X
0ADE: 29 09    369          AND  #$09      ;SET and 300 baud stay the same
```

```
0AE0: D0 E8     370           BNE  H1AAE      ;Always taken
0AE2: 86        371  H1AC6    HEX  86         ;CTRL-F
0AE3: 88        372           HEX  88         ;Ctrl-H
0AE4: 98        373           HEX  98         ;Ctrl-X
0AE5: 91        374           HEX  91         ;Ctrl-Q
0AE6: 12        375           HEX  12         ;Ctrl-R
0AE7: 14        376           HEX  14         ;Ctrl-T
0AE8: 0E        377           HEX  0E         ;Ctrl-N
0AE9: 8A        378  H1ACD    HEX  8A
0AEA: 0A        379           HEX  0A
0AEB: 00        380           HEX  00
0AEC: 40        381           HEX  40
0AED: 00        382           HEX  00
0AEE: 0A        383           HEX  0A
0AEF: 90        384           HEX  90
0AF0: BF        385  H1AD4    HEX  BF
0AF1: 3F        386           HEX  3F
0AF2: F7        387           HEX  F7
0AF3: FF        388           HEX  FF
0AF4: 77        389           HEX  77
0AF5: FF        390           HEX  FF
0AF6: FF        391           HEX  FF
0AF7: A0 06     392  H1ADB    LDY  #$06
0AF9: D9 E2 0A  393  H1ADD    CMP  H1AC6,Y    ;Match with ctrl char
0AFC: F0 39     394           BEQ  H1B1B      ;Taken if match found
0AFE: 88        395           DEY             ;Decrement index
0AFF: 10 F8     396           BPL  H1ADD      ;Taken if not at end of list
0B01: 38        397           SEC             ;No ctrl char found
0B02: AC F8 06  398  H1AE6    LDY  N0         ;Restore normal Y-reg value
0B05: 60        399           RTS             ;Exit
0B06: C9 93     400  CTRLCK   CMP  #$93       ;Ctrl-S
0B08: F0 26     401           BEQ  BREAK      ;Taken if ctrl-S found
0B0A: C9 9A     402           CMP  #$9A       ;Ctrl-Z
0B0C: D0 05     403           BNE  NOTZ2      ;Taken if not ctrl-Z
0B0E: 20 D6 0A  404           JSR  H1ABA      ;Prints 'HUNG UP'
0B11: 10 22     405           BPL  H1B19      ;Always taken
0B13: C9 B1     406  NOTZ2    CMP  #$B1       ;'1'
0B15: D0 10     407           BNE  NOT110     ;Taken for 300 baud
0B17: 18        408           CLC             ;Clear for 110 baud
0B18: A9 11     409           LDA  #$11       ;For 110
0B1A: 9D 38 07  410  STORFSW  STA  ACIA,X     ;Store in Flag Status Word
0B1D: 08        411           PHP
0B1E: 7E        412           HEX  7E         ;ROR MODEM,X
0B1F: B8        413           HEX  B8
0B20: 05        414           HEX  05
0B21: 28        415           PLP
0B22: 3E B8 05  416           ROL  MODEM,X    ;Move C into BRS
0B25: D0 0E     417           BNE  H1B19      ;Always taken
0B27: C9 B3     418  NOT110   CMP  #$B3       ;'3'
0B29: 38        419           SEC             ;Set C for 300 baud
0B2A: D0 CB     420           BNE  H1ADB      ;Taken if not '3', look for more
0B2C: A9 15     421           LDA  #$15       ;For 300 baud
0B2E: D0 EA     422           BNE  STORFSW    ;Always taken
0B30: A9 61     423  BREAK    LDA  #$61       ;Set the 'break' signal
0B32: 99 86 C0  424           STA  CR1,Y      ;Transmit the break
0B35: 18        425  H1B19    CLC             ;Show that ctrl char found
0B36: 60        426           RTS             ;Exit
0B37: C9 0E     427  H1B1B    CMP  #$0E       ;Ctrl-N
0B39: D0 05     428           BNE  H1B24      ;Taken if not ctrl-N
0B3B: 20 58 FC  429           JSR  HOME       ;Clear text screen
0B3E: A0 06     430           LDY  #$06       ;Restore Y-index
0B40: BD B8 06  431  H1B24    LDA  FLAGS,X
0B43: 19 E9 0A  432           ORA  H1ACD,Y
0B46: 39 F0 0A  433           AND  H1AD4,Y
0B49: 9D B8 06  434           STA  FLAGS,X    ;Set and clear registers
0B4C: 18        435           CLC             ;To show ctrl char found
0B4D: 90 B3     436           BCC  H1AE6      ;Restore Y-reg and return
0B4F: 38        437  FLASH     SEC             ;Entry to make cursor flash
0B50: 90        438           HEX  90         ;BCC - never taken
0B51: 18        439  NOFLASH   HEX  18         ;Entry to stop cursor flash
0B52: A4 24     440           LDY  $24        ;CH
0B54: B1 28     441           LDA  ($28),Y    ;Load char at cursor
0B56: B0 08     442           BCS  H1B44      ;Taken if entry from FLASH
0B58: 69 20     443           ADC  #$20       ;Makes char non-flashing
0B5A: 49 20     444           EOR  #$20
0B5C: 09 80     445           ORA  #$80
0B5E: D0 04     446           BNE  H1B48      ;Always taken
0B60: 29 3F     447  H1B44    AND  #$3F       ;Makes char flash
0B62: 09 40     448           ORA  #$40
0B64: 91 28     449  H1B48    STA  ($28),Y    ;Restore char to screen
0B66: AD 78 07  450           LDA  CHAR       ;Restore A-reg
0B69: AC F8 06  451           LDY  N0         ;Restore Y-reg
0B6C: 60        452           RTS             ;Exit
0B6D: 8C F8 06  453  SAVEREGS STY  N0         ;n0
0B70: 8E F8 07  454           STX  MSLOT      ;Cn
0B73: 60        455           RTS             ;Exit
0B74: A2 C8     456  H1B58    LDX  #$C8       ;Number of times to wait
0B76: A9 3C     457  H1B5A    LDA  #$3C       ;Duration of wait
0B78: 20 A8 FC  458           JSR  WAIT       ;Monitor's WAIT routine
0B7B: CA        459           DEX
0B7C: D0 F8     460           BNE  H1B5A      ;Taken if not through waiting
0B7E: AE F8 07  461  H1B62    LDX  MSLOT      ;Restore X-reg
0B81: 60        462           RTS             ;Exit
0B82: A9 4B     463  PRNTMSGS LDA  #$4B       ;Print 'END TERM'
0B84: 48        464  PRINTMSG PHA             ;Main entry
0B85: A2 00     465           LDX  #$00       ;Print 'MICROMODEM II:'
0B87: 20 BC 0B  466           JSR  H1B70
0B8A: 68        467           PLA
0B8B: AA        468           TAX
0B8C: BD 9B 0B  469  H1B70    LDA  H187F,X    ;Print char at H187F+X
0B8F: 08        470           PHP
0B90: 09 80     471           ORA  #$80       ;Set MSB
0B92: 20 ED FD  472           JSR  COUT       ;Output to screen only
0B95: 28        473           PLP
0B96: 30 E6     474           BMI  H1B62      ;Taken on last char of msg
0B98: E8        475           INX
0B99: D0 F1     476           BNE  H1B70      ;Always taken to continue print
0B9B: 20        477  H187F    ASC  ' '
0B9C: 00        478           INV  'M'
0B9D: 4D 49 43
0BA0: 52 4F 4D
0BA3: 4F 44 45
0BA6: 4D 20 49
0BA9: 49 BA     479           DCI  'MICROMODEM II:'
0BAB: 4E 4F 20
0BAE: 43 41 52
0BB1: 52 2E     480           ASC  'NO CARR.'
0BB3: 8D        481           HEX  8D
0BB4: 52 49 4E
0BB7: 47        482           ASC  'RING'
0BB8: 8D        483           HEX  8D
0BB9: 44 49 41
0BBC: 4C 49 4E
0BBF: 47 BA     484           DCI  'DIALING:'
0BC1: 43 4F 4E
0BC4: 4E 2E     485           ASC  'CONN.'
0BC6: 8D        486           HEX  8D
0BC7: 41 57 41
0BCA: 49 54 20
0BCD: 43 41 52
0BD0: 52 2E     487           ASC  'AWAIT CARR.'
0BD2: 8D        488           HEX  8D
0BD3: 48 55 4E
0BD6: 47 20 55
0BD9: 50        489           ASC  'HUNG UP'
0BDA: 8D        490           HEX  8D
0BDB: 42 45 47
0BDE: 49 4E 20
0BE1: 54 45 52
0BE4: 4D        491           ASC  'BEGIN TERM'
0BE5: 8D        492           HEX  8D
0BE6: 45 4E 44
0BE9: 20 54 45
0BEC: 52 4D     493           ASC  'END TERM'
0BEE: 8D        494           HEX  8D
0BEF: 3F        495           HEX  3F
0BF0: 8D        496           HEX  8D
0BF1: AD 78 07  497  SENDATA  LDA  CHAR
0BF4: 29 7F     498           AND  #$7F
0BF6: 8D A7 C0  499           STA  MCOA7
0BF9: 60        500           RTS

                              ERRORS: 0

--END ASSEMBLY--              1018 BYTES
```

AE ProDOS: A Review by Barry Fox

This review will cover the new PRODOS version of Ascii Express Professional. It is available as an upgrade for $50.00 + $3.50 P&H from United Software Industries to registered users of AEPRO. It should be available soon on the market, so check your local store.

Now for the good part: The upgrade comes as an uncopy-protected double sided disk. Side one contains the main AE program and side two contains utilities. An addendum to the users manual is included which outlines the differences between the DOS 3.3 version (latest was V4.2) and the PRODOS version (version 4.30P). The program uses the same commands as the older versions with the following major differences: The "I" command allows you to select the new prefix for AE to use for file saving, etc; it does not address anything by slot, drive numbers anymore. The other change is that in unattended mode you can specify access down to a specific prefix to prevent access even to other subdirectories on a selected drive.

And now for the answer to the big question: Yes you can convert your macro files to AEPRO PRODOS macro files. By converting the program CONVERT.MAC.3.3 to DOS3.3 it will convert your "S" macro files to binary files with a suffix of ".P". A word of caution: the total macro filename with the .P suffix must be less than 15 characters or you will need to rename it when converted to PRODOS. When prompted by CONVERT.MAC.3.3 for Macro name, type the name including the .MAC suffix. Then type in a new (or the old) filename for the "binary" filename(remember the .MAC suffix and to leave room for the .P suffix that will be added). Continue for all your macro files. Next convert the .P binary macros using the "CONVERT" program on side two of the AEPRO disk (yes, it is the standard PRODOS<>DOS 3.3 program).

Next place the converted macros on your BACKUP AEPRO disk (remember it is not copy protected). You then run the program BIN.TO.MAC on side two of the AE disk which will allow you to convert your macro.MAC.P files to macro.MAC files of type $F4.

In use the program is just like the AEPRO we all know and love! One big word of caution: If you have used special set-ups write them down since you will have to go through the configuration setup just like when you first ran AE. If you have any other questions leave me a message on the WAP BBS [WP5531].

APPLE /// SIGNEWS

by Charlene Ryan

Thank you, Apple /// fans, for your outspoken support and encouragement to continue this column. I will try my best. You know more than I that something like this should have been started a long time ago. Better late then never, eh?

The first and most important item this month is a change of meeting place. One of our newest SIG members, Al Lambert, has offered the use of a meeting room in a downtown DC hotel. It's at the Convention Center Inn, 12th and K Street, on February 14, the second Thursday of the month. We feel this location is more centralized for our club members and is worth a try. Universal Computer is becoming less and less receptive of us using their premises for our meetings, and the meeting room accommodates no more than a handful of people. I like to look at it as though we have grown too large for the location.... The Walter Reed location will still be our backup should this new meeting place not work out.

The January meeting was truly successful with the talents of Bruce Hodge. Bruce used to work for Apple on the "///" team designing graphics, when he got caught up with the reduction of the "///" force and was transferred to the //e department. His software package, "Third Wave Graphics" was a product he was working on while with Apple and he bought it to finish it on his own. Third Wave Graphics is actually two separate packages: Third Wave Graphics Toolkit, and the Raster Graphics Toolkit. They are a collection of Pascal procedures that give you the ability to display sophisticated graphic imagery on the Apple ///. Raster Graphics Toolkit includes 3D modeling Toolkit for manipulating images comprised of line segments in three dimensional spaces. If you are interested in Pascal programming, this is for you. This is the only software package on the market that takes advantage of the Interlace Mode of the /// Plus. It gives the programmer nibble maps of 560 X 384 pixels which are almost as powerful as the Macintosh, and it can use up to 16 different colors as well. The tools are device independent - that is, they will draw on anything hooked up to the screen (plotter or printer). Those at the meeting who saw his demonstration were highly impressed. The whole package lists for $300, but Bruce is offering it to Apple /// SIG members for $200 ($150 each item if you are only interested in one). Just send a check to: THIRD WAVE GRAPHICS, 501 Channing Avenue, Palo Alto, CA 94301.

Attempts will be made to establish continuous contact with other Apple /// groups so we can share publications and software. We learned that Apple /// and Pascal are very popular in Europe.

There is an extensive interview of Steve Jobs in this month's Playboy. He mentions that Apple ///'s are still being sold at the rate of 2,000 per month. Not bad for a dead machine.

Our first tutorial is scheduled for February 11. That's a Monday, and it will be held at the Apple Pi Office in Bethesda. Anyone interested on learning all about SOS (Sophisticated Operating System), please call me at 836-0463 (home) or 697-2219 (office). The fee is $5.00 and space is limited.

For those of us who have Compuserve, there is a very active Apple /// group out there who raps on the wire and whose members are willing to share information. Much software and hardware is offered for sale through this source at excellent prices.

The Apple Pi office received a letter from the Canadian Apple /// Users Group requesting contributions to a publication entitled, "Hints & Kinks - A Collection of Apple /// Information from User Groups Across the Continent." The letter was dated 14 December 1984, and they wanted the material to include with the January newsletter. I don't know how they did it, the deadline for our January publication was November 30! Those who are interested in getting a copy of this publication can inquire to the following address: Murray D. Lampert, President, Canadian Apple /// Users Group, 80 Antibes Drive, Suite 2805 North York, Ontario, Canada M2R 3N5. Telephone: (416) 665-3522.

This group will attempt to make this a regular effort quarterly, or annually, depending on the response for this first publication. No prices were quoted but the fee will be "nominal."

The Washington Apple /// Group received a newsletter from a /// Group in Carmichael, California (their first attempt at a newsletter). There is a new version of Business Basic (1.23) that allows you to enter a program larger than 64K. A newer version exists (1.3) but it's full of bugs. The /// Group in Carmichael is offering a free copy of the 1.23 update by sending them your original Business Basic Diskette, a blank diskette, and $2.50 for postage and handling. You can also subscribe to their newsletter for $30.00 a year, both to the following address: The /// Newsletter, Attn: Circulation, 3201 Murchison Way, Carmichael, CA 95608. (The Business Basic offer is for a limited time.)

We have several interested parties for a group purchase of a new 512K board for our computer. Any more nibbles (or bytes?) This will bring the price down to $869.00.

We have planned an executive meeting (at my place on January 10) that will take place before this article "reaches the newsstands". If anyone is interested in taking part in the planning of events, or wishes to contribute or suggest, you may attend the meetings, or call Bill (703) 941-5050 or Jerry (703) 790-1651. Your comments will be appreciated by all of us.

The Denver Apple /// User Group requested a mailing list of our members. They will be distributing a compiled version to each individual on the list so that software and hardware developers can use it to encourage dissemination of information about new and existing products. We are sending our list with recent adjustments resulting from the telethon we made for the January meeting. If for some reason you are not on the current mailing list, please let me know so I can correct our records. We would like all of us to be able to take advantage of opportunities such as what the Denver people are offering.

"MONITOR" is the ROM machine language resident in our Apple ///. You access it by simultaneously pressing control, open-apple, and reset. A free list of Monitor instructions and commands will be sent to you if you write to the following address : System Executive Offices, 260 N. Jackson Street, Mobile, AL 36603.

contd. on pg 25

THE APPLE //c BOOK: A Review
by George Sall

THE APPLE //c BOOK by Bill O'Brien, Bantam Books
Price: $12.95 (List)

Billed as "your complete guide to mastering Apple's newest computer", this 274-page soft-back book was published in July 1984, not too long after the //c was brought to market. While not fully satisfying my definition of what a complete guide should be, it is a worthy complement to the Apple //c Owners Manual.

The author is described as a widely published writer and a recognized expert on Apple computers, having had practical experience with every type of Apple ever made. As a result, one of the guide's strong points is a lucid description of the evolution of the Apple //c as well as its similarities to, and differences from, other Apple models. It is the best chronicle on the subject that I have come across. O'Brien, however, is so enthusiastic about the //c that his objectivity may be open to question. One could be excused for believing he was a member of Apple's advertising department when he wrote the guide. That enthusiasism, though, is infectious and makes the purchaser of a //c more convinced than ever that he made a good choice.

As inferred by the July publication date, the guide was written early in 1984, apparently before the contents of the //c Systems Utility Disk were widely known. At least, the author "initializes" disks with the traditional "Init Hello" command rather than with the "Format a Disk" program on the systems utility disk. This confused me at first.

Two other irritants come to mind:

- o While the guide provides a comprehensive comparison of DOS 3.2 and DOS 3.3, it does little to enlighten the reader about ProDOS, its advantages and/or disadvantages, except to imply that it's faster and follows more complex search commands. But, then, neither does the Apple //c Owners Manual.

- o In the same way, there is little attempt to explain what happens when one chooses the "Pascal" option when the Utilities Disk asks what formatting option is desired? I do not yet understand if, or when I need, to use a "Pascal" format.

The guide is designed to spur the user into "hands-on" experience as quickly as possible. The reader is told to type in routines, issue the proper command and then observe what happens. This is what one should do if he is to get the greatest benefit from the guide. Unfortunately for me, my mind doesn't work that way. I prefer to study an application in depth before I undertake it. I want to know what is going to happen before it happens, so the "try it and see" approach is not my cup of tea. This, of course, will be no drawback to the willing experimenter.

As a "stand alone" document, the Apple //c Book is not as good as the Apple //c Owners Manual. Its great contribution is as a supplement to the Owners Manual. My copy is well thumbed and annotatated as a result of checking and rechecking on obscure (to me) points in the Owners Manual.

So far I have paid greatest attention to the sections of the guide that have to do with the Apple //c itself, the disk operating systems, and printing. I am not yet deeply into programming, or at all into graphics, games or modems, and have tended to ignore sections of the guide devoted to these areas. I have no reason to believe, however, that my reaction to those portions of the guide I have studied will be any different from those I will have when I have "gone all the way".

Because I have not read other "guides" I don't know how this one stacks up. I am fully satisfied, however, that the Apple//c Book is well-worth the price. I know it was for me!

Apple /// SIG News contd. from pg 24

The following address is provided to obtain a list of programs available for the ///. Most of them are tools and utilities: A DataSystems,Dept B., 229 Ravenwood Ave., Rochester, NY 14619.

We are assembling an Apple /// Hot Line List that we will submit to the Editor of the Apple Pi Journal. If you would like to be included, call Bill or Jerry (phone nos. above) and we will be sure to include you. Also, if you need an updated club member roster, or if the information about yourself on the roster needs to be updated, let us know. We'll provide. Until next month....

WHY I BOUGHT AN APPLE //C

by George Sall

(This is the second of an intermittent series of letters by a neophyte to the world of personal computers. In my first letter (see The October, 1984 WAP Journal) I gave some advice to my 83-year old father-in-law, Roy, who was interested in getting a computer but didn't know how to go about it. While Roy hasn't yet committed himself, I took the plunge! This letter tells why I did what I did, how I did it, and where I did it.)

Dear Roy,

When I last wrote, I told you what little I knew about the evaluation and selection of a home computer system and wound up by saying that I then knew what I wanted from Santa. Well, I couldn't wait and ended up getting a computer system well before Christmas!

The purpose of this letter is to tell why I did what I did, and how I went about it, in the hope that my experience will be helpful to you in making up your mind about getting one. My decision-making and selection procedure turned into a three-step process to answer three critical questions!

Why Did I Want A Personal Computer?

To answer this question I must have read at least three shelves full of computer oriented books from our local library over a two-month period. Most of them didn't help much except that I began to absorb the jargon. Some of the books were downright worthless. Finally, though, I came across one that solved my problem. I can't remember the title or the author, but I do remember one chapter well. It was entitled "Five Reasons You Don't Need A Home Computer, and Two Reasons You Might". While the two "might" reasons didn't fit - have a small business or want it for the educational benefits of your children - the five "don't" reasons certainly did. All of a sudden the truth was revealed, "There was no way I could justify buying a computer!" The message was clear; if I bought one I was only going to be indulging myself.

With that mental hurdle out of the way, I settled on indulgence and entered into the second step of the process.

Which Brand?

At first blush this looked like an impossible task. There were so many machines out there, with such a range of prices! Some were "compatible"; others were not (for the longest time I wondered, compatible with what?). I eventually made some order out of this confusion by creating three classes by price: low, high and in between. Then, looking back at my experience as a consumer, I concluded that I wanted something in the moderate range. I had never been satisfied buying the least expensive model of anything, and the most expensive has had whistles and bells I didn't really need. Another milestone passed!

Armed with the specification sheet I wrote you about in my last letter, I visited around to "test the market." This was quite an experience but not as rewarding as I had hoped it would be. I couldn't find the lowest common denominator upon which to base a meaningfull comparison. Nevertheless, the effort was worth it because I was forced to delve more thoroughly into what it was I really wanted to do.

I also sought the counsel of others. Fortunately, early on I talked to a long-time friend and one-time co-worker, Ed Myerson, who touted me on the tremendous help one could get from a users group. He went on to describe how valuable Washington Apple Pi had been to him. That was really all I needed; it was going to be an Apple!

I began to shop the ads, but soon realized I didn't know enough about the subject to make reliable comparisons. Falling back again on experience, I concluded that it would be wiser for me to purchase from a computer store that had its own repair service than to go the discount route. I also concluded that it would be wise to purchase all system components (i.e., computer, monitor, disk drive and printer) from the same dealer so as to preclude the possibility of a run-around in the event one part of the system broke down. The path was becoming clearer!

Which Dealer?

This was easy! I looked first to a convienient Apple franchised store (it was on my route home from work). I never got further. The decision to buy there was dictated by the candor of the salesman I was assigned. He admitted, "There is a lot I don't know about computers, but I will do my best to get answers to the questions I can't handle."

In the end he sold me a system which included:

- An Apple //c (I liked the looks, the idea of a built-in disk drive, the 128K of memory, and wasn't at all concerned that the case couldn't be opened to allow messing around with the insides);
- A 13-inch green screen monitor (I couldn't read the 9-inch //c monitor at all well); and
- An Epson RX-80 F/T printer.

In Retrospect.

I am convinced I made the right major decisions. If I were to do it again I would give greater consideration to the flexibility of the Apple //e, but am not convinced that would have changed my final decision. I don't really need the added flexibility.

I should have bought a second disk drive while the spirit of adventure prevailed. It would be a great convienience. Now, though, I'm back in a "justification mode" and am unable to come up with an adequate cost/benefit ratio.

I seriously overestimated my ability to master the use of a computer. It is like learning a foreign language; a lot of hard work is involved. For someone of my generation it just doesn't come easy!.

The Bottom Line.

I'm happy that I bought what I did, when I did. Although victories in overcoming operating problems come slowly, when they do come they are truly sweet!

The WAP Hotline has been a treasure trove of information and advice every time I have run into trouble. That alone justifies my decision.

Sincerely,

George

P.S. Will keep you advised.

LISA SIG NEWS
by John F. Day

---SPECIAL MEETING NOTICE---

The February meeting of LISA SIG will be held at 12 noon in the WAP office on Saturday February 9th. The meeting highlight will be a hands on demonstration of the Priam DataTower, a 75 MegaByte disk mass storage system that includes internal streaming tape backup. Mark Taber of the Priam Corporation will be here to answer your questions about the DataTower. This should be a most interesting and important presentation, so let's all turn out to see it.

There are two books that cover the LISA on the bookstore shelves these day. The first, Introduction to the LISA by Arthur Naiman is terrible. Not only is it about the LISA 1, making it totally out of date, it is also poorly written, organized, and contains little information that the LISA documentation didn't provide. Save your money for the next book.

The Complete Book of LISA by Kurt J. Schmucker is an excellent book. It covers all aspects of the LISA 2 and LISA 7/7 software and contains numerous tips and hints on their use. It contains several 7/7 applications scenarios and also covers alternate operating systems such as MacWorks and the LISA Workshop. Get this book. Get it today. Get it for $17.95 from Harper & Row, or your local bookstore. I hope to get the author, who lives in Crofton, to come and speak to the SIG meeting in March and tell us about his second LISA book that will be released in several months. Kurt is very knowledgeable on the LISA Workshop 3.0, and should shed some light on this area of LISA.

By the time you read this article, the free LISA hotline service will no longer be free. The InterSol, Inc. of Braintree, MA has taken over support of the Hotline. The 1-800-553-4000 number is still the same; however solutions to your questions will now cost $10.00 each. A discount package of 10 solutions for $89.00 is also available. WAP members who mention this article will get a further discount, getting 10 solutions for $75.00 through March 15th 1985 and will also get a free Flip 'n File as a bonus. InterSol accepts the usual plastic money for payment. I called them the other day and got super service. Check it out!

During my Christmas vacation I took the opportunity to re-read the LISA 7/7 Office System manual. The ease of use of the LISA 7/7 system steers one away from reading the documentation thoroughly. During my re-reading I noted several interesting things that I missed during my initial reading that I would like to pass along.

There are several ways to select more than one icon at a time. The first way is to draw a selection box around several closely grouped icons by first placing the pointer above and to the left of the first icon and then pressing and dragging it diagonally across the other icons. A selection box will appear and all icons within the box when you release the mouse button will be selected. This technique works well for closely grouped icons. An alternative method is to do shift-clicks by first selecting one icon and then moving to another icon to be selected. Next, hold down the shift key on the keyboard and click the mouse button once. This process can be repeated as many times as is needed to choose all the desired icons. Icons can also be deselected in the same manner that the shift-clicks work by holding down the shift key and clicking on a selected icon. That icon will then be deselected.

The maximum number of items that the Desk menu lists at once is 22 items. If you have more than 22 items on the desktop, the LISA lists windows before adding icons to the Desk menu. This maximum number corresponds to the maximum number of open windows that you can have at once. (Mac owners eat your heart out!). It is suggested that the user place stationery pads on the desktop, since choosing a stationery pad from the Desk menu tears off a new document and opens it into a window in one swoop.

The Attributes of "Icon Name" selection under the File/Print menu will not only give you information on the time and date a document was created or last modified and the number of sectors it occupies, but will also allow you to password protect the document or folder. Check the way you entered the password carefully before clicking to enter since if there is a mistake or if you don't remember the password exactly, you'll be up that certain four letter creek we all know.

It is possible to back up a document that is too large to fit on one micro diskette. The LISA tells you when the first diskette is full and prompts you to insert another diskette. The trick is that you'll need to reconstruct it on your hard disk because LISA won't let you use the document until you reconstruct the ENTIRE document.

The option keys on the keyboard allow you to use the special symbols and international characters contained in the LISA. If you have the reference cards installed under your keyboard, the first card contains a guide to key functions. Several of the keys are delayed keys that work in conjunction with the next key you type to give you foreign language accents, umlauts, and tildes. One special feature is a non-breaking space that looks like a space on the screen, but for word-wrapping purposes is considered to be a letter. See page 111 and 114 of the 7/7 LisaWrite manual for the complete details of the option keys.

Those of you who have an Apple DMP or Imagewriter can print the screen by pressing the right-hand option and shift keys and then typing a 4 on the numeric keypad. To print the screen to a diskette, hold down the option and shift keys while typing a 7 on the numeric keypad. To dim the screen hold down the option and shift keys while typing a 0 (zero) on the numeric keypad.

SIG members are encouraged to make presentations and write articles for the journal. Everyone should have received the LISA SIG questionaire by now. If we missed you, give me a call at (301) 672-1721 and I'll send you a copy.

SigMac NEWS
by Ellen L. Bouwkamp

DECEMBER SigMac MEETING

Steve needs someone with experience with PFS File and Report to answer a question from a Connecticut Sig Mac member. Please contact Steve if you can help.

Ms. Elaine Hall, developer of the MacMuscle program described below, has a copy of ROM calls which she received in MacCollege. These will be available to interested parties at a charge of $2.00. Contact the WAP office for further information.

The membership voted to request that WAP buy and pay for a MAGIC unit. The MAGIC unit was demonstrated at the November meeting (see pg. 43 of the December 1984 WAP Journal). We also voted to investigate the possibility of acquiring a laser printer for use by the membership in the WAP office for a fee. The executive committee will followup on this mandate.

There was an extensive discussion of the pros and cons of insurance policies. Bethesda Computers has information about a policy by Chubb costing $25.00 per year with a $100 deductible. You may get a folder at Bethesda Computers or call Emmet and Chandler in San Francisco at (415) 981-1100. Get a copy of the policy and read it very carefully before you buy! Some homeowners policies cover your computer and some do not. Be sure your policy covers damage from electrical surges, lightning, and other potentially lethal disasters. A SigMac member will write an article in a future WAP Journal issue further elaborating what you should be looking for.

ONE MORE TIME: You MUST be a member of WAP for at least 90 days before you can purchase Apple products. Non-Apple products can be purchased immediately. It is your responsibility to call the office to keep up on group purchases.

SOFTWARE DEMONSTRATIONS:

MacMuscle: Elaine M. Hall, Vice President, Tech2000 Software, Inc. began her talk with some helpful hints about becoming a successful software entrepreneur. She and her husband took an idea and fully developed a program in five months. She attended MacCollege and received many helpful hints. Ms. Hall recommended three books: How to Start, Finance, and Operate Your Own Business by James Silvester ($20.00); The Complete Guide to Writing Software User Manuals by Brad McGehee ($14.95); and Legal Care for Your Software by Daniel Remer ($24.95). These books help you talk knowledgeably with your lawyer and accountant about your fledgling software business.

The Hall's pride and joy, MacMuscle, is software intended to improve health and fitness. It was programmed in PASCAL on a Lisa and downloaded to a Macintosh. A MacPaint diagram of the human body allows the user to select the specific muscle group he/she wishes to develop. The muscles are labeled with common and anatomical names, and one can see either a front or a back view. When the user selects a muscle group, a verbal description of the muscle group and activities that use that muscle appear. Selecting an activity provides a split screen with an animated human doing the exercise on the right with a written explanation of the exercise on the left half of the screen. MacMuscle provides individualized scheduling options, customized exercise programs, and will calculate your maximum heart rate for exercising.

MacMuscle can be purchased by mail for $69.95 from Tech2000 Software, Inc., 263 Lugonia Street, Newport Beach, CA 92663. WAP members who provide their WAP numbers are entitled to a 20% discount. At press time, the Halls have accepted new positions with their full-time company and are moving to Florida. You may write to them at 530 Franklyn Avenue, Indialantic, FL 32903.

Box Font, SigMac Disk 3 - Regina Litman. This demonstration illustrated how a font, such as Geneva 9, can be completely surrounded with a box by using this utility on SigMac Disk 3. Using the key just below the Backspace key, place a delimiter at the end of the line you wish to enclose. Then use the "a", "b", "c", or "d" keys to place lines of varying length ("a" being the shortest and "d" being the longest). If you are enclosing a larger font, such as London 18, there will be a gap between the top horizontal line and the side vertical lines. You can attempt to close this gap with the subcript option, although this is not always successful.

Trivia - Steve Hunt. In this takeoff of the popular game Trivial Pursuit, questions are presented in random order by category. There are five categories and three difficulty levels. The second or third game will show some of the questions you've seen before. This game is by Mirage and lists for $49.95. Our members responded to Trivia with erudite attention.

Factfinder - Steve Hunt. Advertised in Macworld as "a kind of electronic 'desk-drawer'," Factfinder allows you to organize miscellaneous items and then retrieve them at will. Factfinder uses a multiple window structure to allow you to specify search parameters, edit contents, and show which files meet your search criteria. This program works with incoming MacWrite documents. You can highlight a specific word in a document and specify it as a search key. There are online help menus, some with graphic images to show you how it works. This product is by MACWARE.

MICROSOFT FILE - Steve Hunt. Microsoft File allows you to build a database that includes a mixture of text, numbers, and pictures. You set up the database and specify parameters. Headers and footers are similar to those found in Multiplan, as are the techniques for setting up widths of fields for each attribute.

NEWS, RUMORS, AND LATE-BREAKING NEWS:

The January 1985 issue of Consumer Reports reviews the Macintosh and gives it CR's thumb's up!

As of November 1984, you can buy Inside Macintosh for $100, down from $150 earlier. The price for the Software Supplement is still $100. To purchase these software developers' tools, send your check to Apple Computer, Inc., at 467 Saratoga Avenue, Suite 621, San Jose, CA 95129.

Apple's annual report is out. I think I could safely say this is the annual report for the rest of us ... enjoyable reading and superbly high quality photographs of creative people such as Lee Iacocca, Stephen Sondheim, and Dianne Feinstein and illustrations of how they use their Mac. If you're interested in obtaining one, write Dan Eilers, Assistant Treasurer,

contd.

Apple Computer, Inc., 20525 Mariani Avenue, Cupertino, CA 95014. For the more accounting-oriented of you: annual sales increased 54% to $1.5 billion and the gross margin was 42% of sales. Earnings per share decreased from $1.28 to $1.05. These data and more in Apple's 1984 annual report!

Kevin (the office) Nealon has cute little handmade mouse warmers on sale. (Made personally by Mrs. Nealon - hence their nickname "Mom's Mice".) They are available for sale in the WAP office.

Jay Heller is interested in connecting with others who are interested in enterpreneurial development of programs for the Macintosh. Contact him at (301) 948-7440.

The December 1984 issue of MacWorld has an excellent summary of how to keep the Macintosh functioning through preventative maintenance. It also has an excellent summary of Microsoft BASIC 2.0 features.

I leave you with words of caution to those of you who, like me, have been shopping for a modem: Buyer beware! Case in point: I walked into the downtown Sears computer store. Saw a sign: Apple 1200 modem for pennies under $400. "WOW!" I think, "$100 off list. Great, I'll buy it!" I tell the salesman so; he says "O.K., and of course you'll want to buy the cables." "But the cables," I say, "are included in the price!" "That's not the way we sell it," he says. "How much are the cables?" I ask. "50 bucks", he answers. "But look on the side of the box!" I respond, "It says 'Box 1 of 2'. What do you suppose the second box is?" "Well" he says again, "that's not the way we sell it." "Well," I say, "you just lost a sale!" Reminder: you need compatible modem, cables, and software to have successful telecommunications capability. When you are quoted a price, do not assume it covers what it is supposed to cover! If in doubt, find a SigMac member to ask!

JANUARY SigMac MEETING

Our first 1985 meeting nearly filled the USUHS Auditorium. At our current growth rate, we will exceed its legal capacity within two or three months! An indication of our collective selves: Normally, a good club disk sale is 10 to 15 at a single meeting. This usually occurs when the disk is new. At this meeting, we sold 150 disks! Preliminary statistics reveal that about 30% of new Washington Apple Pi (WAP) members are Macintosh owners (or about-to-be owners). Keep spreading the word! Your officers need help in locating a larger auditorium. If you know of a location which would seat over 500 people, please call Steve Hunt as soon as possible. We expect that by March or April we will be in dire need of this new meeting place!

BUSINESS MEETING:

Your officers will submit a proposal for a separate SigMac budget to the WAP Board of Directors. Also, we have asked that the purchase of the new projector be facilitated so that other SigMac meetings can have the large-screen view we have now only for our monthly Saturday meetings.

When polled, the membership expressed interest in having the WAP office open longer than 12:30 p.m. on SigMac Saturdays. (Ed Note: See change in office hours listed in "General Information".) Also, due to future basketball games at Our Lady of Lourdes, there is need to change from Thursday nights there. The membership appeared to express a preference for holding the advanced users meetings after the Saturday SigMac meeting. We will notify you in advance of future developments on these issues. Membership also expressed interest in a course run by Motorola on programming for the 68000 microprocessor. We will follow up on this mandate.

Please leave the van spaces in the USUHS parking garage for the vans. They cannot go above the first level of the garage and smaller vehicles are taking their allocated spots. Thanks!

Bob Pulgino has offered to be our volunteer coordinator. If you can offer assistance in any part of the operation of SigMac or WAP, please contact him at (H) (703) 671-3664.

The new member disk is still being developed. We accept suggestions from the membership as to what you'd like to see on a disk for new members. In the meantime, new members can select one diskette from the SigMac selection instead.

Meeting date changes: Please mark your calendars for the following changes to the March and April Saturday meetings. These meetings will be held at the USUHS Auditorium until further notice and have been moved to accommodate USUHS scheduling problems:

February	9	(second Saturday)
March	16	(third Saturday)
April	20	(third Saturday)
May	11	(second Saturday)

JAZZ will be demonstrated at the March meeting. We will be notifying you of any requirements (such as membership card) which will allow SigMac members to be assured a seat for this one!

The group buy of the 512K upgrade has been suspended until service followup can be worked out. Several of the upgrades have had problems with blown power supplies. Be sure to get Apple insurance on your Mac to help assure that you get service support from dealers and to minimize your repair costs!

A telecommunications tutorial was held Saturday, January 19. Topics included - basic principles, how to hook up a modem, two or three of the common software programs (MacTerminal, MacTep, Red Rider), a walk-through of a download, and a handout with key tips about how to make effective use of telecommunications. This tutorial will be repeated in the spring.

RUMORS & TIDBITS:

The current issue of Infoworld details rumors of the happenings at the Apple annual meeting on January 23rd. These include participation by several third-party vendors, an announcement of a laser printer with 1.5 mb of memory and its own processor, and Apple's long awaited local area network.

Rumor also has it that MacDraw is in the .99997 pre-release version! All MacWrite versions beginning with "3" - as in 3.0, 3.17, 3.4, and 3.8 - have major problems. Use them at your own risk!

Filevision is sponsoring a contest - deadline February 15 - for innovative uses of its program. Contact Steve Hunt for details. The winner receives a 512K Mac and a hard disk drive.

Don't be panic stricken about Jack Tramiel's proposed Macintosh look-alike, the Jackintosh. Tramiel claims he can, using the GEM operating system, produce this mock Mac for $300-$500. Believe it when you see it!

Expect distribution of Microsoft Word within a couple of weeks. We will get Microsoft to demonstrate both Word and File in the future. The company wants to be

contd.

sure that enough copies are in distribution before it demos them to us.

Dennis Brothers, who can be found through Compuserve's MAUG, has reviewed MacLion. He compares its features to those found in dBase II and PDP 11. MacLion is produced by Computer Software Design and lists for $379 according to the December issue of Personal Computing.

ODDS & ENDS:

MacWorld has done a review of four hard disk drives. One SigMac member has suggested that the problems with the hard disk drives are primarily resolved when a 512K Mac is used instead of a 128K Mac. The last word is not yet in on these drives!

Another controversial topic: to use disk head cleaning kits or not. The old-timers among us say that this controversy can best be resolved with the adage "If it's not broke, don't fix it." There appeared to be a slight edge among the members against using such kits.

One member states that the Hewlett Packard laser printer will run with the Macintosh. If you are heavily into graphics, you will need the graphics card which HP has announced for some future date. The HP doesn't have a microprocessor, but is useful for word processing. In the future, price/feature ratio will become more and more important as competition heats up.

Thunderscan is a product that uses the Imagewriter to digitize graphics back to the Macintosh. We hear it is extremely slow - up to 20 minutes to digitize one page. Also, we hear it does not reproduce in the correct aspect ratio.

Future SigMac diskettes will include: the 1.4 version of the Desk Accessory mover and MockWrite, a program whcih allows word processing from the Desk Accessory. SigMac disks 1 - 10 are now on sale and disks 11-13, maybe 14 will be available in February.

DEMOS:

BASIC v. 2.0, Microsoft (demo by Tom Warrick): BASIC v.2.0 has two versions of BASIC - a binary version and a decimal version. From a user's viewpoint, these versions do not differ in operation. The binary version is useful for scientific and engineering applications; the decimal version is for business and financial applications. A small window shows the code, and when you double click on this window it becomes a large window. Version 2.0 supports most MacWrite functions, such as cut, copy, and paste. You can use the clipboard, and it will be treated as a file so you can put its contents into another program. You can search, find, and replace strings. This BASIC supports stepping so you can follow the program when it runs. You can have two lists of code showing at once to facilitate editing and coding.

As in MacPascal, in BASIC v. 2.0 all command words are boldfaced. You do not need numbers; it uses names for labels. Line numbers do not need to be sequential. Creating menus is easy with a command MENU as is creating dialog boxes.

Many BASIC 1.0 programs will not run on BASIC 2.0. Any BASIC v. 1.0 program which has PEEK or POKE commands will not be compatible with the v. 2.0. This is interpretive BASIC, so one cannot have stand-alone programs. Special utility programs are included with version 2.0. One is a program compressor which allows you to reduce file size by selective deletions.

Front Desk, Layered Inc. (demo by Tom Warrick): This is a program with "a lot of nifty features" and one fatal flaw. It produces a monthly appointment calendar with today's date highlighted. If you double-click on the day you desire to know more about, you get a blow-up giving the time, the name of the person with whom you have the appointment, his/her telephone number, the purpose of the meeting, comments, and the charge to the client.

One can get a breakout by day of the week for all in the office, by individual in the office for month or week or day, by service, and other subcategories. Its fatal flaw?? This is not a Desk Accessory; therefore, in order to use it, you have to stop the program you are running and bring up Front Desk. We are interested in knowing how this program will work when several individuals are tied in via the local area network to a single Mac. Will it support this application??

Altered Finder by Dave Clingman on SIGMAC DISK 13 (demo by Steve Hunt): This public domain program illustrates how the 1.1g Finder can be altered using the resource mover. "Dinner time for Oscar" replaces "Empty the Trash" and "Oscar" sits on top of the trash container. A fun tool - members present loved it.

COPY II PLUS, Central Point Software (demo by Steve Hunt): This program allows you to make backup disks of copy-protected software. You can do a sector copy, which is like the backup that usually comes with a commercial program, or you can do a bit copy. It supports both one and two disk drives. It will back up some master disks. There is no known copy program which will support a hard disk drive.

MacLabeler, Ideaform, Inc. (demo by Steve Hunt): This allows you to keep track of disks and their contents. It costs $50.00 and allows you to print the name of the disk on the border and back of a label. You can change patterns around the disk label for variety. The package comes with labels and the company recommends that you buy page labels and cut them into strips when their labels are gone. This program may be a bit overpriced but does allow the organization of what is becoming a multitude of public domain and commercial diskettes!

ONE FINAL NOTE: Demonstration of programs during SigMac meetings does not constitute any sort of "official" endorsement of these programs. The SigMac officers are interested in knowing your experiences with programs and will pass along both the good and the bad (even the ugly)! We present demonstrations to allow you to make up your own minds about the purchase of a particular program. If you wish to volunteer to do a demonstration, please contact any of the officers. Our collective experiences are invaluable to the membership and are, after all, why we all joined SigMac. See you in February!

VISICOLUMN: Tips on Multiplan and the Mac

by Walton Francis

Multiplan on the Macintosh provides most users the best available spreadsheet. Particularly on the 512K Macintosh, Multiplan has most of the power of Lotus 1-2-3, very nearly its speed of calculation, faster disk operations, easier and faster use in spreadsheet design and functions such as copying cells (Lotus uses a tedious and confusing multi-layered system of commands), better cell and table formatting and graphics (especially when used with MacWrite and Microsoft Chart), and far greater learning ease (see references 1 and 2). Screen display is roughly a standoff, with the visual clarity of the Macintosh superior and its smaller display size a minus in spreadsheeting. Some of these virtues simply mirror the speed and user interface built into the Macintosh; others reflect the design of Multiplan itself (Multiplan deservedly being one of the half-dozen best selling pieces of application software of all time) and the synergism of the combination. It takes Lotus or SuperCalc III on a super-fast clone such as the Tandy 2000 equipped with a hard disk, or most probably Jazz (when it comes out), to provide a significant edge over the Multiplan/Mac combination, and then only in the largest business applications. Lotus has a clear advantage only in the use of programming macros (a feature, however, of use primarily in worksheets which are both highly complex and repetitive), and in the completeness and potential size of its data base applications.

Notwithstanding its many virtues, Multiplan has several defects and limitations. Some of these are correctible and some are not. This article explores both types. In what follows, I assume a basic familiarity with Multiplan and the Macintosh, and aim at present users, though some of the advice is equally applicable to other spreadsheets or other machines.

Big Tips

It is hard to overemphasize the importance of using the "name" approach to spreadsheet design. I often construct complex spreadsheets without a single cell reference in any formula, not just because cell references can be a major nuisance (and especially so in Multiplan with its nonstandard reference system), but because use of names greatly facilitates accurate design and documentation of models. Profits=sales-costs can't be beat as a mnemonic!

The trick to using names is to think big and think simple. I often name a whole row or column at a time and lay one name on top of another. Why mess with individual cells unless unavoidable? Not only does using a row or column heading as the name help in design, but also Multiplan expects you to do this and saves you the trouble of any typing at all. Unfortunately, I have so far been unable to construct a spreadsheet without touching the keyboard at all, but I have come close. Long live the mouse! And using names to cover whole ranges of results simplifies considerably linking multiple files. (Linking files is the means by which Multiplan beats the problems of memory limitations - January and the other months can each be a separate worksheet, with yearly totals automatically calculated on a thirteenth, thus allowing spreadsheet applications involving megabytes of data.)

I have to leave something to the manual, so in what follows I will concentrate on somewhat more subtle issues than naming and linking. This article is for tips, not tutorial.

Speed Up.

In my recent article on spreadsheet speed (reference 3), I went to great lengths to document the virtues of Multiplan on the 128K Mac, a combination which beats Lotus on MS-DOS machines without hard disks. But Multiplan's speed advantage lies primarily in file storage, not sheer calculation speed. So superior is Lotus' code that it runs a calculation in about one-third of Multiplan's time in spite of the 68000 chip in the Macintosh. What can be done? A 512K Mac is worth about a 20% speed improvement, from 10 to 8 seconds to recalculate my 1,000 cell benchmark. But of far more use is avoiding the real problem: the penalty imposed by the Mac's bit-mapped graphics. By a simple device one can halve recalculation times again, to 4 seconds for my benchmark (as compared to 3 seconds with Lotus on the IBM PC).

The trick is to run recalculations with a blank screen. This, in turn, is accomplished quite simply. Put the cursor on a cell 15 or 20 lines below or to the right of the last real entry in your model, and only then recalculate (of course, if you need to worry about this problem you are already using manual rather than automatic recalculation). Because the screen is blank, Multiplan avoids rewriting each cell and zips along faster than you ever dreamed. To automate the process, put an entry of some kind in the cell, and select the "last cell" via the mouse to avoid using the scroll bars.

The mouse and scroll bar combination is so potent in comparison to cursor keys that Microsoft didn't bother to include a "go to" command in the Mac version of Multiplan. This is all very well for smallish models, but an unbelievable drag (pun intended) in a multi-thousand cell model. What can be done to move around faster? The most common problem case involves getting from the bottom right of the spreadsheet to the upper left (going from upper left to lower right is already very fast because of the select "last cell" command). This is handled quite simply by selecting "all cells", which automatically and almost instantaneously puts the cursor in the upper left cell. In the case where there is a particular cell you want to reach (say, a variable you modify frequently), "name" it and use the select "name" command. And, of course, there is nothing wrong with using windows to move back and forth from one place to another.

Printing is another sore point we owe to bit mapped graphics. Not only does high quality printing take forever on the ImageWriter, but also it forces disk access to store the image prior to printing. The obvious solution is to use draft mode, which totally avoids graphics, but unfortunately leads to messy results since proportional spacing is lost as well. Besides, one is still left without spooling and cannot get back to work until printing is done (score another plus for clones and Lotus). There are no fully satisfactory solutions, but some partial ones. First and simplest is to rely on the Mac's ROM routines and get a screen dump (command-shift-4; see the Macintosh manual which you never bothered to read). This avoids disk access but only works a screen at a time and gives you more decoration than you wanted. Still, very nice for cases in which you want to print out 10 different options real fast - I like to use windows to show both the variable modified and the bottom line while avoiding the in-between parts of the model.

contd.

A second way to speed up printing is to use a print buffer. Mine is a Quadram Microfazer. As discussed below under hardware fixes, this has its own limitations, though it works superbly for high volume draft print jobs. And a third way is to use a hard disk or RAM disk, also discussed below (to preview: a RAM disk is a superb and cheap expedient).

A final area of possible speed up lies in storage. There is a frequent criticism that the Mac drives are slow. This is dead wrong: disk access on the Mac is very fast indeed and far superior to any 5 1/4-inch floppy system. The cause of the most noticed delays is the crippling of Mac applications software imposed by 128K of RAM - in the case of Multiplan its annoying habit of accessing the disk when you first use a new command. If all of an application were in memory at once, there wouldn't be enough memory left for decent size models. The potential solutions to this problem are hard disks and RAM disks, discussed below.

Printing and Formatting.

We all bought Mac's because we love fancy formats and typefaces. Unfortunately, even though Multiplan outshines any other spreadsheet by far in its overall appearance and formatting (for example, grid lines are an absolute delight in complex models, and showing page breaks on the screen greatly simpliflies print formatting), it has some nasty omissions.

Most aggravating by far is that the standard Multiplan font, Seattle 10, is a space hog. Coupled with the fact that (so far as I know) there is no way that Multiplan can access a compressed print mode on the ImageWriter, the volume of numbers one can place on a standard sheet of paper is less than half that obtainable with, say, Multiplan on an Apple // and an Epson printer. This and other problems, and a host of solutions, are discussed at length in an article by Lon Poole (see reference 4), and I will not repeat his excellent advice. Suffice it to say that substituting 9-point Geneva increases by about 50% the amount of data carried on both the screen and a piece of paper, that sideways printing helps a lot with models which are more horizontal than vertical, and that transferring data to MacWrite (don't forget to set tabs) gives you access to the full range of fonts and styles to fancy up your spreadsheet.

A couple of points not emphasized by Poole. First, don't forget the simplest tricks, such as reducing margins to zero and getting rid of grid lines and row and column numbers, to save space. Second, transferring Geneva to a copy of the Multiplan disk will not work if you do not use the System Folder from version 1.1 of the Finder rather than the Multiplan version. The Multiplan version seems to work but leaves you with garbage. Follow the directions given exactly, and start over if gremlins pollute your characters. Third, keeping all text within columns (i.e., not crossing column boundaries with a word or phrase) leads to much handsomer results when printing in draft quality.

Small Tips

If you are like me, you hate manuals (even short and simple ones like the Mac's) and will avoid reading them given any excuse. This is a particular problem for those of us who know spreadsheeting cold and have already paid those particular dues. In honor of such sloth, here are a few points either experts or novices may have missed:

- Multiplan provides headers, and headers can include automatic dates. Stop cutting and pasting from the clock to date your printouts!

- Not documented in the manual is the box which appears when you copy and paste from one worksheet to another. To reduce delays, click off the "formatted" option.

- Multiplan allegedly tells you how much memory you have left, via the Apple icon's "about Multiplan". The figure given is a percent; the absolute limit on worksheet size is about 42K on a 128K Mac and about 58K on a 512K Mac. The real limit for everyone except masochists is about ninety per cent of the stated capacity on the 128K Mac, and perhaps 98 per cent of capacity on the 512K Mac. After that things get very slow indeed. For big models, link rather than trying to squeeze in a few extra columns.

- Multiplan is not advertised as having a data base capability. In fact, it has quite a repertoire of capabilities when using its sort routine, particularly in combination with column moves and cutting and pasting and linking. For example, unlike Lotus you can do a three level sort by successively sorting each of three columns. You can then select the results, move them to a new model, rearrange or delete unwanted entries, reduce unwanted columns to a width of zero and wind up displaying or printing any subset you want. You can even combine data bases using common "names" and linking. The only real limitation on doing anything that a dedicated file manager will do lies in the 255 row (i.e. record) limitation.

- In the Macintosh version, Multiplan has made the printing of formulas quite a paper waster. Suppose you have just one, long 60-character formula in each column of a 50 row spreadsheet having 10 columns. To print the formulas you will have to reformat all columns to 30 characters, select "show values" to double the column width, and print. If my calculations are correct (I can't afford to experiment!), the output will require 500 pages. My trick saves a lot of paper. Copy and paste each long formula to the bottom of the worksheet (use column 1 for a cell reference and paste the formula in column 2), and then simply edit each copy to delete the = sign. This will transform them into labels. Presto, you have eliminated the need for column widening, added only 10 lines of paper to the printed output, and added a nice piece of model documentation to boot, particularly if you used names rather than cell references in your formulas.

Hardware

Some of Multiplan's limitations can be overcome by judicious hardware fixes. As for any other serious application, a second disk drive (or a ram disk) is a major convenience under Multiplan, and a virtual necessity if multiple, large files are to be linked. Because Multiplan accesses the disk frequently, the program must be on the same disk as the data unless you have two drives.

A printer buffer, used in conjunction with draft printing mode, is a necessity if your applications require lots of paper throughput. Unfortunately, the memory requirements of graphic printing are so major that even a 64K device will buffer less than one page. Still, for short spreadsheets this can be a major timesaver even in high quality printing.

With the present version of Multiplan (1.02), a 512K Mac does you less good on model size than you might reasonably expect because Microsoft wrote the program to deal with only 128K! We can be reasonably certain that Microsoft will update the program in the near future to correct this flaw, and at a modest price, for the simple reason that Jazz will take Multiplan to the cleaners otherwise. Meanwhile, a 512K Mac runs Multiplan a little faster (and a lot faster as you approach capacity limits), gives you almost 50% more nominal model size (and better than 50% more effective size), and gives you the huge benefits of a RAM disk.

contd. on pg 35

p-SYSTEM FOR THE MAC

by Stephen J. Hyland

As a programmer, I purchased my Macintosh primarily for use as a software development tool. However, until recently, developing software required access to a Lisa if one wished to develop compiled software. In my work, I use Ada; however, I have also used Pascal, Cobol, Fortran and Assembly.

In my survey of development systems for the Mac, I looked at all the available languages and rejected most of them. I have never liked Basic, and MicroSoft Basic is interpreted, anyway. Nor do I enjoy working with Assembly, although I realize its usefulness and am able to code in assembly when necessary. While "C" and Forth are compiled languages, I do not wish to learn a new language, especially those close to my primary languages, Ada and Pascal.

Since I already knew Pascal well, I chose to order the UCSD p-System from SofTech. This system looked as if it might fulfill my requirements for a compiled language with which I could develop (hopefully) marketable software. I am happy to say that, with some limitations, SofTech has fulfilled my expectations.

SofTech has been shipping the p-System for the Macintosh since October. At the time I placed my order, they had available three packages: the Designer Series Pascal Development System, the Designer Series Fortran-77 Development System, and the Advanced Development Toolkit. The Pascal/p-System package comes with a bootable p-System disk, a non-bootable disk containing the compiler, utilities, and libraries, and extensive documentation, which I'll discuss later. It also contains interfaces to QuickDraw and an interface to configure the serial port (MacConfig). The Advanced Development Toolkit contains a 68000-assembler and linker, symbolic debugger, native code generator, application interfaces, and some tools for program analysis. Documentation for all of this is provided; however, you will need some supplemental references for the 68000. I recommend 68000 Assembly Language Programming by Kane, Hawkins & Leventhal, especially if you are not a highly experienced assembly programmer, and the M68000 16/32-Bit Microprocessor Programmers Reference Manual from Motorola.

For those who are unfamiliar with UCSD Pascal and the p-System, the compiler generates an intermediate code (p-code), which is then interpreted at run-time by the operating system. This requires that whatever system running the program be running under the same operating system. The p-System operating system is often referred to as the "p-machine"; that is, the operating system is actually a pseudo-machine which interfaces between the hardware it is running on, and the software it is running. The advantage of this is that an application written in the UCSD version of Pascal or Fortran is transportable and should run on any machine running under the p-system, as long as the application remains strictly within the definition of the UCSD standard. The disadvantage of this, from a developers standpoint, is that the application can only be sold to those who have the p-system on their machine, or the developer must provide a bootable system with the application. P-code will also run a bit slower than a completely compiled application, however; it is my opinion that if speed is of the essence, you should probably code in Assembly. Most users will not notice much difference in speed in applications. SofTech does provide a way of producing faster code with their native code generator; however, native code will occupy more space, and the application will also not be completely in native code. Interfaces with ROM procedures will be in p-code.

The documentation provided is in four volumes: Operating System, Internal Architecture, Program Development, and Application Development. A copy of The UCSD Pascal Handbook by Clark & Koehler is also provided, and those unfamiliar with UCSD Pascal as well as those who are experienced with it will find this book helpful. For those who are new to the UCSD p-System, I also recommend purchasing Introduction to the UCSD p-System by Grant & Butah. The documentation provides a wealth of information about UCSD Pascal, and about the p-system. It is, however, limited in it's coverage of Macintosh internals, and not a substitute for Inside Macintosh. What you are provided with is sufficient for programming on the Mac. Source code is given for the Quickdraw interface and the MacConfig interface, as well as a sample program using Quickdraw.

The system runs its own operating system, as mentioned earlier. When you boot, the prompts and commands bear no resemblance to that friendly Macintosh interface, and you might as well get your mouse out of the way. Since this is the case, you might wonder about the usefulness of the p-System, but keep in mind, the p-System has been around for a while, and the operating system is well proven. The utilities are pretty standard (editor, filer, etc.) and are easy to use. The extensions to "standard" Pascal are very useful, and these include the ability to perform multi-tasking. I do not know what the efficiency is of multi-tasking on the Mac, but the ability is there, and I certainly intend to experiment. Bear in mind, p-System volumes and files and Macintosh files are completely non-existent to each other, at least in these packages. Also, the PBoot application on the MacBoot disk is copy protected. However, you can get a back-up of this from SofTech for five dollars. All else is copyable to other disks, and, once you boot the operating system, you can run programs on any disks without keeping the boot disk in the drive. You will have to re-insert the boot disk when you halt the operating system.

MacAdvantage, however, is a horse of a somewhat different color, and since it's arrival, this is primarily what I have been using. It is exactly what I was looking for in a development environment. MacAdvantage comes on two disks, neither of which are copy-protected. The documentation for this not only supplements the documentation for the p-System, it makes a good companion to Inside Macintosh. This is completely a Macintosh environment and is run separately from the other p-System software I mentioned. In fact, if it is your intention to develop exclusively for the Macintosh, you do not need to purchase anything else from SofTech.

Disk 1 is a bootable disk containing the UCSD Pascal compiler, an editor, several libraries, the p-machine, and several utilities. It also contains a file called Empty Program that contains the standard program resources. Disk 2 has a resource compiler, a librarian, a debugger, an error-handler, the code for the interfaces to the ROM routines, and a sample program that runs a Macintosh application. With these, you can write Macintosh programs using all of the ROM

contd.

calls. You also have access to the extensions to Pascal found in UCSD Pascal.

Typically, you will enter your program using the editor, which functions similarly to MacWrite. You must also create a resource file for any resources you will use in your application. Next, you compile your resource file using RMaker. Once this is completed, you click on the compiler icon and the code will be compiled into p-code. The compiler prompts you for the filename, output filename, resource filename, and the listing filename. In testing the compiler, I found it compiled the test program at a rate of 498 lines per minute. After your program has compiled, you use the Set Options application to point to the locations of the Pascal Runtime library, the Mac Library, and the p-Machine. Other choices on this menu allow you to set various startup options such as a default window and some debug options, and to set the finder bundle bit which puts the application icon on the desktop. Finally, you can run your application, and debug it if it doesn't work. I have not used the debugger yet, but with this you can do all of the normal debug operations such as single-stepping and setting break-points, and examining and patching memory, as well as some unusual things like performance monitoring either on your Mac, or by hooking up another computer directly or over a modem. The other facilities MacAdvantage gives you are a Librarian to create and maintain libraries, and an Error handler that does a number of things including allowing you to create custom error handling routines.

Once you've compiled and debugged your application, you can put it on a bootable disk. All you need besidea your application are the Pascal Runtime and p Machine applications, and the system folder with whatever system resources you need in there. I found this to be one of the most exciting parts of MacAdvantage.

The documentation for MacAdvantage, extensive as it is, should be viewed as a supplement for Inside Macintosh. SofTech has provided the source for all the interfaces to the ROM, but explanations of the calls are minimal. A rewrite of Inside Macintosh is not their intention. What they do provide is clear documentation on the use of MacAdvantage and its utilities, an overview of UCSD Pascal which primarily points out it's differences from non-Macintosh versions, and some good chapters on Macintosh interfaces, resource file creation, managing memory and p-Machine architecture. It's rounded out by the appendices which contain the ROM interface source code, error listings, and p-Code listings.

If you want my opinion, I think it's quite a deal. But this software is not cheap, and if your intention is to have a Pascal you can play with, by all means, buy MacPascal instead. However, if you are a serious software developer, MacAdvantage is something to consider. And, if you also want to develop software for the p-System market, consider purchasing the whole nine yards.

The Designer Series UCSD Pascal	$195.00
MacAdvantage: UCSD Pascal	$150.00
Advanced Development Tool Kit	$250.00
The Designer Series Pascal & MacAdvantage. Two for One Special Offer: (Available for a limited time only.)	$295.00

Hardware: Macintosh 128K or 512K, second drive recommended. Designer Series also available for Apple //e.

Ordering: SofTech MicroSystems, Inc.
16875 W. Bernardo Drive.
San Diego, CA 92127
(619) 451-1230.

VisiColumn: Multiplan and Mac contd. from pg 33

According to a recent review (reference 5), neither the early versions of the Tecmar nor Corvus hard disks will operate Multiplan. This problem is related to Multiplan's software protection but is apparently not insuperable because the same review says that the Davong Winchester will run Multiplan. The Davong drive, however, shares with the others the problem that only about 150 files can be stored due to limitations of the present version of the Finder. The HyperDrive people have told me on the phone that their internal hard disk avoids these problems, and it is supposed to be very fast as well, much faster than drives hooked up through the serial port, though I am skeptical of any such claims until third party reviews appear. Regardless, a hard disk is best at solving storage size needs and only a partial answer to speed needs.

The key hardware (well, actually software) fix of benefit to Multiplan is the RAM disk (for a detailed discussion see reference 6). Operating at electronic rather than mechanical speed, the RAM disk greatly reduces the need for a second drive, considerably speeds up graphics printing (because saving the printed image to disk is so much faster), eliminates annoying disk accesses, and also immensely speeds up both manual and automatic linking of worksheets. The only disadvantages of a RAM disk are that it requires a 512K Macintosh, and reduces potentially available RAM for your own models (this disadvantage is of no practical importance for the current version of Multiplan).

The only commercial version of a RAM disk now available comes from Assimilation Process, and costs $30. I have not been able to try one yet (all the local dealers are sold out), but have heard that it works quite well indeed. There is also a freeware RAM disk which the Pi will presumably offer to members soon if not by the time you read this, or which can be downloaded from CompuServe (beware the "free" version which is a pirate copy of an early version of Assimilation's; it is not only illegal but bug ridden). I have tried the freeware and it is highly functional. The only specific trick needed for Multiplan is to open it prior to transfer to the RAM disk (or rely on the Master rather than a copy), in order to avoid the problem (common to hard disks as well) of having to insert the master disk into a nonexistent drive slot. Be warned, however, that setup is tricky, involves trial and error, and does not seem to agree precisely with instructions available to date. The Assimilation Process version is presumably easier to get started on, and also offers control over the amount of reserved memory. My advice for Multiplan users is that all present 512K owners get a RAM disk, and all 128K owners consider a memory upgrade a higher priority than a second drive.

In sum, the combination of 512K Mac, RAM disk, and printer buffer provides a great improvement in Multiplan's speed and convenience for heavy duty spreadsheet use.

References:

1. Andrew T. Williams, "Multiplan Meets the Mac", Macworld, Premier Issue, 1984.

2. Mitch Trachtenberg, "Multiplan/Chart on the Macintosh", Byte, December, 1984.

3. Walton Francis, "VisiColumn: Spreadsheet Speed", Washington Apple Pi, September, 1984.

4. Lon Poole, "Spreadsheets Printed in Style", Macworld, December, 1984.

5. Danny Goodman, "Shifting into Overdrive", Macworld, December, 1984.

6. Steve Hunt, "The 512K Mac - the Real Benefits", Washington Apple Pi, January, 1985.

A PAGE FROM THE STACK
by Dana J. Schwartz

As Winter closes around us, the WAP Disketeria continues to search for new additions. As you can see from the order form at the back of the Journal, we take every conceivable type of Apple software that is not copyrighted - including CP/M, Pascal, and Macintosh. Instructions for submitting contributions are in your member reference book, but don't forget that you get a free library disk of your choice for your donation. We accept your programs at any time - at the office, at the monthly meeting or through the mail. If you spend the next snowstorm at your keyboard, we would like to distribute the results!

This month we introduce three new Macintosh disks, with the following descriptions from SigMac Librarian Tony Anderson:

SigMac Disk 8: MacFORTH Programs

This disk is especially for all you MacFORTH devotees. It includes a selection of games and utilities guaranteed to keep you loading FORTH screens for hours. With this disk and Creative Solutions MacFORTH language, you can play a game of backgammon, become fascinated with "Life", take MacForth apart, or disassemble your Macintosh. All with a flick of the old mouse. This disk is the first of what we hope will be many more FORTH only disks. For their help with this first disk, three WAP members should be thanked: Jim Russell, for providing a disk full of FORTH and other goodies; Steve Hunt, for programs; and Tony Anderson, the SigMac Librarian, for the use of his MacFORTH disk. Of course, we also thank those who have given of their time and talent to create these programs and who have generously allowed us to use them.

In the Games & Demos folder:

Backgammon (by William F. Toleman, some corrections by Ward McFarland) - This is an excellent version of the old family favorite. It's you against the Mac in one of the world's most played games. In addition, this program provides you a chance to get inside a real, working MacFORTH example and to see how it's done.

MacLIFE (by Ward McFarland) - MacFORTH really shows its stuff in this program and it's the right stuff. Custom menus, user-defined windows, mouse control and all the things we thought we needed a Lisa to develop are here. While not as fast as Bill Atkinson's "Life" on SigMac Disk 2, it more than compensates by adding predefined patterns, pattern saving and reloading, and printing. The excellent documentation is an education in FORTH and in the concepts of "Life".

MacLife Doc Part I (by Ward McFarland) - This documentation for MacLife is well worth reading whether you are interested in "Life" or in programming.

MacLife Doc Part II (by Ward McFarland) - More MacLife documentation.

MacLife Bibliography (by Ward McFarland) A list of recommended reading for programmers and "Life" enthusiasts.

MacMusic (by Ward McFarland) - FORTH music that is most unusual. Foreshadows good things to come from FORTH.

In the Utilities folder:

Block Conversion Documentation (by John W. Baxter) - This MacWrite Document describes the program Convert and TOBLKS.BAS. The programs will allow you to convert FORTH block files to text files and back. Useful for file transfer.

Convert (by John W. Baxter) - This program provides a means of converting a MacFORTH block file to a format suitable for upload to systems such as Compu- Serve and the Source. It also provides a method for reconversion of downloaded files.

DECOMP.4TH (by Alan D. Galumbeck) - Decomp decompiles the definition of the next word in the input stream. A line is displayed for each word in the definition.

DEFINE.4TH (by Wayne R. Loofbourrow) - This is another FORTH decompiler. This program allows one to see the definition of an already compiled word without access to the source code.

DISK_COPY (by Ward J McFarland) - This is a FORTH program to copy disks or examine selected disk sectors. The program has a few bugs.

FORTH.XMT (by William Bond) - This is a prototype file transmission scheme for the Macintosh. It will take a MacFORTH block file and convert it to a format suitable for transmission over a modem to another computer.

Forth Bug Notes - This MacWrite document identifies two small bugs in MacFORTH and what to do about them.

TOBLKS.BAS (by John W. Baxter) - This MS-BASIC program reads a formatted text file, and produces the equivalent MacFORTH Blocks file.

TUBE (by William Bond) - This is the MacFORTH Online Terminal Emulator with enhancements to the original by William Bond.

In the Disassembler folder:

DSML10.4th (by N. Lebedin) - This program will display the contents of any address or range of addresses in the Mac as assembler instructions. It adds a new word to your MacFORTH vocabulary. You can start disassembling all 500 or so of the MacRom routines.

DSML10.bin (by N. Lebedin) - This is a binary file used by the disassembler.

SigMac Disk 9: Not One Byte

This disk includes 7 new fonts, 3 new games, a communications program, and 4 of the best Macintosh utilities ever.

In the Fonts folder:

APL 12 - All the APL symbols including overstrikes.

APLMap - A MacPaint document showing the locations of the APL Font characters on the keyboard. Contributed by Michael C. O'Connor.

Andover 12 - Greek 10-24; Hood River 12: Park Avenue 18; Philly 9-24 (by Mark Miani); Russian 10-20.

contd.

In the Utilities folder:

Banner (by John Gregory) - This application prints large signs on your Imagewriter and lets you select the font, style, and size of your message.

BinHex (by Yves Lempereur) - Assembly language implementation of BINHEX.V30. This version of the well known and well used utility is now better than ever. The speed difference is nothing short of amazing. It's so fast you'll think it didn't work at all, but work it does.

File (by Cary Clark, modified by JW Peterson) - File was originally written by Cary Clark at Apple, and then modified at Utah by JW Peterson in order to make it a useful editor for straight text work. In this context, it works best for writing text that is later uploaded to a larger host machine. Therefore, File differs from MacWrite, MS-Word, etc. in several ways: it doesn't know anything about multiple fonts or type styles within a single file; it can use a carriage return to end each line, and reformat paragraphs accordingly; it is small and starts up quickly; unlike MacWrite, File allows multiple windows to multiple files.

File.Help - Documentation for the program File.

FileEdit (by John H. Mitchel) - FileEdit lets you examine and modify Mac files. With it you can edit any sector on the disk as if you were editing a MacWrite document. BE CAREFUL! Only edit damaged disks for which there is no other hope, copies of disks, or disks you don't mind losing. This is a powerful utility and you can do as much damage with it as good.

In the Games folder:

Bricks (by Roger L. Gould) - Every computer has its version of brick-out and this is Mac's.

Iago (by David Reed) - This Othello clone has more to offer than most others: three levels of play, three board sizes, save game feature and others.

MacMelody (by Jeff Miller) - This program allows you to enter a melody with the mouse and an on-screen keyboard. You can then play it back. There are controls for the volume and tempo.

In the Communications folder:

MacKermit - This program is chiefly an adaptation of Columbia's Unix kermit. It has only been tested communicating with that version of kermit. The kermit file transfer system is a communications protocol between two running programs, one on each computer.

MacKermit.help - Documentation for the program MacKermit.

SigMac Disk 10: Mostly BASIC

We will celebrate our tenth disk with a look back to the ancient past, in Macintosh terms, and a look ahead to what MSBASIC programs will routinely look like in the future.

In the Utilities folder:

FileINFO (by Michael McKay) - This program allows access to the File Info associated with any Mac file on the desktop, whether it is visible or not. Some file attributes can be changed using various supplied routines.

Mouse Checker - This small program will provide both a check of your mouse and an example to use in learning how to program for the mouse.

PRINT (by James G. Hanson) - This program allows you to set the ImageWriter's print modes and then dump ASCII(TEXT) files of any size out to the ImageWriter.

TYPE (by James G. Hanson) - A program to allow you to print to the Macintosh screen ASCII(text) files one screenful at a time.

In the Terminal folder:

AutoTEP (by Ralph L. Miller, Dennis Brothers, and Lofty Becker) - Auto TEP is based on Dennis Brothers' MacTEP version 1.87. It has all the features of that program, and corrects some errors (such as buffer overflow when printing at 1200 baud). It also incorporates the menus which Lofty Becker created for MacTEP version 1.81, and updates them to the 1.87 version. It uses overlays so that desk accessories can be used with the program, and no special CLEAR instructions are needed. It adds certain menu features, such as clickable user selection of XON/XOFF and modem hangup. It also has clickable control of scrolling. However, the primary innovation is full auto-logon sequences - not just auto dialing, but full auto-logon.

Auto TEP Users Manual (by Ralph L. Miller) - The documentation for AutoTEP.

AutoTEP.ovl (by Ralph L. Miller, Dennis Brothers, and Lofty Becker) - An overlay for AutoTEP.

In the Adventure folder:

C.I.A. - You and your partner are on a secret mission. You tell your partner what to do and he reports back to you with what he finds. A slight twist on the old adventure format. This game was slightly Macintized by using one font for your input and a different font for your partner's reports.

Mars Escape - Almost generic text adventure, but a lot cheaper than Zork!

Trucker (modified by Scott Watson) - You are a truck driver in LA. It's Monday 8:00 am and you must be in NY city by 4:00 pm on Thursday. How long do you drive? How long do you sleep? How fast do you drive? This is more of a simulation than an adventure. In fact, what's that flashing red light behind me?

Vampire! - This is a simple text adventure with the normal vocabulary of go west, go up, drop garlic, etc.

In the Catalog folder:

Catalogger (by Tom Parrish) - Catalogger is a Microsoft BASIC program. It maintains a disk-based Catalog of Diskettes which contains names and other characteristics of all files on all cataloged diskettes. The program also selectively lists the Catalog. It semi-automatically updates the catalog by reading information directly from diskettes inserted by the user.

Catalogger doc (by Tom Parrish) - How to use catalogger.

List catalog (by Tom Parrish) - The printing module of the catalogger.

Update catalog (by Tom Parrish)- The module that reads the disk directories to update the catalog.

In the Games folder:

Concentration (by Daryl L. Scott) - This is a game like the old tv favorite - without the puzzle. In a very clever use of the Cairo font, this game has you

contd. on pg 39

SHORT TAKES FROM THE MAC GAMING FRONT

by Ronald Wartow

In view of recent SigMac Journal articles noting the interest in games of many club Macintosh owners, I am writing this one-time-only separate GAMESIG article. In the future, for logistical simplicity, the GAMESIG column will discuss all Apple computers, so Macintosh owners who want to be up on games should refer to the GAMESIG column.

You're probably wondering what I know about the Macintosh. Let's face it, my initial GAMESIG article in December should have pegged me as anything other than someone who needs or wants a Macintosh. I had read the numerous articles of complaint concerning the paucity and turtle-like pace of software for the Mac. I made inquiries of software companies and checked what is and what will be available. In an outrageous burst of conspicuous consumption, I gave myself a Mac as a holiday gift, ostensibly to keep you better informed.

I am happy to report that even Macintosh owners can come out of the closet now because slowly but surely the game companies, small and large, are recognizing that the number of Macintosh owners is proliferating at a rapid pace. Hopefully, the gaming software will not be confined, as it is primarily now, to translations of games available or playable on the Apple][systems, but will be so-called "native" Mac games which take full advantage of not only the ease of use of this computer but its advanced capabilities.

SIGMAC DISKS 2 AND 5: You don't have to look far for some fascinating little games for the Mac. These 2 disks contain Life, Daleks, and Reversi. Life is a fascinating example of cells and how they regenerate, stagnate or die over the course of generations. The "game" has been favorably written up. Daleks is a fun game of you against little robots that requires precise strategy and your arsenal includes, if you can believe it, a sonic screwdriver. Reversi, written for a charitable cause by one of Wizardry's co-authors, is or is simi- lar to the game Othello. These are all fun, to say nothing of the other useful utilities and programs on those disks.

Just about, if not all, of the Infocom all-text adventures (Zork I, etc.) are available. Unfortunately, if you've played them on the // series, there is no real reason to play them on the Mac. There are no real gimmicks to make them any different or more playable, no matter how great they are.

On the other hand, check out **CYBORG**, originally and on the Mac, an all-text adventure with a huge difference. Rather than type in all 10 directions (don't forget up and down), your Cyborg control panel lets you click those directions as well as examine locations and objects with the mouse. Your inventory and state of health, as well as other readouts are all mouse-controlled. Of course, you still must type in many things, but the game, which was great on the //][series is terrific on the Mac. Cyborg for the Mac is put out by Broderbund.

LEGACY, by Challenger Software, is hallmarked by stunning graphics. This is a graphic and text adventure game. I haven't gotten very far but the prose is hysterical in its trying to convey a mystical and heavy tone in this game involving magic.

FORBIDDEN QUEST, by Priority Software, is basically all-text but incorporates 5 stunningly graphic art prints. Indication of its scope is the fact that 3500 points is a perfect score. Directions are mouse-controlled and as with the other games, saving and restoring is done on the same disk with the mouse. Although your score goes down if you use it, the program contains hints from subtle through substantial through answer, a very interesting concept.

Although I have only seen it demonstrated at a dealer, arcade and strategy fans should evaluate **"ALICE"**, to my knowledge, the only native game to be put out by Apple or for that matter by almost anyone for the Mac. You are Alice and take on the characteristics of a chosen chess piece and then are chased around the board by opposing chess pieces in quick real-time action. Apparently you can even alter the features of your opposing pieces, and a maze game is also included.

Games that I haven't seen but I understand are head and shoulders above their Apple // fathers, particularly as far as ease of play are concerned, are **MILLIONAIRE** and **SARGON III**.

As for Future Mac games, **WIZARDRY** should be out by January. According to reports, it will be all mouse-driven and be a different game with new monsters, treasures, and whatever. The latest MacWorld contains a letter from Gamestar which is converting its **STAR LEAGUE BASEBALL** for the Mac. **ULTIMA III** will be coming out soon but I understand that it will be the same game, as on the Apple][versions. Penguin is planning to put out **XYPHUS** and **COVETED MIRROR** for the Macintosh in the future. Electronic Arts is preparing **PINBALL CONSTRUCTION SET** for the Mac.

I appeal to Macintosh owners who have played or seen some of the other games available to call me for their comments for incorporation in future articles, or "cross over" and write reviews for GAMESIG. In closing, I express this opinion. The best "game" out is:

For non-Mac owners this translates from the Mac's Cairo font to "MACPAINT (caps lock down) -- Macpaint (caps lock up)."

"Undocumented" Mnemonics contd. from pg 39

EROS	Erase read-only storage
LCC	Load and clear core
EPI	Execute programmer immediately

* Apple Italy only.

Morse-Code Keys contd. from pg 13

```
9130  PRINT "THESE PROGRAMS WERE THEN MODIFIED TO MAKE
      ";
9137  PRINT " ACCESS AND EXIT SIMPLE, THROUGH A
      CENTRAL MENU USED AS 'HELLO'"
9140  PRINT : PRINT "NOTES WILL BE FOUND AT THE END OF
      EACH PROGRAM."
9150  PRINT " TO ADD PROGRAMS TO MENU, ADD
      INSTRUCTIONS,";
9155  PRINT "FOLLOWING FORMAT OF LINES 1100-1199.";
9160  PRINT " THEN ADD TITLES AFTER LINE 117 AND
      CHANGE LINES 250,260 AS NEEDED.
9180  PRINT : PRINT "ABOVE CHANGES MADE BY BORIS
      LEVINE, DECEMBER 1983"
```

PRINTING THE "KEYCAPS" WINDOW

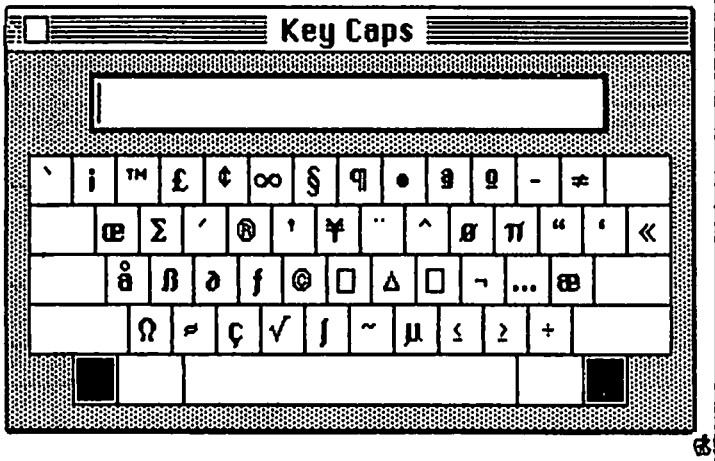
by Peter Trinder

SOUTH BRAMBLE
SUNNING AVENUE
SUNNINGDALE
BERKSHIRE ENGLAND
SL5 9PV 44 990 20232

How do you print the Keycaps window on the Macintosh? You can always hold down Shift+option+4, but doing so means you get only the Shift+option display, which has only a few characters. In addition "4" will always be highlighted. How in any event can you print the regular keycaps display, the shift display, the Caps Lock display, or the unshifted Option display?

This one had me puzzled for a long time. Then I twigged - with the Keycaps window open on the Desktop, first select the display you want to print by pressing the appropriate combination of keys (Shift, Caps Lock, or Option). Hold those keys down. With your other hand, move the cursor into the Text Window of Keycaps and the cursor will change from the arrow to the insertion bar. Press and hold the mouse button and drag the pointer away onto the Desktop. Continue to hold the mouse button down and release the keys you were holding down. Press Shift+command+4 (or Shift+command+3 if you want to save the Keycaps window to disk as a MacPaint document). THEN release the mouse button. Printing will begin.

When you select a Keycaps display with Caps Lock, make sure you release it before pressing Shift+command+4. Otherwise you would print the entire screen.



"UNDOCUMENTED" 6502 MNEMONICS

by Paul Lewis

Recently a list of undocumented System 370 Instructions (IBM's Assembler Language) crossed my desk at work. These "newly" identified instructions seemed to explain why so many things go wrong with our systems at work. On closer examination it appeared that many of these undocumented instructions had slipped from the IBM instruction set to the Apple's 6502 instruction set, again bypassing the tech writers. I think you will agree that these "new" instructions explain why things do not always happen as expected with our PERFECT programs.

A Page From the Stack contd. from pg 37

and up to four others searching for matches of that font's characters. You must have Cairo in the System file of the disk with BASIC on it.

Missile Command (by Steven Weintraut) - Grab your mouse and cover your window of vulnerability.

Mouse-Ball (by Mitchell Waite) - Grab your paddle and show your friends you do have the stuff it takes to score high at this version of Breakout. This fun little game comes from the Sept/Oct issue of our favorite and only Macintosh magazine, MacWorld. (Ed. Note: Not true! See "ICONCEPTS, THE MACazine".)

Orbit (by Todd Fincannon) - Play NASA orbital engineer and guide the shuttle to a new orbit to catch the failed satellite. You control the forward and rearward thrusters as you ease your spacecraft into its new path. Don't fire too long or... Oops! you just set off on a three year mission to Mars (See Mars Escape).

In the RADAR folder:

RADAR.BAS - This program will allow you to download weather information from CompuServe and display maps of the current US weather.

WEATHER - A sample of the information available on CompuServe. This is an encoded weather map. It can be displayed by running RADAR.BAS.

In the Demos folder:

3D-Demos (by Y. Lempereur) - This is a demo of the MacASM assembler. It is an improved version of the one included on SigMac Disk 7. You can now change the rotational speed along any of the three axes.

MacClock (by Steve Capps) - Each computer has a clock program of some kind, but this is the classiest one I've ever seen.

WindowDemo (by Andy Hertzfeld) - This demo was written way back in April of 1982. It shows the state of development of the Macintosh windows at that time. Remember that this is two years before the release of the Mac and one year befor the Lisa. It includes the famous bouncing Pepsi bottle caps.

MNEMONIC	MEANING
BH	Branch and hang
AI	Add improper
DO	Divide and overflow
ARZ	Add and reset to zero
SRZ	Subtract and reset to zero
RI	Read invalid
RP	Read printer
WWLR	Write wrong length record
SRSD	Seek record and scar disk
ED	Eject disk
RD	Rewind disk
BD	Backspace disk
RIRC	Read inter-record gap
UER	Update and erase record
MDB	Move and drop bits
CM	Circulate memory
MLR	Move and lose record
MC	Move continuous
HCF	Halt and catch fire
CVU	Convert to Unary (base 1)
CRN	Convert to Roman Numerals
BAE	Branch on almost equal
DWIM	Do what I mean
ARN	Add Roman Numerals *
BST	Backspace and stretch tape
RBT	Rewind and break tape
SPSW	Scramble program status word
EIOC	Execute invalid Op Code

contd. on pg 38

PRACTICAL PROJECT PRIORITIZER

by John C. Rice

This article will explain a simple algorithm that turns a list of construction projects into a method for creating a priority list. The basic tool is a data-base-management-system. The flexibility and versatility of these systems is simply amazing. The technique will be illustrated using a list of traffic signal construction projects. It could have been a list of state highway projects, a list of schools needing repairs, your family's possible future purchases, or even military weapons procurement. All that is needed is a "wish-list", and the need to develop a final "shopping-list". In addition, throughout the article, references to the Washington Apple Pi program "Super File Cabinet" (SFC) have been included for training purposes.

INTRODUCTION

It is possible to develop very complicated project priority computer programs. Many larger organizations have created main-frame computer programs that include multiple variables, complex weighting factors, and other criteria that are input to the program. All of this is very time-and-money consuming, but provides job-security for the computer department. Do not confuse a project priority algorithm, with the Critical Path Method (CPM). The CPM process is used on a single project, to help manage the course of events. We are trying to determine which project to do first.

Later on we will use the "Benefit Cost" ratio. Of all the parameters that could be used, such as project scope, resources consumed, number of crews required, and the like, Benefit Cost most accurately represents whether a project should or should-not be built. All the rest are just begging the issue. When faced with a list of projects, there is a human tendency to fit in some minor jobs, even though they are far less important. Consider the "In-Basket" on your desk. We all have a tendency to grab some dumb little thing that we can knock out in a hurry, and put off the much more important major task. The Benefit Cost ratio avoids that tendency, and is the most valid prioritizer.

STEP ONE

The first step is to develop the data base itself. Carefully think out exactly what should be included in each "record". Each "record" is composed of many "fields". In the example to be used, the most important field is the name of the project (the street intersection to be signalized). Aside from the reference Record Number assigned by the computer, it is the most important. The remaining fields could consist of items such as project cost, design status, nature of the project, approval status, and a remarks field. When creating your data base, you may even want to insert a couple of dummy fields for future use, and just fill them for the time being with "NA".

With SFC, from the first menu that appears after typing "RUN", select '3'-CREATE A NEW DATA BASE, and assign it a meaningful name such as "Signal.Projects". With SFC, each "field" is created by naming the "HEADER" for a particular column number. The computer automatically reserves the first field '0' for the "Record Number", so do not duplicate that field.

STEP TWO

Having designed your data base, now enter all of your information, one record at a time, field-by-field. This leads to the field called "Project Priority". It will be two letters, and two numbers - for example BC85. The first letter is the "Political Priority", from A to E, with A being the highest priority, and E being the lowest. Including this factor recognizes the fact-of-life, that most of us work for a higher authority, that often "orders" the completion of a project (regardless of its benefit as a whole). The second letter represents the estimated Benefit Cost ratio (B/C), for that project. Again, A represents a high B/C, say 5 or more; B would be 2; C say 1.2; D would be a marginal project with a B/C of only 1.0; and E would be a B/C less than one, that would be purely cosmetic. This B/C can be from an actual calculation, or from the estimate of an experienced manager. Finally, the two numbers represent the "desired" year of construction. The year must come last for this algorithm to work right, however the Political Priority and the Benefit Cost letters could be reversed to more accurately reflect your agency. You will be suprised at how fast you can go down the list of projects assigning estimated letters and numbers.

STEP THREE

There is another important field used in this process. That is the Construction Date. On the first pass through the data base, enter your best guess of when the project will be under construction. Some of these will be accurate, because the date is tied (by necessity) to outside events. The construction date is entered, for example: 84-9, representing 1984, month of September. It is important to have the year first, for the sorting process to work properly. Shown below is a typical header, and a single record.

REC#	LOCATION	PRIORITY	CONST DATE
6	Oakmont Dr-Shady Grove Rd	BC84	84-7

To accomplish Steps Two and Three above with SFC, from the Main Menu, select '3'-ADD NEW RECORDS. Then record by record, location by location, build your list of projects. Be sure to 'SAVE' your data base to the disk file.

STEP FOUR

Now stand back and let the data-base-management-system do its work. The strength of the alogrithm is the use of the string-sorting capability of the data-base management system. First, sort the data base by the Location field. This will alphabetize your list. Store your newly sorted list as your fundamental data base, replacing the original.

With SFC, from the main menu, select '6'-SORT THE DATA BASE. From the next menu that appears, select No. 1 'Location' upon which to perform the sort. Store the sorted data base.

STEP FIVE

Now re-sort the list by the Project Priority field. YOU NOW HAVE YOUR PRIORITIZED PROJECT LIST! And it didn't hurt at all. You will probably want to save

contd.

this as an additional data base, with a different name. It is best to get a printout of the list at this point, although you may work at the screen if the list is small.

With SFC, from the Main Menu, again select '6'-SORT THE DATA BASE. This time from the sub-menu, select '2' the 'PRIORITY' column that will be sorted. To gnerate a printout, you will have to carefully layout an output format, specifying column by column spacing. It is best to do this on a piece of scratch paper first. Save the output format you have created. With SFC, you must first turn the printer on from the Main Menu, with '7'. Then use '5'-GENERATE REPORTS. From the sub-menu that appears, enter '2'-CREATE A NEW REPORT FORMAT.

STEP SIX

This is where an experienced manager earns his/her money. With the prioritized list in front of you, and using the data-base-management-system, call-up your fundamental data base. Now, for each record, re-enter the data in the Construction Date field. Just go down the list, including in each month the number of projects your agency can perform. Then move to the next month. As stated before, some projects will have a required date, that will not permit revision. The number of projects your agency can perform will be determined by work-force size, available equipment, and the all-important availablility of funds. Re-save this revised data base under the original name.

With SFC, to make changes, from the Main Menu, select '2'-SEARCH AND/OR CHANGE DATA. From the sub-menu that appears, and having the printout in front of you, select '3'-CHANGE BY RECORD NUMBER. You will then be asked the record number to change. Upon your response, all fields of that record will be displayed. Enter the field number associated with the construction date, and supply the corrected value. Repeat for the rest of the records to be given revised dates, and return to the Main Menu, having resaved your data base.

STEP SEVEN

Next sort the new data base by the Construction Date field. Request a printout. Input a printout "selection criteria" of those records having a Construction Date field with "84" in it. You have just generated a printout of your 1984 construction program! Further, if during the set-up, you have used the data-base-management-system to total on the Cost field, you will have the total cost of the construction program for 1984.

With SFC, from the Main Menu, again select '6'-SORT THE DATA BASE. This time, from the sub-menu that appears, sort on the Construction Date field.

CONCLUSION

The two fields described above (Project Priority, and Construction Date) offer the manager an opportunity to create a construction program by priority, but then to override the initial results according to outside criteria. These two fields work together to produce the final construction program listing. The technique is useful in just about any field of endeavor, and it is hoped you will find it helpful in your work.

DAISYWHEELING: On Silence and Sundry

by Arsen Darnay

(Guest Columnist from Mini'app'les)

Just before the holidays, an outfit called First Class Peripherals began promoting a hard disk for the Apple][computers with four-color inserts in the magazines and with direct mail aimed at known Apple users.

Ten megabytes for under $700. The pictures looked good. The text was not too hokey either. The price struck me as very low indeed - because I'd learned slowly that to own the megabytes of storage, you had to shell out twice that much for half of that capacity.

The system is called The Sider - perhaps because it is a tall and narrow unit and best fits by the side of the computer. It is sold directly, through the mail. The ads show the hard disk inside a rural mailbox, with room to spare.

I ordered the unit after some hesitation and several calls to local dealers and to First Class Peripherals' 800-number. Aside from normal concerns any prospective buyer might have, I wanted to find out about the Sider's operating characteristics, especially the amount of noise it makes.

I am one of the ten percent of the population acutely sensitive to some kinds of noise. Wind in the willows or surf on the shore are nice. I like. But mechanical vibrations at some frequencies and the nerve-jangling hum of certain kinds of electronic devices... No like. Make for nearest horizon. Include me out.

My first contact with computers was a grimy, early IBM-PC. I used to spend hours wrestling with spreadsheets and never failed to grow melon-sized headaches from the fan and the monitor's hum (the latter possibly imagined). These days I work on an IBMT-XT at times - same problem. My Apples have no fans. Never! I'm with Steve Jobs, founder of Apple, who is said to hate fans. Long may he prevail. My Zenith green monitor is quiet. My amber one hums - and will be replaced.

So I called some dealers hereabouts trying to learn whether or not hard disks are inherenly noisy in that subliminally, poisonously subtle way that makes me crawl ceilings like Spiderman. I learned mostly what I'd already concluded from other contacts with the retail sector - the people at computer stores are changing; the experienced pros have left for new pastures, and the new breed knows nothing at all, is matched precisely to the new clientelle, the Christmassy couple defensively shopping in the dangerous land of the unfamiliar.

They had heard about hard disks but they hadn't actually worked with one. They supposed that they were quiet, but So-and-so was not here at the moment, and I should apply to So-and-so for technical information.

And the pleasant voice at First Class Peripherals assured me that The Sider was as silent as the grave.

So I wrote a check. I told myself that this was a mature decision, but I knew in my heart that I was in the grip of that by now familiar acquisitive passion. Still. Ten megabytes for under $700 . . .

The Sider came, at last, in January. I set to work installing it on the //e. This was a tricky exercise because I couldn't distinguish the 'upper L-bracket' from another 'L-bracket' and couldn't see a 'lower L-bracket' anywhere in my plastic envelopes. The drawing was murky, faded, and ambiguous. I had to remove half my cards to get into the back of the unit. And to move the cable itself through the slot reminded me of the rich man and the eye of the needle or Caesarean section in reverse. I fiddled with the tiniest of screw drivers, Apple upside-down, a flashlight between my teeth, etc., etc. And finally, two hours later, manual in hand, I was ready to 'power on the Sider' as instructed. And I did so.

Now a question. Have you ever been in an old-fashioned butcher shop? I mean one of those places where they still slice meat for you using machines with blades at an angle and the clerk has to push the meat against the blade for each slice?

Very well. You know the sound those machines make when you turn them on. It's a high-pitched whine with just a whiff of steel scraping steel. And as the revs grow higher, the whine thins out until only dogs and people like me can hear it.

Thus the sound of The Sider. I stood there dumbstruck with disappointment.

My telephone has a long, long cord. I dialed up First Class Peripherals and, after a brief conversation, I held the telephone against The Sider so that the technocrat on the other end of the line could hear the sound of his product. He said he thought he heard it, but there was a lot of noise in his office, etc. Confessed that they'd gotten quite a few calls about noise; some of the Siders were a bit noisy; but the unit in their own office made no sound at all.

Needless to say, I returned my Sider with some regret. I'd love to have the megabytes; I'd love to have them for under $700; but silence is more precious.

* * *

I have a commission to develop a maze-type game for the Apple family of computers. With that chore ahead, I bought myself a Taxan color monitor, Model 210 - the one that permits you to have both RGB color (with a card) and the normal TV-type color display. Along with that I acquired the Digital Paintbrush graphics system - about which at some other time. But regarding the Taxan, I am very happy with the unit. Not the slightest hum, and the colors are truly stunning.

* * *

Pleased to report that some of these columns are now also appearing in Washington Apple Pi, the Apple user group serving Washington, D.C. and surrounding areas. This pleases me especially since I'm an old Washington hand, going back a few years. Used to live in Fairfax, Va. Regularly battled my way downtown on Highway 50 or I-95 (before it was renamed). Used to play small notes on the great organ of the Bureaucracy. These days my commute is from the bedroom to the office by way of the kitchen, but some memories never die. My heart goes out to all of you on or about the Potomac . . .

THE NEW GUTENBERG SR. — A BREAKTHROUGH IN WORD PROCESSING

by H. J. Silverstone

This article *should* look different! It has been written and printed using Gutenberg and an Apple Imagewriter Printer with downloaded character sets in a style close enough to WAP's format of 15 characters/inch and 8 lines/inch to be directly photo-reproducible – but more on that later.

This is a review of a pre-release copy of the New Gutenberg Sr. word processing program *without* benefit of the manual, the imminent completion of which will permit the distribution of the program, but with the benefit of a two-page summary of new features provided by John Wagner, the author of Gutenberg, and with the benefit of almost a year's experience using the older Gutenberg Sr. This writer apologizes in advance for not commenting on the additional features he was not clever enough to discover by trial and error, but he also wishes to point out in advance that his already off-scale rave review can only go further off scale when the manual is available.

Gutenberg is by far the most powerful and versatile word processing program that exists on any microcomputer. It is even more powerful than the NBI word processor used by the secretaries in the writer's university chemistry department, and which cost more than an expensive imported car. Gutenberg with an Apple Imagewriter printer is capable of producing printed copy whose appearance approaches that of a typeset book, complete with figures, tables, pictures, superscripts, subscripts, mathematical symbols, and foreign alphabets, all in an enormous variety of type styles and widths. But do not be misled: it is not necessary to write in French or Greek or Hebrew (which incidentally Gutenberg does from right to left!) or to write mathematical equations or chemical structures to appreciate Gutenberg.

NORMAL . . .

Just the appearance of a letter or a report using Gutenberg's downloaded normal font with perhaps a few titles in its downloaded **bold font** can be enough to make one fall in love with Gutenberg. In fact, so much of the power of Gutenberg turns up on the printed page, that it seemed mandatory that this article not be retyped but be directly reproduced. But the editor has stringent space requirements . . .

. . . VS. SQUASHED

Consequently Gutenberg's "micro font" is being used for most of this article. Like all of Gutenberg's downloadable fonts, the micro font is proportional. It can be printed in at least 10 different widths on the Imagewriter.

The most narrow width is 160 dots per inch.
The most narrow width after 160 is 144 dots per inch.

In the 144 dots/inch width, the micro font seems to average about 15 characters per inch, the normal WAP Journal value. The normal WAP line spacing is 8 lines per inch, which is a little too tight here: descenders run into the tops of the letters of the next line at 8/inch. A good compromise is 7.2 lines/inch. The net result is that the appearance of this article mimics WAP's normal style fairly closely – on a completely different printer. But again, normally I wouldn't use such a squashed format. The preceding paragraph is printed in the font and spacing I ordinarily use, prefer, and recommend when compactness is less paramount.

DID YOU NOTICE?

By the way, you should have already noticed five things not yet explicitly pointed out: one is the "quotation marks" – both varieties are possible; a second is the equality of the spaces between words on a single line; a third is the true dash "—" versus the hyphen "-"; a fourth is the aesthetically pleasing "g"; and a fifth is the multiple column capability. These are some of the details that contribute to the superb quality of the Gutenberg's final printed product. Note that the two columns are printed sequentially, with the printer reverse-line-feeding from the bottom of the first column to the top of the second.

The original Gutenberg Sr. and also the Gutenberg Jr. were last reviewed in the November 1983 issue of the WAP Jorunal by P. K. Wong, who tried to describe all of Gutenberg's features. I am not so ambitious: here I will only try to describe those features that to me make Gutenberg revolutionary – that put it in a class by itself – and that make it exciting to use.

WHERE TO START

To describe Gutenberg is a bit of a problem, because it has so many striking, complementary, but different features. Its operations can be grouped under the broad headings: printing; editing; file handling; and utilities. But these titles are deceptively too simple. For instance, consider the equation,

$$\Delta\beta_2^{(1)} = \frac{(2r)^{2\beta_2^{(0)}} e^{-r}}{n_2!(n_2+m)!}. \qquad (1)$$

Of course this equation must be discussed under "printing," since it involves the precise placement of characters on the page to make superscripts and subscripts, super- and subscripts on superscripts, the alignment of superscripts over subscripts, and the construction of the fraction. This aspect of printing is formatting, and in Gutenberg the formatting is so powerful that it really constitutes a programmable language! Equation (1) also involves Greek letters. The foreign alphabets and special symbols that are supplied with Gutenberg, and how new ones can be designed by the user, might fall under the heading, "utilities."

contd.

But then you might wonder, what do the Δ and β look like on the Apple screen? Of course they look just like a delta and a beta – but now this takes us into editing. The resolution of the pedogogical dilemma attempted here is to start with the printed result and to work backwards towards explaining how it came about.

CONTROL OVER WHERE TEXT IS PUT ON THE PRINTED PAGE

Gutenberg first divides the printed page into one or more blocks. The first page of this article has four blocks: the title; the two columns of text; and the footer "contd." The blocks are written sequentially. I won't go into detail about how to define blocks, but it is not complicated. Gutenberg's default formats provide automatically for header, footer, and one or two text blocks.

When printing, placement depends on the left and right boundaries, the "quadding" (left, right, center, justify), the "body leading" (distance between lines), the font being used, and the print width specified, among others. All of these specifications can be changed anywhere in the text as frequently as is desired. It is possible to move incrementally forward, backward, up, and down – again anywhere in the text. It is possible to move absolutely to any position on the page. It is possible to set up horizontal tab positions anywhere on the line. Further, tab positions can be determined at printing time (see below).

Here is an example of 10 widths
Width 1.
Width 2.
Width 3.
Width 4.
Width 5.
Width 6.
Width 7.
Width 8.
Width 9.
Width 10.

For a more interesting example, within this paragraph first the right boundary is changed and some Italian is printed. Then the right boundary is restored, the left boundary is changed, the "y position" is moved back to where it was at the beginning of the Italian, and the English translation is printed. Finally the left boundary is restored and printing resumes as before.

Vorremmo pranzare adesso. Qual è la specialità della casa?

We'd like to have lunch now. What is the specialty of the house?

Notice also the accents. These are centered over the letters automatically.

For a third example, the command to move up 6/144 inch on an Imagewriter is <up6>, cancelled by <dn6>. Thus, E=mc<up6>2<dn6> comes out: $E=mc^2$.

$There^{is^{no^{end^{to_{what_{you_{can}}}}}}}do.$

It is interesting to explain how to align superscripts with subscripts. For instance, a_1^2 can be obtained by the sequence, a<dn8>1<bscw;up16>2<dn8>. The meaning is almost obvious: (1) Print a. (2) Go down 8 units and print a 1. (3) Back space "current width" (remember, an i is narrow and a w is wide). (4) Go up 16 units and print a 2. (5) Go down 8 units.

A second way to print a_1^2 illustrates the use of tabs, which will be discussed in some detail. The sequence a<stA,cx;dn8>1<up16;tA>2<dn8> means: (1) Print a. (2) Set Tab A to the "current x position." (3) Move down 8 units and print 1. (4) Move up 16 units, tab to Position A, and print 2. (5) Go down 8 units. This way of setting tabs on the fly was used in constructing the fraction in Eq. (1).

Tabs can be set to specific positions at any time and at any place in the text (so long as it is before the tab is needed). For instance let us set Tabs A, B, and C, to 2, 12, and 22 tenths of an inch from the left margin. The command sequence is <stA,2c;stB,12c;stC,22c>. One tabs to A, B, and C via the commands <tA>, <tB>, and <tC>. Thus, <tA>1 <tB>10 <tC>100 yields,

1 10 100

Now here is something cute: The tabs do not have to be accessed in left to right order. For instance, let's change Tab A to 1.7 inches from the left margin via <stA,17c>. Then the same <tA>1 <tB>10 <tC>100 produces

10 1 100

Gutenberg actually prints the 1, 10, 100 in that order: the middle position, the left position, and finally the right position. My daughter recently completed filling out her extracurricular activities and hours-per-week doing them for several college applications. On some the hours came before the activity, on others after. She typed them in via Gutenberg only once, and then reset the tab positions appropriately to print the columns in the order demanded by each application.

NEW GUTENBERG SR. TAB FEATURE

So far all the features described above exist in the old Gutenberg Sr. There is in the New Gutenberg Sr. an automatic tabbing feature that can be used to make simple tables effortlessly. Here I will make a table whose entries are words, because it is clear that words have different widths, and misalignment is readily apparent. Without automatic tabbing, here is what happens:

one two three four
five six seven eight

With automatic tabbing the exact same two lines are lined up in cleanly separated columns:

one	two	three	four
five	six	seven	eight

MACROS

The sequence a<stA,cx;dn8>1<up16;tA>2<dn8> for a_1^2 is a bit tiresome if repeated several times. Gutenberg permits such strings of commands to be defined as two-character "macros." For instance, the macro definition,

<sf,M9<<stA,cx;dn8>1<up16;tA>1<dn8>>>

leads to the much simpler invocation of aligned super-

contd.

and subscripts, a<H9>1|2| = a_1^2, a<H9>sub|super| = a_{sub}^{super}.

NEW GUTENBERG SR. TEXT CAPTURING MACROS

A nice surprise in the New Gutenberg Sr. is the capability to capture text and then to manipulate it via macros. In fact the numerator and denominator of the fraction in Eq. (1) were first separately captured, then measured to find out how far the fraction would extend to the right. Then the denominator and numerator could be printed between the initial position and the calculated final position, with a horizontal line drawn between them.

These remarks only scratch the surface on how Gutenberg can place text on paper. I have said nothing about the 130 variables (up from 26 in the old version) and the conditional (less than, equal, greater than) and arithmetic commands that are part of the formatting language. Nor have I explained how equations, references, and footnotes can be automatically numbered. I hope, however, that the comments so far convey some of the flavor of how Gutenberg's control over the printed page works. Before proceeding to discuss editing, however, I want to make two final sets of remarks about printing and printers.

NEW GUTENBERG SR. PRINT INITIALIZATION PROCEDURE, MESSAGE & PAUSE COMMANDS

One clumsy feature of the old Gutenberg Sr. was the effort it took to start printing. First the proper print program had to be loaded from disk and run. Then the file names had to be typed in. Each time one switched from editing to printing, several finger strokes and several tens of seconds were wasted with these steps. The New Gutenberg Sr. keeps the print program in memory! (Actually, either Print or Paint, but not both, stays memory resident.) To start printing, it is only necessary to type control-P. If you are still editing a file, that file is closed and its name entered as the file to be printed. Alternatively, if you are in the directory, the file whose name the cursor is on when control-P is typed is automatically entered. If you were in "Ready" mode, then when you enter the file name, Gutenberg immediately checks the disk to make sure it is there before proceeding further. Since the print program is memory resident (in fact it gets loaded in at BOOT time), switching from edit to print and back again takes only a few seconds.

Gutenberg is capable of handling very large text files, although my own personal taste is to keep their size moderate. Very long documents are made possible by the "next file" command put at the end of a text file. Gutenberg immediately proceeds to the next file specified as if the two files were one. The New Gutenberg Sr. has two new commands, "message" and "pause," that make it possible to put a message on the screen while printing (such as CHANGE TO DISK NO. 18) and to pause. This makes it convenient and comfortable to have a single document be spread out in files over many disks, yet be printed all at once. That is, the document size is not limited by memory or the size of a diskette, but only by the number of diskettes you own! Another use of these two commands would be to permit a label to be printed gracefully with a letter.

THE GOOD AND BAD NEWS ABOUT PRINTERS

Gutenbergs's main limitation is that it is highly printer specific. It works superbly well with the Apple Imagewriter or Apple Dot Matrix printer, which are virtually identical in their software control. Similar to the two Apple printers are the C. Itoh Prowriter 8510 and the NEC 8023. Gutenberg can move from one position on the page to any other position on any of these printers, which are capable of reverse line feeds, vertical motion in units of 1/144th of an inch, and horizontal motion in units of 1/160th of an inch. However, the software control is different enough that Gutenberg does not support font downloading into the latter two, which makes the Imagewriter (the Apple DMP is no longer sold) with an Apple Super Serial Card the best choice by far. (In fact, when I saw the results one of my colleagues got with Gutenberg on an Imagewriter, I immediately went out and bought an Imagewriter to replace my mechanically-almost-identical Prowriter. To this day I do not know why Apple doesn't use Gutenberg to promote the sale of Imagewriters. There is nothing that can run an Imagewriter like Gutenberg.) An additional enhancement to the New Gutenberg Sr. Apple-printer driver is an automatic feature that makes it possible to use the 15-inch Imagewriter without getting "line too long" messages that result from Gutenberg's 200-character line-output-buffer overflowing.

Except as noted, the remarks on positional control apply equally well to the four printers mentioned above. The (printing) performance of Gutenberg on other printers is not so powerful as it is on the Apple, Prowriter, and NEC 8023 printers (but it is certainly no less powerful than other word processing programs on the other printers).

THE GOOD NEWS ABOUT EDITING

One criticism of the old Gutenberg Sr. was that its editing capability was not in the same league as its printing capability. It did have some exceptional features, such as "change" and "programmed" editing: any key could be changed to stand for a string of text, always or conditionally (depending whether it was struck twice or whether it came immediately after a "return"); and any key could be made to represent a sequence of editing operations. But the screen display was only 40 columns wide, text could be searched for only in the forward direction, the cursor keys did not wrap, and transferring blocks of text required two steps, mark-save-copy, then mark-delete. The good news is that the editing deficiencies have been remedied, and editing with the New Gutenberg Sr. is a dream.

With the New Gutenberg Sr. the right and left arrows wrap, and the up and down arrows scroll the screen when pushed against the top or bottom of the display. On an Apple IIc or //e with an extended memory 80 column card, the display can be 80 columns by 16 lines. Gutenberg ordinarily uses the high-resolution graphics screen for its text representation so that foreign characters and mathematical symbols will appear normal on the screen. With the extended-memory //e it uses the double-density high-resolution graphics screen (as does Gutenberg Jr.). It can be forced to use the 40 or 80 column text screens, in which case

contd.

there are 24 lines, but frankly I never do this because special characters no longer can be seen correctly. It is hard not to use special characters when they're available. On a II+, the display is still 40 columns: only single-density high-resolution graphics are available, and 80 column cards per se are not supported.

Text copying, transferring, and deleting have been greatly enhanced. The copy buffer is now 3.5k bytes (the old version was only 1.5k bytes in size). To transfer a block, one types "M" to mark the beginning, "S" at the end (to save the block in the copy buffer), "control-E" to erase the block from the text file, and then, after moving the cursor to the new position, "T" to transfer the block from the copy buffer back to the text file. If "T" is struck a second time, the copy buffer is preserved so that the text can be written more than once. As before, it is possible to assemble several pieces into the copy buffer before writing it. If the "control-E" is omitted, then the block is not deleted. If the "S" is omitted, the original block is only erased and not copied into the copy buffer. Note that the two-finger "control-E" replaces the one-finger "D" (delete) of the old Gutenberg "MD" sequence, a nice safety feature. The New Gutenberg Sr. also has a delete-to-the-end-of-line (either end) or to-the-beginning- or end-of-the-current-screen, as well as the older delete-line command.

Search and search-and-replace in the New Gutenberg Sr. can be done forward or backward in the file. The whole process of conditional searches, wildcard characters, etc., has been made much easier and more powerful, and multiple search-and-replace's are now possible. Also, there is an additional insert command: the I or A commands wipe the rest of the line or screen blank when entered, while the new Y command pushes the old text to the right as each new character is entered.

What seems to me to be particularly nice about editing with the New Gutenberg Sr. is the speed at which it can be done. There is now a built in type-ahead buffer (it was easy to out-type the old version). The key strokes for each command have been reduced to a minimum, and the program responds very rapidly. I am adept at the use of Super-Text and Screen-Writer II, and I considered both of them faster than the old Gutenberg. The New Gutenberg Sr. beats them both, at least in my hands.

WHAT A GUTENBERG TEXT FILE LOOKS LIKE

Perhaps this is a good point to indicate what goes into a Gutenberg text file. The bare minimum is text and formatting commands. The formatting commands are always enclosed by angular brackets <> and can be of two forms: basic Gutenberg printer/formatting commands; and macros, which are most easily referred to by a two-character code, such as <M9> as used above in the aligned superscript-subscript example. Macro definitions may appear in the text file or more cleanly in a separate format file. BUT it is not really necessary to learn how the formatting commands work, because there are several standard format files provided, along with instructions how to use them in the sense that <S1> should be placed in the text to switch to single spacing, <S2> for double spacing, etc. It is not necessary for the user to know that <S1> is defined in the standard format file to be <BL,1L>. Incidentally, the experienced Gutenberg user is probably wondering how I got all the <'s and >'s printed out without having Gutenberg think they were commands. In the New Gutenberg Sr. one puts a control-D in the text (mnemonic dump), and all subsequent angular brackets are regarded as text until one puts in a control-P (mnemonic print).

SPECIAL CHARACTERS: FOREIGN LANGUAGES, MATHEMATICAL SYMBOLS, ETC.

For some of us, the most fantastic capability of Gutenberg is its ability to print and to show on the screen characters and graphics other than the 95 standard characters available in the printer and in the Apple screen-character-generator chip. If you write in Greek, you see what you write on the screen in Greek, and with a downloaded Greek character font in the Apple Imagewriter or DMP, you print as fast as you would English text. My personal use requires writing mathematical equations using lots of Greek letters and special symbols. Gutenberg not only has made it possible, but a pleasure.

Gutenberg can handle special characters two different ways: by graphics (on any of its supported graphics printers) and by downloading (only on the Imagewriter and DMP). Downloaded characters are generally prettier because their dots can be twice as close together as graphics characters, making for smoother slanting and curved lines, because they can also be up to 16 dots wide rather than only 7, and because they are proportional rather than fixed in width. Compare ß with β, φ with ϕ, and ψ with ψ. On the other hand, downloaded characters can only be 8 dots high, whereas Gutenberg's graphics characters can be 12 dots high. You can make $\frac{1}{2}$ as a graphics character, but to do ½ as a downloaded character, you have to slant the solidus.

There are two character creation utilities with the New Gutenberg Sr., SCREEN and DOWNLOAD. The former is to design screen characters. They can also be printed in graphics. The latter is to design downloaded characters. Both are very similar in how they work. An appropriately sized grid is placed on the screen along with a sub-menu giving all allowable commands. The character is designed by turning on blocks in the grid. New characters may be created, old ones updated, and old ones may be revised and then switched to other characters. For instance, to make ö I started with o and added the umlaut, then renamed the ö to the position normally occupied by the backslash \, which I never use. (Another way to print ö is to make the umlaut a floating accent; compare the Italian text printed above.) The SCREEN utility is a greatly enhanced replacement for the GRAPHICS utility of the old Gutenberg, and it has the ability (as does DOWNLOAD) to pull individual characters from other fonts on the disk.

FONTS PROVIDED WITH THE NEW GUTENBERG SR.

The New Gutenberg Sr. comes with several fonts that can be used as is, that can be slightly modified to individual taste, or that can be used as a resource pool for making custom, special purpose fonts. The title of this article is printed using Gutenberg's

contd.

"headline" graphics font. A sampling of some of the downloadable fonts, provided with the program, follows:

Micro:	abcdefg
normal:	abcdefg
bold:	**abcdefg**
italic:	*abcdefg*
SMALL-CAPITAL:	ABCDEFG
Cyrillic:	абцдефг
Greek:	αβçδεφγ
Hebrew:	בגעדיבא

FILE AND DISK UTILITIES

Another shortcoming of the old Gutenberg was the clumsiness of some of the file and disk manipulating operations. Usually specific programs, such as COPY, FORMATDD, DELETE, etc., had either to be run directly from the disk or invoked from memory – always by typing in the entire name. From the "READY" mode with the New Gutenberg Sr., touching the right-arrow key instantly gives a menu from which can be chosen by number (a single key-stroke) COPY FILES, DELETE FILES, FORMAT DATA DISKS, LOCK FILES, UNLOCK FILES, AVAILABLE SPACE (on disk), and CHECK SYSTEM (by which certain checksums of memory are recomputed to detect certain kinds of memory failure). These operations are performed with the greatest of ease with the New Gutenberg Sr.

PAINT

For some the PAINT program is the most fantastic feature of Gutenberg. I have put PAINT off to last because I just am not so familiar with it. I have never used it in a serious way. Nevertheless, it is a program that permits creation of graphics either up to twice the width or twice the height (but not both simultaneously) of the Apple high-resolution graphics screen. The major difference between the old and new versions is that PAINT can now be permanently memory resident and accessed instantly by typing control-P. As mentioned before, either PAINT or PRINT can remain in memory while editing, but not both. Also, either one can be designated to be loaded at boot time. PAINT can not only create graphics, but it can load and modify graphics created by other programs and saved as graphics-screen-dump DOS 3.3 files. Moreover, Gutenberg's graphics images can be printed in the middle of text, as with my somewhat minimalist re-creation of the WAP logo shown here. One can imagine the usefulness of PAINT in preparing graphs and figures for inclusion and automatic printing with the text.

MISCELLANEOUS

There are many more features of the New Gutenberg Sr. than there is room here to describe. There are a few, however, that I do want to mention, if only briefly.

The program GLOBAL can translate Gutenberg or DOS files into DOS or Gutenberg files (all four possible combinations) while at the same time replacing various characters or combinations of characters with different combinations of characters. One of my colleagues uses GLOBAL extensively for files sent back and forth between his Apple, an IBM mainframe computer, and his biology department's stand-alone word processor.

Another new feature is a split/merge utility that is quick and easy to use.

In the New Gutenberg Sr., the escape key is (except for exiting from the edit mode) a universal cancel/panic key. From the "READY" mode, the space key immediately gives the directory. The "1" and "2" keys point to disk drives 1 and 2. On a //e, the "8" key and "4" key select 80 and 40 columns. These single-key commands are very nice and contribute greatly to the ease and pleasure of use of the New Gutenberg.

As a final miscellaneous feature, the New Gutenberg Sr. has an INSTALL program that permits one to install a printer driver, a format file, a screen font, and a change file to be loaded at boot time. It also seems that I neglected to mention before this point a very important new feature – formats stay in memory and do not have to be re-specified each time when going back and forth between editing and printing.

EASE OF LEARNING

One of the criticisms of the old Gutenberg was of the effort and number of hours needed to become proficient in its use. Although I cannot comment definitively on how much effort the New Gutenberg Sr. will require without seeing the manual and the new tutorials, I have formed an opinion based on using the new version and based on the standard format files and modules provided with the New Gutenberg Sr., which have comments built into them. Also the standard letter format file and the standard report format file have on the disk instruction files on how to use them. My guess is that it will be much easier for the beginner both to use the new version immediately and to learn some of its more complicated subtleties. If one can imagine some sort of ratio that measures the effort of learning divided by the power of the word processing program, then the old version already had the lowest effort/power ratio, and the new one will probably reduce the old ratio by an order of magnitude.

CONCLUSION

For the beauty of its printed output, for the creative possibilities it provides, for the ease of its use, the New Gutenberg Sr. with an Apple Imagewriter printer and Apple Super Serial Card interface is head, shoulders, and torso above all other word processing programs. For foreign languages and for technical writing, it is the *only* word processing program. It is a word processor that one might never outgrow. Certainly it gives one a great sense of pride and satisfaction in the appearance of the printed fruits of one's labors.

LOADING AN APPLE WRITER GLOSSARY QUICKLY

by Thomas S. Warrick

One of the most useful features of Apple Writer II and //e is the glossary function that allows users to enter commonly used words and phrases with only two keystrokes. A user can save on a disk a glossary file of frequently used words and phrases that can then be loaded into memory with only four or five easily remembered keystrokes using a very simple Word Processing Language program. This article explains how.

A glossary file is simply a standard Apple Writer text file in a special format. Each glossary entry must begin in the left-most position on a separate line. The first character on the line is the "name" of the entry that must be entered after Ctrl-G in order to retrieve the entry. Thus, the entry:

wWashington Apple Pi

means that if you enter Ctrl-G followed by the letter "w", the phrase "Washington Apple Pi" would be entered as if it had been typed in full. To create a glossary file, first boot up Apple Writer or, if Apple Writer is already running on your computer, clear memory using Ctrl-N followed by a "y" and a Return. With memory clear, which can be verified by looking for "Len: 0" on the status line, enter the name of the glossary entry followed immediately by the entry itself. Press return and type the next entry. Repeat this process until all entries have been made. If you are using a copy of Apple Writer that is not write-protected, which you should be doing, save the file on the copy of Apple Writer that you normally use. Save it under the name of "MY GLOSSARY" or some similar title that will distinguish it from other files on the disk.

Now comes the tricky part. Write a short, easy-to-remember Word Processing Language program that will load the glossary file automatically. Word Processing Language (WPL) is one of the most popular and least understood features of Apple Writer. WPL is not difficult - if you know assembly language. If you don't, WPL syntax can be frustrating and the command set confining. But in concept, WPL is quite simple. It operates exactly as if you, the user, were entering the characters by hand, except that in WPL the commands come from a disk file. It is therefore very similar in concept to the way DOS 3.3 EXEC files work.

Entry of a WPL program begins in the same way as entry of a glossary file. If Apple Writer is not currently running on your computer, boot it up. If it is, clear memory using Ctrl-N followed by "y" and a Return.

This is the WPL file that will load the glossary file MY GLOSSARY automatically for Apple Writer //e:

```
 PND
 QEMY GLOSSARY
 PYD
```

(For Apple Writer II, the process is only slightly different. Enter "5" instead of "E" in the second line.) Note that the first character in each line is a space; this is required. After you enter these three lines, save it to disk under a name that is short and easy to remember. I use the name "DO" for a reason that will become clear momentarily.

Congratulations, you have now written your first WPL program. What does it do? The first line is the equivalent of a Ctrl-P followed by the WPL command "ND", which means "no display." This command turns off the text display during the execution of the WPL program. The next line loads the glossary file. As the first non-blank character after the first space in a WPL command line is treated as a control character, the "Q" is processed as if you had manually typed a Ctrl-Q from the keyboard. This would normally get you the "Additional Functions Menu," and it has the same effect here, although you will not see it. The next character, "E" (or "5" if you have Apple Writer II), is the equivalent of selecting the "Load [G]lossary File" option. The remainder of the line is the equivalent of manually entering the name of the glossary file that Apple Writer should load, in this case "MY GLOSSARY". The last line is the equivalent of a Ctrl-P followed by the WPL command "YD", which means "yes display". This counteracts the effect of the first line.

If you have saved this WPL program under the name "DO", all you need to do to load the glossary file quickly after booting up Apple Writer is to enter Ctrl-P followed by the four characters "DODO". The Ctrl-P invokes the print/program command set, which includes WPL commands. The first two letters, "DO", represent the command to run a WPL program. The last two letters are the name of the short WPL program saved earlier. Remembering this should be easy, as even a "dodo" such as I can remember to enter Ctrl-P DODO. If typing five characters takes too much time, you can reduce the number of characters required by 20 percent by naming the WPL file with a one-letter file name such as "G". The key sequence necessary to load the glossary file in that case would then be Ctrl-P DOG.

BUGS & OTHER PARASITES

Bob Velke submits the following:

My article in the January 1985 WAP Journal, "Setting the Date with ProDOS", contained an error on page 18. The error only affects the default setting of the date. Line 110 should read:

```
110 IF LEN(S$=0 THEN GOTO 280: REM <END - PREVIOUS
    DATE ACCEPTED>
```

NOTICE OF SPECIAL MEETING OF THE MARYLAND APPLE CORPS

There will be a special meeting of the Maryland Apple Corps - devoted to the Gutenberg Word Processor - on Saturday, March 30, 1985, from 2:30 to 4:30 PM in the "Towson Room" of the Towson Branch of the Baltimore County Public Library. John Wagner, author of the Gutenberg, will be the special guest and speaker. All interested WAP members are invited to attend.

The Towson Library is located at 320 York Road, approximately 1 1/4 miles south of Baltimore Beltway Exit 26 (York Road) at the intersection of York Road and Chesapeake Avenue. There is a large, metered parking lot on the east side of the library. For additional information, call H.J. Silverstone, (301) 435-3582 (evenings and weekends).

APPLEWORKS-COMPATIBLE UTILITIES:

Now You Can Have What Apple Left Out

by Walter S. Mossberg

In less than a year, Apple Computer's AppleWorks integrated software has become the best-selling program for the Apple // line. Promoted heavily for both the //e and //c, AppleWorks has become the essential productivity package for many Apple owners, and new buyers of Apple //'s often acquire it at the same time they buy their computers.

While the program has some drawbacks, its word processor, database and spreadsheet modules combine power with simplicity and have proven to be more than adequate for most who use them. But some popular functions simply weren't programmed into AppleWorks, and many users have missed them. A demand has sprung up for Mail Merge capabilities, enabling the production of form letters; for graphics; for spelling checking; for expansion of AppleWorks' "desktop" area; and for a telecommunications module that can transmit AppleWorks' ProDOS files over a modem.

To meet this demand, at least nine utility software packages have been issued in recent months which add capabilities to AppleWorks (See Table 1). Some are specifically designed as AppleWorks utilities. Some are merely AppleWorks-compatible, and will work with other ProDOS software. But even those in this latter group have AppleWorks-specific modes and features, and appear likely to find their most common use with this premiere integrated package.

Nine AppleWorks-Compatible Utility Programs

Name of Utility	Publisher	Type	Price
HabaMerge	Haba Systems	Mail	69.95
AppleWorks Mailing	Intl Apple Core	Mail	30.00
MegaWorks	MegaHaus	Mail/Spell	125.00
Sensible Speller*	Sensible Solutions	Spell	125.00
ASCII Express*	United Software	Comm	150.00
Apple Access //	Apple Computer	Comm	75.00
AppleWorks Expander	Applied Engineering	Memory Use	29.00
GraphWorks	PBI Software	Graphics	79.95
HabaTemplates	Haba Systems	Templates	29.95

*New ProDOS Version

- Table 1 -

According to Don Field, who manages AppleWorks for Apple, the company has encouraged the add-ons, even though it is contemplating adding some of the same features to future versions of AppleWorks at some unspecified time. Field says Apple regards AppleWorks as a basic user environment, and thus third-party utilities are a natural development.

In this review, I will discuss and compare five of the nine AppleWorks-compatible utilities: AppleWorks Desktop Expander, a utility that works with an extra RAM card to roughly double AppleWorks' desktop; MegaWorks, a combined mail merge and spelling checker program; Sensible Speller/ProDOS, an AppleWorks-oriented version of the well-known spelling checker; ASCII Express (ProDOS), a powerful communications package that can handle AppleWorks files; Apple Access //, a more modest communications package geared to AppleWorks.

The views expressed below, positive and negative, are my own, and don't reflect any official position of Washington Apple Pi.

Mail Merge

As the first truly integrated Apple // package, with a file-handling buffer shared by both word processor and database, AppleWorks was a natural for mail merging, the automatic combining of an address list and boilerplate letter text to produce "personalized" form letters. But Apple left it out. Three of the utilities work with AppleWorks database and word processing files to produce such form letters: HabaMerge, AppleWorks Mailing Program, and the program reviewed here - MegaWorks. (MegaWorks actually combines both a mail merge module and a spelling checker. The spelling function is discussed separately in the next section of this review.)

The MegaWorks mail merge function is quick, simple and powerful. First, you create on AppleWorks both the text of your letter and your database of names, addresses, and special text inserts. Leaving the data disk with these files in Drive 2, remove AppleWorks from Drive 1, and boot up MegaWorks. The program looks like AppleWorks on-screen, displaying the familiar file-folder image. You select the mail merge function, tell the program which database and disk file you wish to merge, and it quickly creates and saves on disk a new AppleWorks word processor file containing the resulting multiple form letters. You then reboot AppleWorks, call up this new file, and print out the letters.

The only major drawback is that MegaWorks won't recognize just any old database address list, or form letter. Your database MUST have the symbol "$$" before each field (i.e. name, address, salutation) you wish inserted in a letter. And your letter must use the same "$$" symbol at each spot where you desire a customized insert. This is easy for the form letter, but may require redoing or altering existing database lists.

All in all, however, MegaWorks' mail merge function is a satisfying addition to AppleWorks.

Spelling Checkers

Unfortunately, MegaWorks' Spelling Check function is a clumsy, slow, limited-capability feature that appears to have been thrown into the package as an afterthought. It is so tedious to use that it is suitable only for the shortest, cleanest documents, in my opinion. No serious writer could prefer it to the powerful, speedy and elegant ProDOS version of Sensible Speller, which costs the same as the MegaWorks package (but lacks the mail merge function).

Both these spelling checkers will scan AppleWorks word processor files for errors. Both first load the document into memory, then use a separate dictionary disk to match your words against correct spelling. Both then tell you what "suspect words" they found, and give you a chance to correct misspellings, and update the dictionary. But there the similarity ends.

There are two fundamental differences. First, MegaWorks turns up vastly more words which really aren't misspelled, but are merely unfamiliar to its dictionary. Sensible Speller's main dictionary considers many fewer correctly-spelled words "suspect" and thus turns up fewer. What's more, The Sensible Speller has a second dictionary disk to further refine the search,

contd.

and it can be programmed to ignore certain words the dictionary isn't likely to have, like acronyms.

The second big difference is that, unlike The Sensible Speller, MegaWorks must ingest long documents in several time-consuming passes and do a new scan on each pass.

A benchmark test I ran shows that these differences add up to an enormous speed advantage - with no less accuracy - for Sensible Speller, especially on long documents. Table 2 shows how the two spelling checkers performed on two documents - one a 300-word letter with no spelling errors and the second a 3600-word article on foreign policy with many unfamiliar names and terms but few misspelled words. Both programs correctly analyzed the spelling of the documents. But MegaWorks ground its way through many more "suspect" words. The result was that MegaWorks took 50% longer on the short letter and more than twice as long on the long article, where it needed half an hour to spot the 3 real errors: Afghhanistan, unilatreral, & peacekeepinbg.

Benchmark Test of Spelling Checkers for AppleWorks

	MegaWorks 1 Dict.	Sensible 1 Dict.	Sensible 2 Dicts.
Long File			
Actual Errors	3	3	3
Suspect Words	283	88	47
Total Time (Mins)	30.3	13.9	11.5
Short File			
Actual Errors	0	0	
Suspect Words	29	9	
Total Time (Mins)	4.5	3.0	

- Table 2 -

Note that even the time required to insert a second dictionary to refine The Speller's checking was more than offset by the time saved through paring the list of suspect words nearly in half. And the benchmark results would have been even more lopsided on a customized version of The Speller which would ignore acronyms, etc.

The Sensible Speller also has several other nice features missing in MegaWorks. For instance, it automatically suggests the correct spelling, allows you to browse the dictionary for similarly-spelled words, and specify the program's way of handling words beginning or ending in specific characters. The Speller's manual is also far superior.

MegaWorks' spelling checker does have two points of superiority: its screen displays look like AppleWorks and it shows suspect words in a 9-line section of the original text, compared to 3 lines on The Sensible Speller.

Users interested in checking spelling of their AppleWorks documents will find The Sensible Speller their best choice by far. Users mainly interested in mail merge, but who could use a spelling checker for limited, occasional use on small documents, may prefer MegaWorks.

TeleCommunications Software

Until very recently, AppleWorks owners who wanted to transmit AppleWorks files via modem were forced first to convert them to DOS 3.3 ASCII text files, because there weren't any readily available ProDOS telecommunications programs. The results were often unpredictable and sometimes unsatisfactory. Now, however, users can choose from several ProDOS packages, including the two reviewed here - Apple's own Access //, and a new ProDOS version of United Software's venerable ASCII Express, for years the most powerful and flexible communications package in DOS 3.3 (This package was formerly called ASCII Express The Professional).

Access //, often sold now to novice buyers as THE communications package for Apples, is simply not in the same league as ASCII Express. Feature-for-feature, it pales by comparison. But that's not what makes Access // one of the worst products Apple has ever offered, in my opinion. The real black mark against the program, I believe, is that it has been designed so it won't work at all with the vast majority of modem-equipped Apple //e's now in existence. Not only that, but this fundamental incompatibility isn't revealed on the outside of the package, or in the tutorial program. It is first mentioned more than 20 pages into the manual, and must come as a bitter surprise to many. It's as if Apple was ashamed of the limitation, deep down.

Access // will work with all //c's, but it will ONLY work on //e's which are using modems connected to a Super Serial Card, and then only if the card is in Slot 2. That means it works fine with the new line of Apple-brand modems (made by an outside vendor), which require a super serial card, as well as with other modems which hook up that way. But it won't work with much more popular and numerous modems, including Hayes' Micromodems, which have dominated the Apple][market for years.

Thus, Apple's first major communications software package appears to have been designed to help push its branded modems, but it simply isn't available to most of the two million Apple][owners (it won't run at all on][‘s and][+‘s, though ProDOS will). Can this be the same computer company which recently set up an 800 phone number that plays tape-recorded "thanks" to Apple][owners?

For users who can somehow swallow this compatibility problem, Access // still falls short. While both Access // and ASCII Express can handle AppleWorks documents, ASCII Express also has its own powerful built-in ProDOS text editor, so you don't have to boot up AppleWorks each time you want to compose a two-paragraph Electronic Mail response or bulletin board message.

Both have memory buffers to capture text being downloaded from remote systems, such as CompuServe, or Dow Jones. But Access // can take in just 3K before having to dump to disk, interrupting the flow. ASCII Express has a huge 28K buffer. ASCII Express has literally scores of customization choices, so you can tailor it to your needs and your style. Access // is much less customizable. ASCII Express has a "remote" mode so you can leave your computer on and control it by phone from another terminal across town or across the country. Not Access //. ASCII Express supports dozens of modems, printers and other computer features and has specific emulation options for 11 commercial terminal types. Not Access //.

Access // does have a few things going for it. Like ASCII Express, it features a special built-in programming language for constructing macros that can automatically dial and log onto remote systems, and instantly issue commands. Its manual is easier to read than that of ASCII Express. And it looks on screen like AppleWorks. Access //'s list price is also half that of ASCII Express. But mail order discounters narrow the difference considerably, offering ASCII Express for $80 or $90, versus a

contd.

discount price of $65 for Access //.

For most Apple owners, ASCII Express offers much, much more - starting with the ability to use it with the modems most people own.

Using Extra RAM

The last utility program of the five reviewed will have a much more limited audience - those people interested in more than 128K of memory for their //e's, who want to use it in AppleWorks.

The program, The AppleWorks Desktop Expander, performs a permanent, one-time modification to your AppleWorks Startup Disk. Once this change is made, AppleWorks' desktop will swell from 55K to 101K in the presence of Applied Engineering's MemoryMaster //e 80-col card. The MemoryMaster, which sells for about $175 discounted, is a clone of Apple's own extended 80-col card that has 128K onboard as opposed to 64K for the Apple card.

The 101K desktop allows more and/or longer files to reside simultaneously in AppleWorks' active memory, so they can be consulted, combined, or compared. The 12-file limit still applies, as do the individual file length limits. But, especially with long spreadsheets or text files, the 101K desktop allows much easier file handling.

The Desktop Expander Software apparently will also work with Applied's new RAMWORKS series of cards as well. But I haven't any idea if it will recognize the extra memory on cards made by other firms.

MENDING SCREENWRITER II

by Boris Levine

Most of us who use Screen Writer II agree that its Manual is much better than the one for its predecessor, SuperScribe II. But among the useful items omitted from the rewritten manual is the technique for repairing "clobbered" portions of SWII.

It is possible, for good or bad reasons, to damage one or more of the programs on the SWII master disk. However, as the new manual does not point out, it is also possible to repair such programs. The best way to describe this repair is simply to repeat what the manual for the earlier SSII says about it:

"SuperScribe II uses standard DOS 3.3. As a result, you can also backup all the SuperScribe II files. This can be done with a standard copy program such as Apple's FID program. However, you won't be able to boot up this backup or run the files. But should you ever destroy a file on your master SuperScribe disk, you will be able to copy that file back to the master.

If you need to do this, be sure you copy the disk, file for file, not with a bit copy program. Only by not destroying the structure of the SSII master disk can you be sure this recopy backup will work."

And, based on a recent test, this procedure works for ScreenWriter too. Note: It doesn't say anything about copying any non-DOS programs.

To use this procedure, take out that unused extra SWII master disk from its pocket in the Manual (or borrow one) and copy it onto at least one disk. Now you have a stock of perfectly good files to use when you get that "I/O ERROR" message while booting a SWII Master disk. The repair procedure is simple enough. Use the VERIFY function of FID with the Wildcard and No Prompting options, and when it gets to the bad file it will report "I/O ERROR". Then copy that file from the backup to the master disk and use VERIFY again. On the second run it will not only check the file just copied, but find any other clobbered file, which then gets the same treatment (plus CUSTOMIZE, if necessary).

The older manual was correct in that the backup will not boot or run, (i.e. the protected portions did not get copied) but it was also correct in saying that it could serve to repair the master disk. And that built-in capability is nice to have.

SUGGESTION: Copy the gist of the above and paste it on page 3 of the SWII manual with the other information on Getting Started, and make a suitable note in the Index.

WHAT HAS . . . ?

What has 2,455 programs, two mailing list packages, 196 games, 138 business programs, and is incredibly low-priced?? WAP DISKETERIA 3.3 software, that's what.

Yes, there are over 2,400 programs available in DOS 3.3, ranging from games to statistical formulas; from Christmas carols to solar system simulations. There are 103 disks in the 3.3 portion of the Disketeria, and they only cost $5.00 apiece. Come to the WAP office, or to the Disketeria sales table during the next meeting, and look over the fine selection of disks. There's bound to be one or two just for you.

DOES IT SOUND GREEK TO YOU? by John A. Love, III

Over the past year I have been publishing a regular series in the Washington Apple Pi Journal on Assembly language programming.

If you are interested, genuinely interested, in learning more about Assembly language, I will be teaching a 9-session tutorial on this subject in Fairfax county, starting in March-April 1985. I plan to cover the following material:

- o Syntax of the allowable opcodes and operands.
- o Selected portions of the F8 ROM code.
- o Selected portions of the Applesoft ROM code.

Please call me at (703) 569-2294 if you are interested - even if you only think you are interested. Let's talk about your particular interests in Assembly language. As an instructor, my only wish is to convey the knowledge you seek.

NATIONAL COMPUTER CONFERENCE

A National Computer Conference, "Innovative Microcomputer Applications in School Programs", is scheduled for March 31 - April 2 at the Baltimore Plaza Hotel, Pratt Street, Baltimore, MD.

CALL FOR PAPERS - Papers are being solicited for this conference (18 papers will be accepted). Abstracts are due by February 1. Acceptance notice will be given by February 11. If accepted the final paper will be due March 8.

The fee for the conference is $275. This fee will be waived for those presenting papers. The keynote speaker will be Tom Snyder of Tom Snyder Productions, Cambridge, MA. Scott McVay of the Geraldine R. Dodge Foundation in Morristown, NJ will give the dinner welcome speech. There will be special interest workshops (including Gutenberg, micros for administrative uses), round table discussions, hardware and software exhibits, and door prizes (including an Apple //c).

The contact is: Mark S. Curtis, Director of Computer Studies at St. Paul's School, Brooklandville, MD 21022. Phone is (301) 825-4400, ext. 49. The conference coordinator is Melinda Curtis, Friends School of Baltimore, 5114 N. Charles St., Baltimore, MD 21210.

Programming the 65SC802/816 contd. from pg 56

almost certainly require a hard disk, and lots of memory!)

Given the tone of last spring's "Apple // Forever" meeting, these new chips give an even brighter future for the family. An Apple //e equipped with a megabyte of RAM, a 65SC816, and a multitasking ProDOS would be a real dream machine for productivity, both at home (running the appliances, doing word processing, calling the bank for your balance), and in the office (talking with the mainframe, running the robots, controlling the building environment) and all at the SAME TIME!

NEAT LIST
by Merle Block

It is bothersome to use the series of commands: PR#1, <Ctrl-I>80N, LIST, to print out a program listing on the printer, and then remember to follow-up with the command PR#0 to return the display to the monitor after printing. I wrote the Text File program, which I call "NEAT LIST", to do all of that on my Apple][+, with the Epson MX-80 printer, and with the Orange Micro GRAPPLER card. I do not know if the program will work with other set-ups. If it doesn't, it may be possible to modify the program for other equipment.

The program "NEAT LIST" will print a listing of a Basic program, in 80-column format, without splitting a command word at the righthand side of a line, and with the program name and date above the listing.

"NEAT LIST" is a Text File program which is written and saved onto a diskette by a program called "MAKE.TEXT". After "NEAT LIST" is put onto the diskette, it is used with the command: EXEC NEAT LIST, to print a listing of the program which was in the computer when the Command is called.

Following are the steps to make the program, and use it:

STEP 1. Put an initialized diskette into the disk drive which will be used.

STEP 2. Type NEW, to clear any old program. Type a copy of Figure 1, MAKE.TEXT, into the Apple.

STEP 3. Type SAVE MAKE.TEXT. Notice: Do NOT run the program before saving, or you will lose what you have typed!

STEP 4. Type RUN. (The MAKE.TEXT program will make and save the Text File program NEAT LIST.) You can see the file names with the command CATALOG.

STEP 5. Type EXEC NEAT FILE. Then type LIST. The listing on the monitor should match the listing in Figure 2. If it does not match, find the error/s in MAKE.TEXT, correct, and redo steps 3, 4, and 5. (Do not make corrections directly into the NEAT LIST program.)

After you get NEAT LIST on a diskette and running, you may DELETE MAKE.TEXT. (I am not going to delete it, for its a good example of how one program can write a Text File program.)

Now, to use the program: Load or type the program which you want to have printed. If any of the line numbers on that program are less than "10", renumber the program. If you do not already have a copy of that program on diskette, SAVE it. (Something can always go wrong.) Put the diskette on which the NEAT LIST program was saved into the disk drive and type EXEC NEAT LIST. Respond to the prompts, and a neat listing of your program will be printed. CAUTION: The command RUN NEAT LIST will clear the program which you wanted to have printed. Only use the command: EXEC NEAT LIST.

Figure 1 - MAKE.TEXT

```
110  REM   * FIGURE 1- MAKE.TEXT *
120  D$ =  CHR$ (4):Q$ =  CHR$ (34):
     REM   * D$=<CTRL-D> ; Q$= " *
130  PRINT D$"OPEN NEAT LIST"
140  PRINT D$"WRITE NEAT LIST"
145  PRINT "PRINT";Q$;"TURN-ON THE PRINTER AND
     TYPE 'RUN'.";Q$
150  PRINT "1 POKE 33,33: D$=CHR$(4)"
160  PRINT "2 INPUT";Q$;"WHAT IS THE NAME OF YOUR
     PROGRAM ? ";Q$;";N$"
170  PRINT "3 PRINT:";"INPUT";Q$;"DATE (EG:12/15/84) ?
     ";Q$;";DA$"
180  PRINT "4 PRINT D$";Q$;"PR#1";Q$;":PRINT N$:
     PRINT DA$"
190  PRINT "5 PRINT CHR$(9)+";Q$;"70R";Q$
200  PRINT "6 LIST 10,"
210  PRINT "7 PRINT D$";Q$;"PR#0";Q$
230  PRINT "9 END"
240  PRINT D$"CLOSE NEAT LIST"
```

Figure 2 - NEAT LIST

```
1 POKE 33,33: D$=CHR$(4)
2 INPUT"WHAT IS THE NAME OF YOUR PROGRAM ? ";N$
3 PRINT:INPUT"DATE (EG:12/15/84) ? ";DA$
4 PRINT D$"PR#1":PRINT N$: PRINT DA$
5 PRINT CHR$(9)+"70R"
6 LIST 10,
7 PRINT D$"PR#0"
9 END
```

Best of ABBS contd. from pg 59

From WAP538 to:WAP577 12/20 Subject: ABBS Info

WAP ABBS is using 48K of main RAM. We also have an Axlon RAMdisk 320, with 320K on it. As soon as I get a keyboard connector cable, we are going to go to a 64K system, using the 16K card space for the message summaries that are now on the RAMdisk. You can use memory cards w/ WAPABBS 1.2, but not 1.1 or earlier versions. V1.2 will be out "real soon now." - Tom Warrick

From WAP538 to [YOU] 12/20 Subject: Old messages

=Alexander-: Your column in the Journal is great! Keep up the good work! Could you put in your next column the two oldest messages on the board? They are a patch to make DOS 3.3 show the track & sector being accessed. It seems quite interesting. Tom Warrick

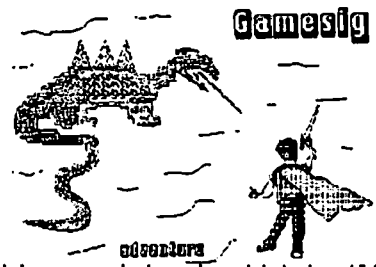
From WAP844 to ALL 10/17 Subject: RWTS DISKMONitor

DISKMON - RWTS Parms Text Scrn Display. A simple, permanent DOS patch to show exactly what the Disk is doing. TRY IT!

```
]CALL-151 <after DOS3.3 boot>  |--------
*B6B3:84 48 85 49 A0           |Works w/
*B6B8:04 B1 48 48 4A 4A 4A 4A  |normal
*B6C0:09 30 8D 23 04 68 09 30  |DOS 3.3.
*B6C8:C9 3A 90 02 69 C6 8D 24  |Patch in
*B6D0:04 A9 20 8D 25 04 C8 B1  |unused
*B6D8:48 09 30 C9 3A 90 02 69  |area of
*B6E0:C6 8D 26 04 A0 0C B1 48  |Boot 0
*B6E8:AA BD F0 B6 8D 27 04 60  |pg, TOS0
*B6F0:13 12 17 6A 06           |--------
*BD00:20 B3 B6 EA <make RWTS call ptch>
*3D0G <Insert a new disk to try it on.>
]NEW:TEXT:HOME  |----------------------
]INIT HELLO     |1st 2 digits R TRACK in
NOW watch the   |hex,blank,1 hex digit 4
top right-hand  |SCTR,then S=seek,R=read
corner of scrn. |W=write, or F=format.
```

SHORT TAKES FROM THE GAMING FRONT

by Ronald Wartow



Approximately 20 people have responded to our call for the revival of GAMESIG. WAP members representing a cross-section of society - from doctors, dentists, airline pilots, 6th graders, and college students - expressed their interest in computer gaming and seeing WAP actively support this special interest group. By the time you read this, we will have had our organizational meeting. The March issue of the Journal will report what transpired.

PRELIMINARIES

First, our thanks go to Sir-Tech Software for providing WAP with a review copy of their new game - RESCUE RAIDERS. Moving on, lots of exciting new games have hit the market, apparently to take advantage of the holiday season. Apple][owners can choose from a continuing wide range of gaming software. What follows now is a roundup of the latest games along with brief descriptions with hopefully meaningful comments on the new software. At the end of these "Short Takes", I'll give you the benefit of what to look forward to in the next month or two.

APPLE // SERIES

UNIVERSE - Omnitrend Software. For about $90 you would expect a lot of bang for your buck. This 4-disk monster is unlike anything I've seen. Set in the future, the game starts with your taking out a mortgage on a space ship and ends almost 20 years later (about 50 real-time hours). In between you can be a miner, utilizing sophisticated mining equipment, a pirate doing what pirates do, or a trader roaming the substantial number of star systems and planets available for exploration. The detail is incredible with over 30 customized screens and readouts.

Comments:

PRO: Fascinating attention to detail will appeal to those who like to combine fantasy with reality (I wouldn't try to skip out on the mortgage!). Massive documentation containing over 80 pages on high quality paper and 12 pages of "quick" reference charts and a padded looseleaf binder which converts into an easel. Also, Omnitrend gives excellent customer support.

CON: The Price. Excessive disk swapping even with a 2-drive system and lots of disk access.

RESCUE RAIDERS - Sir-Tech Software. Described on the box as the "ultimate arcade game of battle strategy". This game fuses arcade-reflex skills with tactical and strategic skills. Combining stunning scrolling graphics and infinite options, you fight 8 increasingly difficult battles armed with a helicopter manned by soldiers and a variety of on-the-ground weapons and defenses, all displayed on radar. Scoring reflects the human cost of any war in that your score can be low even if you win all 8 battles. All of the action is controlled by joystick.

Comments:

PRO: Visual pleasure. Good buy because it's not easy. Interesting premise, that is, you use modern weapons in a World War II scenario via the machines.

CON: I can't get by the first battle which shows you what happens when an adventure and FRP gamer is confronted with anything requiring joystick handling.

KING'S QUEST - Sierra On-Line. This game has been available on the IBM. Translated to the Apple, it will only run on Apple //e and IIc computers with 128K. I used a friend's IIc for a week to play it. Lauded to the skies in every review I've seen, this game, according to technical types, sets new ground for Apple graphics. Most importantly, it represents somewhat of a breakthrough in that your character, a medieval lord, is seen on the screens and movement is by joystick. You can see him duck behind trees, jump, and swim in lakes and rivers. There is lots of animation which makes this a beauty to behold. Typical adventure game commands must be typed in. The quest involves the recovery of three items scattered somewhere throughout the mythical kingdom.

Comments:

PRO: Very impressive graphics. Novel execution of directional movement as well as the various physical activities that your character can and must perform. Recommended. Excellent scoring system (164-point maximum) lets you repeat play to solve game while giving up as few valuable items as possible.

CON: Despite what the box says, there is no sound. Documentation does not point out the 164 maximum. Plenty of disk access, swaps, and constant color fills. Much too easy. Therefore, recommended for our younger members.

SEVEN CITIES OF GOLD - ELECTRONIC ARTS. This game simulates in pleasing graphics the exploration of the new world by explorers like Cortez. You must outfit your men with supplies in your recently-bought ships and sail to the new world encountering all of the dangers the explorers did. Many settlements are encountered containing everything from farming villages to "modern" Aztec and Inca cities. You can amaze the natives, offer a gift, or trade with the chief to get food or gold, as well as establish missions in the new world.

COMMENTS:

PRO: This is not really a game. Rather, it teaches the benefits of dealing with people in a humane way because the court which sent you on this journey will chastize you for mowing down the New-Worlders with your sophisticated weapons. Educational. Titles and honors are bestowed based on your benign treatment of the natives, as well as the amount of the New World discovered. Whenever you return from the New World to gain new titles or just rest up before buying more ships, men and supplies, you can visit your home and in a spectacular piece of graphics watch that portion of the New World you've discovered fill in.

CON: No real gripes except youngsters will stick with this longer.

SHORT-SHORT TAKES - RECOMMENDED

All of the above
ARCHON - great combination of chess and arcade
MURDER ON THE ZINDENDEUF - sophisticated "clue"
GNOSIS VII - for those who love logic puzzles
QUESTRON - Ultima-like but joystick-operated
PRISONER II - for those who like paradox puzzles

contd. on pg 55

DISKETERIA DISPATCH

by John Malcolm

(A sometimes column about the state of the Disketeria.)

The WAP Disketeria is two things: a collection of public domain programs available at nominal cost from WAP; and the dedicated staff of volunteers who acquire, edit, copy and sell this collection. Some of the programs are written by WAP members, others come from Apple user-groups around the world. WAP members are encouraged to submit programs to the Disketeria.)

The Disketeria staff has lots of things to tell you about this month, because they've been busy little hackers, making the Disketeria more useful to the WAP membership. First, we did some counting! At the start of 1985 the Disketeria collection consisted of:

Over 3,000 programs, on 141 disks, including:

2,455 programs in 3.3 DOS
360 programs in Pascal
191 programs for MACs

That's a lot of software, and the staff thanks everyone who made contributions over the years.

The next thing we want to tell you about is what we call the "write-ups." We've gone back through all the old issues of the WAP Journal and clipped everything that the club has ever printed about each disk (and some things that were never printed). We assembled all the articles onto one or two pages per disk, made copies, and are offering them for sale for only two-bits per disk. These "write-ups" were very popular at the last meeting, everyone wanted a ready reference to the disks they were buying. So remember, the next time you buy a disk from WAP, ask for the write-up too.

Finally, we are indexing all the programs in the Disketeria into alphabetical listings. At this point we have alpha sorts available in these categories:

Business
Math/Sci/Stat/Eng
Utilities
Education
Games
Sights & Sounds (graphics and audio)
Communication
Pascal
Logo
Mac

These alpha sorts are great if you are looking for a certain kind of program - you can scan the alpha sort for that category and find likely-sounding titles. They are also great for general browsing. Anyone with a small business can find lots of useful programs simply by reading through the "business" sort, without having to sift through thousands of program titles which are of no use to her/him. These sorts are really useful, and will help you find the programs you could never find before. Stop at the Disketeria table before the next meeting, or at the WAP office anytime, and scan a sort - you'll be impressed.

APPLEWORKS: A Printer Fix

by Paul Koskos

In September Walt Mossberg gave a talk on AppleWorks. Impressed, I bought an Apple //e and a copy of AppleWorks and went to work. Picture my dismay when my first spreadsheet printout exhibited erratic column line-up. Two hours of wrestling with printer format options, font sizes, and anything else I could think of produced no noticeable improvement, and I had visions of an expensive piece of software going up in smoke.

Suddenly I remembered! Walt and several other reviewers had mentioned that AppleWorks didn't like non-Apple parallel printer interface cards. Not only that - Walt had downloaded an Apple program from CompuServe which was reputed to produce love at first sight between AppleWorks and Grappler and other non-standard interface cards. (I, of course, was cursed with a Grappler card. Let me correct that - Grappler has been a great card, but Apple did not allow for it in the original AppleWorks program.) In any case, Walt had supplied a copy of the downloaded utility program to the November 1984 WAP Journal. Would it work? The only way to find out was to try it.

Following Walt's directions in the Journal exactly, I made a copy of the AppleWorks STARTUP disk, typed in the Apple utility program from ProDOS Applesoft BASIC, saved it to disk, and then ran it. I followed its directions to produce a modified AppleWorks STARTUP disk.

Trembling, I booted AppleWorks with the modified STARTUP disk and printed my spreadsheet once more. MIRACLE of MIRACLES! IT WORKED! No more ragged columns. Everything in order.

Thank you, Walt Mossberg. Thank you, Apple. The world is a lovely place again. My spreadsheet prints!

Short Takes contd. from pg 54

CHAMPIONSHIP LODE RUNNER - if Lode Runner was a snap
REACH FOR THE STARS - the ultimate "Star Trek"
COMPUTER BASEBALL - the thinking fan's game
INFOCOM - Zork I, Zork II, Enchanter (Zork IV), Sorceror (Zork V)
ROCKY'S BOOTS & ROBOT ODYSSEY I - great logic tools
ANY WIZARDRY
COVETED MIRROR - great graphics adventure with animation

SHORT-SHORT TAKES - NOT RECOMMENDED

EMPIRIUM GALACTICUM - convoluted "Star Trek"
TIME ZONE - six 2-sided disks which take months
THE QUEST - Long but few puzzles

FUTURE:

For the Apple][family, Wizardry IV should be out by February. It will be what is called a mirror scenario of the first, and you will take the role of the evil Werdna and fight all of the good guys with your new buddies, the Monsters. According to published articles, this scenario will be the toughest yet. Don't hold your breath for Ultima IV. It apparently will not be out until the Spring. Archon II, the follow-up to the just-released Archon, should be available by Spring.

Enjoy your gaming!!!!!

PROGRAMMING THE 65SC802/816 FAMILY

by Lawrence Husick

In last month's article, I discussed the hardware aspects of the 65SC802/816 chip family. Since the 802 is pin-compatible to the 6502 and 65C02, that is the chip which I have installed in my Apple][+. While there are some capabilities lacking in the 802, most of the new opcodes function just as in the larger 816 processor and so I have a good test environment for the chip.

The first thing to note about the 65SC802 is that on power-up, it is in 65C02 emulation mode, and thus functions exactly as a 65C02 (or 6502) would function. This is important because all of the ROMs in the Apple are written in 6502 code, and a different processor would not properly execute the startup instructions in the autostart ROM or in the disk controller's boot ROM. In emulation mode, all 65C02 opcodes and addressing modes are fully supported, and the code executes at exactly the same speed as before the chip replacement.

(A note on the 6502 vs. 65C02... The 65C02 "fixes" some "bugs" in the NMOS 6502 design. These include the execution of opcodes which are not documented by the manufacturer of the chip, and an error in execution of an indirect instruction when the first byte of the address lies in one page of memory and the second is across the page boundary. The 802 and 816 also "fix" these "bugs" so some software which used these codes and mistakes will fail to execute properly on the 65SC802/816. Rule of Thumb: If it works on an Apple //c, it will also work on the 802/816.)

To begin programming the 802, a crucial sequence of codes is:

```
            CLC       ;Clear Carry Flag
            XCE       ;Set 16 bit Mode
```

This pair of instructions takes 2 cycles, and swaps the bit put into the Carry Flag with the one in the Emulate Register. The Carry Flag will now contain the former contents of the Emulate Register. In this way, a program may keep tabs on the current state of the processor by performing the following steps:

```
*************************************************
*  Check Current Processor Mode Subroutine      *
*  Destroys C Flag, Accumulator                 *
*  Returns processor emulation status in FLAG   *
*************************************************

       TRUE  EQU #1
      FALSE  EQU #0
       FLAG  EQU $300  ;(Your Choice of Locations)

CHEKPROCSTAT  CLC       ;Clear Carry Flag
              XCE       ;Swap C for E
              BCC BIT16 ;Branch if we were already 16 bit
              XCE       ;Put back old E value
              LDA TRUE  ;We set flag in memory to tell us
              STA FLAG  ;   that we had an 8 bit mode.
              RTS       ;Go back to program
        BIT16 XCE       ;Put back old E value
              LDA FALSE ;We set flag in memory to tell us
              STA FLAG  ;   that we had a 16 bit mode.
              RTS       ;Go back to program.
```

Of course, returning the processor to 8 bit mode is as easy as:

```
            SEC       ;Put a 1 in Carry Flag
            XCE       ;Swap it to the Emulate Flag
```

Now that we know how to "shift gears" with the 802, we can see what happens when we do so.

Forward move of a block of memory:

```
        802 Instructions                Cycles

    STA $1000  ;# Bytes to Move          6
    STX $0800  ;Source Address           3
    STY $2000  ;Destination Ad.          3
    MVP $0000  ;Operand is two           7* No. of bytes
                  1-byte bank               Moved
                  addresses.

        65C02 Load/Store Loop           Cycles

Setup LDX SOURCE ;Set Source Address     4
      LDY DEST   ;Set Destination Addr.  4
 Loop LDA 0,X                            4
      STA 0,Y                            4
      INX                                2
      INY                                2
      CPX END    ;Done Yet?              4
      BNE Loop   ;Nope                   3

Times:  65SC802    9 Cycles for Setup
                   7 * Number of Bytes Moved for
                       Command.
        65C02      8 Cycles for Setup
                  19 * Number of Bytes Moved for
                       Command.
```

While the speed of the move instruction is much faster than the Load/Store Loop, it is only one example of the speed of the 802 chip. Other examples include the long address instructions, like ADC, which can add 2 16-bit numbers in a fraction of the time required by a full 16-bit add routine in standard 6502 code, and the jump instructions which can now address up to 32767 bytes away relative to the current program counter.

The greatest advantage of the 802/816, however, is not in its speed, but in the ease with which it can be programmed. According to Steve Wozniak at Apple, (personal conversation in December 1984), we can expect only a 15 to 30% increase in real application speed using these processors (due to the additional fetches required to address 16 bit registers on the 8 bit data bus.) The ease of doing complex programming with a 16 bit processor is the real key.

Among the promises held by the 816/802 for the Apple // family will be application software which rivals the best produced thus far for the IBM-PC. The 816, with its ability to address 16MB of real memory, implement multitasking with hardware support, and emulate the 65C02 is a chance for those programmers who are unhappy with the Intel approach of setting segment registers to begin programming the 816. (A 1MB 65SC816 based Apple //e would not be surprising, considering the ease of using the Auxiliary Slot for the Microsoft Softcard //e!)

A "C" compiler (rumored to be in the works) for the 816 could mean that some of the best software on the market today (WordStar 2000, MicroSoft Word, Chart, dBase III) could readily be made available for the 816 or 802 Apple. (Not to mention Unix, which would

contd. on pg 52

LETTERS TO THE EDITOR

The Routine Machine &Chart: The Author Responds

Dear Editor,

I just received my January issue of the Journal containing the review of the graphics package, The Routine Machine &Chart. As the authors of the package, Andy Scheck and I appreciate the efforts of both Ray and Betsy in reviewing our product. Still, as both an author and a member of WAP, I'd like to make some comments and corrections regarding the review.

The review incorrectly states that the package is written in BASIC, while in fact all of the graphic subroutines are written in machine languagae (making them many times faster than BASIC language routines). Once these routines are installed into your BASIC language program using the Routine Machine, they can be called from within your BASIC program just as if a whole series of new commands had been added to the BASIC language. In the case of the main &Chart module itself, there are 27 new commands added to Applesoft.

Ray suggests that a seven-step process is required to get the ampersand routines to interface properly and that this procedure must be carried out precisely. In point of fact, all seven steps are not required and the order in which these steps are invoked is not important. The system need not be booted on the program disk in order to use either Routine Machine or the &Chart routines. RAM need not be cleared before establishing the ampersand hooks or BRUNning the Routine Machine. In fact, any program existing in memory is undisturbed when the Routine Machine is BRUN and installed. Our tests show that an experienced user can add a routine to any existing program in under 30 seconds.

None of the &Chart routines require that Routine Machine be used or even installed in the machine. In fact, Routine Machine resides in the memory space of the hi-res pages when installed and therefore must be removed from the machine prior to using any hi-res commands.

No mention is made in the review of the two major application programs that also come with the package: EASY CHART and SHAPE MAKER. EASY CHART is a stand-alone, menu-driven plotting package that was written using the &Chart modules. It is capable of producing line, bar and pie charts from data keyed into the program's editor or captured from a DIF file. SHAPE MAKER is a shape table generator/editor which is based around a powerful, but easy to use path editor. It is capable of creating shape tables that use far less memory than many other shape table generators.

The review states that &Chart comes on a single disk. While technically this is true, I think it should be noted that the disk is double-sided and nearly full on both sides. As Ray points out, the package is designed to work on the Apple][+ (which is clearly stated on page 2 of the manual), although the system will make full use of an Apple //e or //c for display of double hi-res graphics.

As the review points out, The Routine Machine &Chart is designed for the Applesoft programmer, but we are convinced that the system offers those programmers a significant enhancement to the standard Applesoft environment.

Rick Chapman

(P.S. Our publisher has decided to change the name of our package. In the future, the Routine Machine &Chart will be called the Chart 'N Graph Toolbox. The change is being made to better reflect the capabilities and uses of the package.)

Comments on Record Master Review

Dear Editor,

I would like to make a comment on the Record Master program discussed by Mr. Raymond Hobbs in the January 1985 WAP Journal. I have owned and used this program for approximately six months and am very pleased with its performance. It is simple to use and apparently was written with the user in mind. Mr. Hobbs gave a good view of the program in his article.

My purpose is to add information to his article. I do not know why Mr. Hobbs did not address the "after the purchase" support that Bridget Software gives. My experience is that the support is superb. Mr. Balaban (he's Bridget Software) is always ready, able and willing to help. I have never been disappointed by his assistance and he has always told me exactly how to work out any solutions I needed. In the last case (after I lost much work because of an error of mine) he and I discussed alternative solutions. The next day, totally unsolicited by me, Mr. Balaban called me and gave me verification of our previous solutions plus three program lines that I could type into the program to eliminate the problem and never have it happen again. (The program is copyable and unlocked.)

I am very pleased with the program and the support that I have gotten. Mr. Balaban is a member of WAP and I think we should support him.

Edward A. Callaway

THE BEST OF WAP ABBS

by =Alexander-

From WP4609 to ALL 12/02 Subject: Amber monitor-ques.

I am considering getting a new monitor. The one I have has a glare and is a greenscreen. Since I will now be using it for hours and hours on end, I need something easier on the eyes. Other than preference, would an amber help in this case? Any suggestions? Debby

From WP4488 to:WP4609 12/02 Subject: Amber monitor

Deb, I have an amber monitor and am quite happy with it, even when I use the computer for long periods of time. It's also the only monitor I've had with the system, so I really can't say first hand that it's better than green. I've used green screens but not intensively. You might try getting a glare cover before going to the expense of a new monitor. They help, and are lots cheaper. KG.

From WAP538 to:WP4609 12/03 Subject: Glare Screen

Debby: Rather than get a new monitor, you can get a glare screen for your old one. They cost about $45 for a 12". We have a client who makes them to order - I can give you their address if you like. Delivery time is about 2 weeks. I got one and it really, really works! Tom Warrick

From WP3797 to:WP4609 12/02 Subject: Bloodshot Eyes

The color of the screen is not what helps the ol' eyeballs with amber monitors. The amber phosphor has a long persistence and is needed to reduce the flicker from 80 (or more) column cards. Poor resolution doesn't help much either. Also I suggest a break every once in a while for the eyes, back, and BUTTOCKS! (NOT to TV or fluorescent illumination!) -Tom Vier

From WP1103 to:WP4609 12/03 Subject: Amber Screen

Glare is a result of specular reflection from the glass surface; screen color will neither help nor hinder this condition. Amber is somewhat more restful to the eyeballs, but that is not the problem you need to solve. See if you can find where the strong light is coming from and 1. stop the light; 2. rotate the work station so that the light can't hit the screen; 3. see that the new monitor has an etched faceplate. The test is the fingernail. It should scratch a bit. Final and costly solution is to get an anti-glare screen for the tube. Leave a message if you want me to look up price and all (Misco is the mail order Co. for this).

From WAP284 to:WP4609 12/06 Subject: Monitor Hue

Some studies have suggested that an amber monitor is easier on the eyes in well-lit work area, while a green phosphor is better in dim lighting. My personal experience agrees with this. Also, the answer on etched screen plates is right on target. No glare, don't need special spray to clean. The Amdek 300 (monochrome) series have these and are great. Mike Hartman

From WP4347 to ALL 12/03 Subject: Color Monitor

Could anyone suggest a GOOD color monitor that I could use with an APPLE][? I do quite a bit of word processing so if possible I could use something with a good text screen. I thought perhaps a good HIRES monitor. BMC has been suggested. Any help would help. Thanks. Jim Myszkowski

From WP2243 to:WP4347 12/03 Subject: Color Monitor

Well, Jim, unfortunately "quite a bit of word processing" and a good color monitor just don't mix, and the reason is in the resolution of the screen. A decent monochrome (one color, be it black, green, amber, etc) will give between 500 - 1000 "lines of resolution" on the screen. This makes for nice, crisp characters. However, the "best" you will do with a color monitor is about 325 lines. This lower res, in addition to the color bleed that you are going to get, makes a color monitor a bad bet for anyone who is going to do any large amount of text work, esp word processing (I assume you do word processing in 80 cols). Brett

From [YOU] to ALL 12/01 Subject: AWriter Form Feed?

How can one get Apple Writer //e to issue form feeds instead of line feeds to get to the top of the next page? =Alexander-

From WAP630 to:[YOU] 12/02 Subject: AW Form Feed

Using .FF as a separate paragraph sends a form feed (at least it does in AW II+). You could also use the CTRL-V feature to put in a CTRL-L or whatever character your printer takes for a formfeed (almost certainly CTRL-L). -->Mark Pankin

From [YOU] to:WAP630 12/05 Subject: AWriter //e Form Feed

Two problems with your idea. - 1) It requires the entry every page and 2) AWriter won't know that it has done it's paging and will, I think, still go ahead and insert blank lines in accordance with PI and PL (using CTRL-V, CTRL-L). Won't it? =Alexander-

From WAP630 to [YOU] 12/09 Subject: AW Form Feed

=Alexander- I think you are right about imbedded Ctrl-L not working well with the page length. The .FF command does not have this problem as AW recognizes it as a command to start a new page. You can also use .FFn where n is the number of lines from the bottom of the page required available to avoid a form feed. .FF10 form feeds if fewer than 10 lines remain. You might also try very long PI and PL values (infinite page length). I have not had a chance to experiment on this because I also have a Mac and use MacWrite if I can. Hope this helps. Mark

From [YOU] to ALL 12/16 Subject: AWriter Form Feed

Thanks to all who answered. Based on a couple of suggestions I found this to work. Set PI to 0. That keeps it from doing paging on its own. Put a CTRL-L at the beginning of TL or (the end of) BL. =Alexander-

From [YOU] to ALL 12/09 Subject: Use 2 Sides?

In the December WAP Journal, Field in his Q&A column says that ".... you shouldn't use the back side of a

contd.

disk ...". And he gets a kudo from the Editor for this. I'm the original WASTE NOT WANT NOT. Why shouldn't I use both sides? =Alexander-

From WP3419 to:[YOU] 12/09 Subject: You Should

Many companies verify the back side of a disk, since many computers use the backside whether there is a write protect notch or not. I always use both.

From WP2136 to:WP3797 12/09 Subject: Diskette Usage

I agree with you about safety and utility of using both sides of floppies. I've been doing this for more than two years (on a LARGE number of disks) with no problem at all. Double density disks are much better disks in my opinion, but 'double sided' or 'single sided' ratings ceased to have meaning to me long ago. While there are seemingly logical reasons why diskettes shouldn't be flipped over, including 'debris is dislodged from the pressure pad and/or lining when the diskette spins in the other direction', in practice I have found these to be false alarms. Sometimes people won't let go of a seemingly reasonable idea, even when it's been demonstrated to be wrong, but each person must decide for him/herself. I'm satisfied using both sides.

From WP1682 to ALL 12/09 Subject: Flip-the-Disk

I completely agree with all of the above messages re: disks. Interestingly enough, the only disks I ever had problems using the reverse side were Verbatims while (cheaper) Elephants, etc. were no problem at all. Still would back-up data, just in case.

From WP1095 to ALL 12/10 Subject: Disks on 2 Sides

The "use both sides" argument was spelled out by T. VanFlandern about 2 years ago in the WAP, and his arguments are still valid. I also notch and use both sides of good but low cost "SS/SD" diskettes and have no greater a reject rate than with single sided use. Disks are getting so cheap now that the main argument for notching is the convenience of related stuff on 1 disk.

From WP4011 to:WP2136 12/09 Subject: Diskettes

I'm one of the many users who uses both sides of a disk, but I did have problem with I/O errors on the backside of 1 out of 15 disks, or otherwise the program is messed up. Just wanted to warn you. Joshua Mendelsohn

From WP1817 to ALL 12/10 Subject: One side or two?

For 18 months I cut my notch and ran the Locksmith check to be sure the back side was OK. Never ever found a bad one. Now I just cut the notch and forget about the Locksmith check.

From WP5518 to:WAP208 12/12 Subject: 2 sides

The material (I don't think cheesecloth is quite accurate) isn't the question - the backward direction is what worries me. The fact that it runs backward is no myth. Who has data that is of such little value that the couple of $$ is worth the risk? (On the other hand, I am supprised at the number of folks who seem to get away with it without any problems!)

From WAP208 to:WP5518 12/12 Subject: 2 Sides 1 More Time

What does it matter what direction the disk spins? The flimsy material inside the disk jacket has no inherent directionality. All I've ever seen it do is rub oxide off the disk surface and collect it in the weave. Spinning the disk in the other direction won't dislodge it any more than spinning it in the original direction. Now, the pressure pad is another subject. It collects a lot of oxide, which can get quite hard over time. Of course, when the warranty runs out on the disk drives, you should learn how to adjust the speed and change the pressure pad anyhow. And clean the read/write head when you start getting I/O errors and the drive speed is accurate.

From WP2243 to:WP5518 12/13 Subject: II sides

Hey there, I'm one of those folks that gets by with no II side problems. I do it mainly just to cut down on the # of disks I have to store/backup. Doing it at work, and have over 200 disks full of data & programs now (Hard drive time is near, eh?) Have been using both sides of Verbatim disks now for 3 years with no failures of any kind. Brett

From WP2383 to ALL 11/16 Subject: Free S.A.M. Programs

I have developed some programs for the Software Automated Mouth (S.A.M.) that I am willing to share - FREE to those who presently have a S.A.M. board. The programs allow you to quickly adjust SAM's speed, pitch, throat, and mouth so that you can select various voices of interest for your programs. It uses joystick, paddles, or Koala Pad, etc. If you are interested in these FREE programs just send self-addressed stamped mailer and a disk (perhaps with one or two of your favorite programs) to: Gary Hayman, 7315 Wisconsin Ave. Suite 605W, Bethesda MD 20814. NOTE: You must own S.A.M. and have a DAC board for this to work. Questions? (D)986-0100; (E)345-3230.

From WP2208 to ALL 11/27 Subject: Apple COBOL

Has anyone had any experience with a disk-loaded version of COBOL for my //e? I'm going to take a COBOL course and am wondering if it's worth working on my micro- or if I should stay with the mainframe. Also, what's the cost?? -Richard

From WAP243 to:WP2208 12/04 Subject: COBOL Opinion

Take my advice, if your life doesn't depend on it - take Pascal or C course - anything but COBOL. I took a course and I got an A in it, but other people who didn't know other languages were totally confused. COBOL is too verbose (it's not surprising, since DOD developed it). However, I know of a Micro-COBOL that runs under CP/M 2.2, sorry. Davis Lee (Journ. Ed. Note: COBOL was developed in the early 60's by the Conference on Data Systems Language (CODASYL), which was a joint industry/government endeavor. Though DOD had members on the committee, they did not develop the language.)

From WP4795 to ALL 11/30 Subject: Good Repair Service

I recently had a very good repair experience after having a problem with a duo-disk drive from Apple. Even though the drive could not be identified as defective in any way, the repair facility gave me (without any prompting on my part) a completly new drive as a replacement and sent the ? one back to Apple. The dealer was Univ Comp Co in Alexandria.

From WP1510 to ALL 12/16 Subject: Thanks to SYSOP

Many thanks to the SYSOP and all the helpers who have kept this board up over the past year - it goes way beyond, and I appreciate it!!! Phil

contd. on pg 53

HYBRID DISK FOR FORTH - PT 1: Fast-Load Hello

by Chester H. Page

Since FIG-FORTH uses only 25 tracks on a disk (for 100 screens), there is room for DOS (3 tracks) and the DOS catalog track, as well as 6 tracks to store a compiled FORTH application. Keeping DOS yields several advantages. Primarily, a FORTH application can be compiled by loading screens, and then saved to disk as a DOS file. This provides for direct booting of the FORTH program. In addition, a slight restriction on the format of the disk allows the use of a customized fast-load routine.

The R/W (read/write) command in FIG-FORTH computes track and sector for a given block number. If this computation is modified by adding 3 to the track number, and then if the new track number is greater than 16, adding 1 more, the resulting track numbers will range from 3 to 28, skipping 17 which is the DOS catalog track. Thus DOS will be protected from overwrite by FORTH screens. Conversely, we can protect the screens from DOS file-save operations by inserting appropriate data in the DOS bit map in sector 0 of track 17. This sector holds the Volume Table Of Contents (VTOC) which tells DOS what disk space is available. The modified bit map tells DOS that tracks 0/28 are full.

DOS uses only part of track 2, leaving room to store the HELLO program on track 2 so that the FORTH program can start at the top of track 29. The procedure for properly initializing a disk will be discussed later.

If you are set up with this modified R/W, some of the screens on an "old" FORTH disk will be invisible because they occupy tracks that are now forbidden. These disks in your library can, however, easily be converted to the hybrid format. The current WAP version of FORTH (Vol. 703, FIG-FORTH1.2) provides both versions of R/W, selectable by a flag called "DOS". When 0 is stored in "DOS", the old screen formula is in effect; 1 stored in "DOS" calls for the modified R/W. The routine below called DISK-CONVERT makes a hybrid copy (in drive 2) of a non-hybrid set of screens (in drive 1). Thus your original versions of the Screen Editor, Assembler, etc., can be converted.

The fast-load routine is a binary HELLO program located at $300/35B. This loader ignores the DOS catalog and track/sector list for the program to be loaded, because it "knows" that the program starts on track 29, sector 14 (sector 15 holds the T/S list) and continues down thru 29, 0 then from track 30, sector 15 down thru 30, 0, etc. Since the first four bytes of a binary file are the starting address and length, the data are loaded starting at $7FC so that the program itself will start at $800. This is done by telling DOS that the buffer to load into starts at $7FC, and by incrementing this by $100 after each sector is loaded. By using the final locations as DOS buffers, they are loaded directly (instead of being loaded by transfer from the usual buffers). The resulting time saving allows rapid-fire reading of the sectors without missing a revolution during the data transfer. Reloading, such as reloading the EDITOR for making changes in screens under development, is very fast (less than 3 seconds) by entering 768 CALL, because the HELLO program is already in memory. WAP 703 FIG-FORTH1.2 uses a conventional BRUN command as its HELLO program. It takes 12 1/2 seconds to boot; the fast-load HELLO reduces this to 7 seconds.

For simplicity, loading starts from track 29, sector 14, and proceeds for as many entire tracks as needed to pass the end of the program, as computed from the byte at $7FF (which is 1 less than the number of sectors needed). It would be a little more elegant to stop loading after enough sectors have been read, but the time saving would be trivial.

INITIALIZATION

The steps in making a hybrid disk are:

(1) Boot DOS 3.3.

(2) Go into the monitor with CALL -151 and enter 9E42:34. This modifies DOS to use a binary HELLO instead of an APPLESOFT HELLO.

(3) Insert a blank disk, INIT HELLO, then DELETE HELLO and remove the disk.

(4) BRUN FIG-FORTH1.2 on VOL 703, enter the monitor with SROM, enter the binary fast-load HELLO.

(5) Enter the DOS reconnect: 1879:20 EA 03

(6) Enter 823:00 C3 if you have an 80-COL card.

(7) LOAD the INITIALIZATION screen.

(8) Enter NEWLOAD.

NEWLOAD manipulates the VTOC bit map to force loading onto the desired tracks.

Note that whatever FORTH program is loaded, it is saved under the name FIG-FORTH1.2. If a different catalog name is desired, e.g., EDITOR, the name can be changed with the usual DOS RENAME.

SELF-SAVE FEATURE

A typical procedure is to test a program, modify or add some screens, and load the changes. Eventually, you wish to save the "final" version. The screen SELF-SAVE handles this very neatly. When you have the vocabulary the way you want it, loading the SELF-SAVE screen mimics ADDNEW but does not include itself. Entering FILESAVE now reads the disk catalog to find what you called your program, and saves the new version under the same name! Since the fast-load routine works on the location of the program and ignores its name, the name of the program can be changed at any time using DOS RENAME, and the fast self-booting will not be affected.

RELOCATING DOS

If you have a 64K system and wish to take advantage of the extra RAM to make more contiguous memory available above FORTH, e.g., for text storage in a word-processor, DOS can be moved up into the memory card. WAP Vol 703 holds a utility called "Relocate DOS to Memory Card" which can be saved on track 2 along with the fast-load HELLO. This relocator program ends by calling for a program named "HELLO", so we must modify the initialization routine. The changed steps are

(3) INIT RELOCATE, then DELETE RELOCATE.

(4a) BLOAD RELOCATE DOS TO MEMORY CARD from WAP VOL 101.

contd.

Announcing the only big computer show devoted entirely to one little computer.

If you own, lease, sell, distribute, service, use or are thinking of buying a Macintosh, this show is a must!

If any new entry in the personal computer field deserves a show of its own, it's the amazing Macintosh™ from Apple® Computer. This is the little box of dynamite that's turning both the business and home computer markets upside down. And now there's an exciting three-day show where you can learn everything there is to know about the Macintosh—Macworld Exposition, sponsored by Macworld Magazine.

Get your hands on a Mac!

At the Macworld Expo, there'll be literally hundreds of Mac's on the floor for users or potential users to work with. Take them for a test drive. Compare them with other computers you may use. Test the Mac's peripherals and software against the competition. The Macworld Expo is a genuine "hands-on festival."

Get the latest Mac market info!

This is the first and only conference program that will bring you in contact with the people who best understand the far-reaching effects the Macintosh will have in business, schools and at home. We'll feature up-to-the-minute topics about the Mac, its peripherals, software and applications. Software experts will be on hand at our free software clinic to guide users to the right programs. Plus, there'll be scores of exhibitors demonstrating Mac-related products.

Get your tickets early!

Because the Macworld Exposition is the very first Mac-specific show ever, excitement is building fast! Watch this magazine and your local papers for special admission coupons and complete show information. And join us February 21-23 in San Francisco!

SPONSORED BY
MACWORLD MAGAZINE
BROOKS HALL
SAN FRANCISCO
FEBRUARY 21-23, 1985

MACWORLD EXPOSITION
SAN FRANCISCO

The Macworld Exposition is produced by World Expo Co. and managed by Mitch Hall Associates. For further information, call Mitch Hall Associates at 617-329-7466 or 617-329-8091. Macworld Exposition is a registered trademark of World Expo Co., Inc. ™ signifies company's trademark ® signifies company's registered trademark.

The initialization screen must also be modified as follows:

```
: FIXMAP1 READMAP 101 FIRST 30 + ! FF FIRST 40 + C!
  FIRST C4 + FIRST 44 + DO 0 I ! 4 +LOOP WRITEMAP ;

: FIXMAP2 READMAP 11C FIRST 30 + ! FIRST AC + FIRST 38
  + DO 0 I ! 4 +LOOP FIRST C4 + FIRST AC + DO FFFF I !
  4 +LOOP WRITEMAP ;

: NEWLOAD BASE @ HEX FIXMAP1 CR 4 EMIT ." BSAVE
  RELOCATE, A$4000, L$431" CR 4 EMIT ." BSAVE HELLO,
  A$300, L$5D" CR FIXMAP2 4 EMIT ." BSAVE
  FIG-FORTH1.2, A$800, L$" HERE 800 - 1+ . CR CR BASE
  ! CLEARDISK ;
```

FIXMAP1 forces both RELOCATE and HELLO to load on track 2. FIXMAP2 sets up six tracks, starting with track 29, for FORTH.

To move the FORTH buffers up under the moved DOS, boot the new disk, modify FORTH with the following changes, load the SELF-SAVE screen, and enter FILESAVE.

```
HEX BA DUP DUP E1D ! 19CA ! 19D5 !
BE DUP DUP 811 ! E29 ! 17F5 !
```

In developing this system I encountered an interesting bug. After LISTing or LOADing a screen, 768 CALL would reload the system, but SROM followed by 300G kept the disk running indefinitely. It turns out that the RWTS routine in DOS uses memory location $48, but this is also the location for storing the processor status byte. The monitor command "G" restores the processor status according to the byte in $48. Running the disk resulted in $48 calling for decimal mode in the 6502 processor; this messed up the arithmetic that finds the last track to be loaded. Starting the HELLO program with a "clear-decimal-mode" instruction cures the problem.

```
SCR # 94
  0 ( INITIALIZATION for fast-load HELLO              26DEC84CHP)
  1 BASE @ HEX
  2 : READMAP 0 DOS C! FIRST 110 1 R/W ;
  3 : WRITEMAP FIRST 110 0 R/W EMPTY-BUFFERS 1 DOS C! ;
  4 : FIXMAP1 READMAP 101 FIRST 30 + ! FF FIRST 40 + C! WRITEMAP ;
  5 : FIXMAP2 READMAP 11C FIRST 30 + ! FIRST AC + FIRST 38 + DO
  6     0 I ! 4 +LOOP WRITEMAP ;
  7 : CLEARSCRN FIRST 100 20 FILL B/SCR * DUP 4 + SWAP
  8     DO FIRST I 0 R/W LOOP ;
  9 : CLEARDISK ." CLEARED:" 64 0 DO I CLEARSCRN I . LOOP
 10     EMPTY-BUFFERS ;
 11 : NEWLOAD BASE @ HEX CR
 12     FIXMAP1 4 EMIT ." BSAVE HELLO, A$300, L$5D" CR
 13     FIXMAP2 4 EMIT ." BSAVE FIG-FORTH1.2, A$800, L$"
 14       HERE 800 - 1+ . CR CR BASE ! CLEARDISK ;
 15 BASE !   ;S

SCR # 95
  0 ( DISK-CONVERT                                    13DEC84CHP)
  1
  2 : DISK-CONVERT FIRST 4 0 DO DUP 4 OVER ! 260 + LOOP
  3         ( This allows starting with screen # 0)
  4     0 DOS C! 56 0 DO I DUP 112 + COPY LOOP
  5     84 56 DO I DUP 116 + COPY LOOP
  6     1 DOS C! 84 68 DO I DUP 116 + COPY LOOP ;
  7
  8 ( DISK-CONVERT copies a "standard" FORTH disk)
  9 ( into the new hybrid format; i.e., it makes)
 10 ( a copy with "juggled" tracks)
 11
 12 ;S

 SCR # 96
  0 ( SELFSAVE                                        26DEC84CHP)
  1 BASE @ HEX LATEST C +ORIGIN ! HERE 1C +ORIGIN ! HERE
  2     1E +ORIGIN ! VOC-LINK @ 20 +ORIGIN ! HERE FENCE !
  3
  4 : READMAP 0 DOS C! FIRST 110 1 R/W ;
  5
  6 : WRITEMAP FIRST 110 0 R/W EMPTY-BUFFERS 1 DOS C! ;
  7
  8 : SELFSAVEMAP READMAP 11C FIRST 30 + ! FIRST AC + FIRST 38 + DO
  9     0 I ! 4 +LOOP FIRST C4 + FIRST AC + DO FFFF I ! 4 +LOOP
 10     WRITEMAP ;
 11
 12 0 VARIABLE FILENAME 1C ALLOT
 13
 14 : READ-CAT 0 DOS C! FIRST 11F 1 R/W 1 DOS C! ;
 15 -->
```

```
SCR # 97
  0 ( SELFSAVE continued                              26DEC84CHP)
  1
  2
  3 : FIND-NAME FIRST 100 0 DO DUP @ FID = IF 3 + FILENAME !
  4    LEAVE ENDIF 1+ LOOP FILENAME @ -DUP
  5    IF FILENAME 1E CMOVE ELSE ." ERROR" QUIT ENDIF ;
  6
  7 : NAMESAVE BASE @ HEX CR 4 EMIT ." BSAVE " FILENAME 1E TYPE
  8    ." ,A$800,L$" HERE 800 - 1+ . CR CR BASE ! ;
  9
 10 : FILESAVE READ-CAT FIND-NAME CR 4 EMIT ." DELETE"
 11     FILENAME 1E TYPE CR SELFSAVEMAP NAMESAVE ;
 12
 13 BASE !
 14 ;S
 15
```

```
:ASM

                1000  ************************
                1010  * CUSTOMIZED FORTH BOOT *
                1020  *       CHET PAGE      *
                1030  *       DEC. 1984      *
                1040  ************************
                1050  *  BINARY HELLO NEEDS  *
                1060  *      DOS CHANGE      *
                1070  *      9E42: 34        *
                1080  ************************
                1090          .TA $800
                1100          .OR $300
                1110          .TF HELLO
0000-           1120  PTR .EQ $0
0002-           1130  TRACK .EQ $2
0003-           1140  SECTOR .EQ $3
0004-           1150  BUFFER .EQ $4
03D9-           1160  RWTS .EQ $3D9
03E3-           1170  LOCRPL .EQ $3E3
0800-           1180  COLD. EQ $800
0300- D8        1190          CLD          TO KILL A BUG
0301- A9 FC     1200          LDA #$FC
0303- 85 04     1210          STA BUFFER
0305- A9 07     1220          LDA #7
0307- 85 05     1230          STA BUFFER+1
0309- A9 1D     1240          LDA #$1D
030B- 85 02     1250          STA TRACK
030D- A9 0E     1260          LDA #$E
030F- 85 03     1270          STA SECTOR
0311- 20 E3 03  1280          JSR LOCRPL
0314- 84 00     1290          STY PTR
0316- 85 01     1300          STA PTR+1
0318- A0 03     1310          LDY #3
031A- A9 00     1320          LDA #0
031C- 91 00     1330          STA (PTR),Y     VOLUME #
031E- A0 0C     1340          LDY #$C
0320- A9 01     1350          LDA #1
0322- 91 00     1360          STA (PTR),Y      "READ"
0324- A0 04     1370  LOOP    LDY #4
0326- A5 02     1380          LDA TRACK
0328- 91 00     1390          STA (PTR),Y
032A- C8        1400          INY
032B- A5 03     1410          LDA SECTOR
032D- 91 00     1420          STA (PTR),Y
032F- A0 08     1430          LDY #8
0331- A5 04     1440          LDA BUFFER
0333- 91 00     1450          STA (PTR),Y
0335- C8        1460          INY
0336- A5 05     1470          LDA BUFFER+1
0338- 91 00     1480          STA (PTR),Y
033A- 20 E3 03  1490          JSR LOCRPL
033D- 20 D9 03  1500          JSR RWTS
0340- E6 05     1510          INC BUFFER+1
0342- C6 03     1520          DEC SECTOR
0344- 10 DE     1530          BPL LOOP
0346- A9 0F     1540          LDA #$F
0348- 85 03     1550          STA SECTOR
034A- E6 02     1560          INC TRACK
034C- AD FF 07  1570          LDA $7FF
034F- 4A        1580          LSR
0350- 4A        1590          LSR
0351- 4A        1600          LSR
0352- 4A        1610          LSR
0353- 18        1620          CLC
0354- 69 1D     1630          ADC #$1D
0356- C5 02     1640          CMP TRACK
0358- B0 CA     1650          BCS LOOP
035A- 4C 00 08  1660          JMP COLD
```

```
SYMBOL TABLE

0004- BUFFER
0800- COLD
03E3- LOCRPL
0324- LOOP
0000- PTR
03D9- RWTS
0003- SECTOR
0002- TRACK
```

WASHINGTON APPLE PI DISKETERIA MAIL ORDER FORM
Software for Creative Living

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

5 1/4" DISKETTES: - Members $ 5.00 ea.; Non-members $ 8.00 ea., Plus $1.00 ea. postage up to a maximum of $5.00
3 1/2" " - Members $ 7.00 ea.; Non-members $ 10.00 ea., Plus $1.00 ea. postage up to a maximum of $5.00

Note: DOS 3.2 disks (Volumes 1 - 40) have been discontinued. The office will maintain an "archival" copy of each of these.

DOS 3.3
( ) Volume 41 IAC 25 Mach. Lang. Util.
( ) Volume 42 One Key DOS ***
( ) Volume 43 IAC 29 Utilities H
( ) Volume 44 Utilities I
( ) Volume 45 Diversi-Copy ***

( ) Volume 70 Business/Math/Statistics
( ) Volume 71 Music
( ) Volume 72 Keyboard Games
( ) Volume 73 Text Adventure Games
( ) Volume 74 Paddle Games
( ) Volume 75 Color Graphics for Fun
( ) Volume 76 Education
( ) Volume 77 Utilities

( ) Volume 90 Spreadsheet C Genl. Bus.
( ) Volume 91 Spreadsheet D Investment
( ) Volume 92 Spreadsheet E Bus. Recd.
( ) Volume 93 (temporarily recalled)
( ) Volume 100 Utilities A
( ) Volume 101 Utilities B
( ) Volume 102 Games A
( ) Volume 103 Merry Christmas
( ) Volume 104 Business A
( ) Volume 106 Science Engineering
( ) Volume 107 Games B
( ) Volume 108 IAC 10 (Graphics)
( ) Volume 109 IAC 11 (Applesoft Tutorial)
( ) Volume 110 Personal/Education
( ) Volume 111 Games C
( ) Volume 112 Utilities C
( ) Volume 113 Business B
( ) 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 WAPABBS 1.1 Doc. **
( ) 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 - Pascal & DOS 3.3
( ) Volume 134 New Members Disk

DOS 3.3 contd.
( ) Volume 135 WAPABBS 1.1 Disk 1 **
( ) Volume 136 WAPABBS 1.1 Disk 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 IAC 28 Pinball Games
( ) Volume 143 Sports
( ) Volume 144 IAC 27 Applesoft Prog.
( ) Volume 145 Apple Logo Tool Kit
( ) Volume 146 Logo Documentation
( ) Volume 147 Apple Logo Sample Prog.
( ) Volume 150 EDSIG1 (Elem. Math)
( ) Volume 151 1983 Tax Template
( ) Volume 152 IAC 31 Miscellaneous
( ) Volume 153 Investments A
( ) Volume 154 Investments B
( ) Volume 155 IAC 33 Miscellaneous
( ) Volume 156 IAC 35 Applesoft-AW//e
( ) Volume 157 IAC 36 Arcade Games
( ) Volume 158 Apple Logo Programs

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
( )*Volume 203 Feast of Carroll
( )*Volume 204 The Master's Dungeon
( )*Volume 205 The Crystal Mountain
( )*Volume 206 The Lost Adventure
( )*Volume 207 The Manxome Foe

Pascal (See also Volume 133)
( ) Volume 300 PIG0: ATTACH 1.1/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:
( ) Volume 312 PIG12:
( ) Volume 313 PIG13: Guerilla Guide
( ) Volume 314 PIG14:

CP/M
( ) Volume 401 Master Catalog
( ) Volume 402 Utilities 1
( ) Volume 403 Communications
( ) Volume 404 Utilities 2
( ) Volume 405 Utilities 3
( ) Volume 406 ZCPR2 Install
( ) Volume 407 ZCPR2 Documentation
( ) Volume 408 ZCPR2 Utilities
( ) Volume 409 Modem 730

Forth
( ) Volume 700 Assembler/Disassembler
( ) Volume 701 Full Screen Editor
( ) Volume 702 GoForth Tutorial
( ) Volume 703 Fig-Forth

Macintosh - @$7.00 (see above)
( ) SigMac 1 MS-BASIC Pgms
( ) SigMac 2 Atkinson's Goodies
( ) SigMac 3 Fonts
( ) SigMac 4 MS-BASIC Pgms
( ) SigMac 5 Desk Accessories
( ) SigMac 6 Mac Paintings
( ) SigMac 7 Desk Calendar & MS-BASIC
( ) SigMac 8 MacFORTH Programs
( ) SigMac 9 Not One Byte
( ) SigMac 10 Mostly BASIC

* Volume 181 required with these disks. ** Vols. 121, 135, 136 must be purchased together.
*** Use of this disk requires sending money directly to the author ($30 for Diversi-disks and $9 for One Key Dos.)

(NOTE: ALLOW 3 TO 4 WEEKS FOR MAILING.) Total Order = ___ disks.; postage $____; Total amount enclosed $_____

NAME _____

ADDRESS _____

CITY, STATE ZIP _____

TELEPHONE _____ WAP MEMBERSHIP NO._____

Make check payable and send to:

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

DATE _____

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 in the January, 1985 WAP Journal.

( )	February 5 (full)	- INTRODUCTION TO APPLE COMPUTER HARDWARE	( )	March 5
( )	February 12 (full)	- HOW TO USE YOUR APPLE SOFTWARE	( )	March 12
( )	February 19 (full)	- BEGINNING APPLESOFT BASIC	( )	March 19
( )	February 26 (full)	- INTERMEDIATE APPLESOFT BASIC	( )	March 26

The fee for each tutorial is $10.00 with an Apple, monitor and disk drive, $15.00 without (monitors available for 1st 5 registrants - call office). 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)

Please check the desired tutorials and return this form with fee(s) made 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

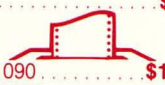
INDEX TO AUTHORS

DISCOUNTS!

5¼ DISKETTES & STORAGE

- SS/DD, BOX OF 10 ..... $12.00
- SS/DD, 10 BOXES $115.00
- DOUBLE NOTCHED DS/DD, BOX OF 10 ..... $14.00 *
- DOUBLE-NOTCHED DS/DD, 100 ..... $125.00
- HARD PLASTIC STAND-UP DISKETTE LIBRARY CASES ..... $2.75 EACH 4 FOR $10.00 (specify color choices: beige, black, blue, green, grey, red)
- SMOKED PLASTIC JUMBO-SIZE FLIP-TOP 75 DISKETTE FILE CASES $13.00
- 70 DISKETTE FILE CASES $12.00
- 140-DISKETTE LOCKING WOOD FILE CABINET $33.00

PRINTERS



- PANASONIC P1090 ..... $199.00 *
- PANASONIC P1091 ..... $299.00
- EPSON RX-80 F/T $289.00
- EPSON RX-100 ..... $399.00 *
- OKI-DATA MICROLINE 92A DOT MATRIX $369.00
- SILVER REED 400 LETTER QUALITY $269.00
- STARWRITER A-10 25CPS LETTER QUALITY ..... $395.00 *
- TOSHIBA 1340 DOT MATRIX AND LETTER QUALITY COMBINED $795.00

PRINTER INTERFACES AND ACCESSORIES

- STANDARD PARALLEL INTERFACE CARD $49.00
- APPLE IIc TO PARALLEL/ GRAPHICS INTERFACE ..... $99.00 *
- GRAPHICS PARALLEL INTERFACE CARD $75.00
- FINGERPRINT PUSH-BUTTON GRAPHICS CARD $119.00
- MICROFAZER GENERAL PRINT BUFFER $149.00
- PRINTER STAND $14.00
- SWITCH BOX 3 PARALLEL PORTS ..... $99.00 *
- SWITCH BOX, 3 SERIAL PORTS $79.00

FLOPPY DISK DRIVES

- FOURTH DIMENSION (FULL OR SLIMLINE) $179.00
- DISTAR $159.00
- LASER/MITAC ..... $139.00 *
- IIc DRIVES $158.00
- DISK CONTROLLER $59.00
- DOUBLE-SIDED DRIVE $199.00
- 2-DRIVE SET ..... $249.00 *
- GAMMA DRIVE ..... $129.00 *

HARD DISK DRIVES

- 10 MEGABYTE WITH CONTROLLER SOFTWARE ..... $1175.00 *

MONITORS

- GORILLA 12-INCH GREEN $84.00
- USI 12-INCH GREEN $94.00
- USI 12-INCH AMBER $99.00
- INTRA 14-INCH COMPOSITE COLOR/80 COLUMN $239.00

MODEMS

- ZOOM TELEPHONICS 300-BAUD $109.00
- CENTAURI 300 BAUD ..... $159.00 *
- PRO-MODEM 1200 ..... $349.00
- PRO-MODEM 1200A INTERNAL ..... $299.00 *

GRAPHICS DEVICES

- POWER PAD & STARTER KIT ..... $89.00 *

VIDEO & DISPLAY EQUIPMENT

- DIGITIZER $299.00
- B & W CAMERA $195.00
- COLOR PROCESSOR $99.00
- COLOR PROCESSOR/ENHANCER STABILIZER/SYNTHESIZER $279.00

GENERAL ITEMS

- 6 OUTLET POWER STRIP $19.00
- 6-OUT WITH SURGE PROTECT ..... $25.00 *
- SURGE PROTECTOR $11.00
- RF MODULATOR $49.00
- COMPUTER STAND $24.00

GAME I/O DEVICES

- CH PADDLE STICKS ..... $37.00 *
- CH MACH II JOYSTICK $37.00
- CH MACH III JOYSTICK $45.00

★ DENOTES NEW PRICE OR ITEM

LONG DISTANCE • CALL TOLL FREE WITH TOUCH TONE PHONE. DIAL 950-1088. WAIT FOR TONE. DIAL 363-1313. NOTE: IF 950-1088 DOES NOT WORK IN YOUR LOCATION, CALL 1-800-446-4462. WAIT FOR TONE. DIAL 363-1313.

SLOT EXPANSION

- 16 RAM CARD $49.00
- 64K RAM & 80 COLUMN CARD FOR IIe $109.00
- MEMORY MASTER IIE 64K + RAM & 80 COLUMN CARD ..... $139.00 *
- MEMORY MASTER IIE 128K RAM & 80 COLUMN CARD $175.00
- MODEM ELIMINATOR CABLE $21.00
- SERI-ALL SERIAL INTERFACE CARD $119.00
- 80-COLUMN CARD (VIEWMASTER) WITH SOFT-SWITCH $129.00
- CENTAURI APS Z-80 CARD $59.00
- Z-80 PLUS CARD (CPM FOR APPLE) $115.00
- FAST Z-80 CARD APPLICARD $175.00
- TIMEMASTER II CLOCK/CALENDAR CARD $109.00
- QUICK-LOADER PROM BOARD $149.00
- ANALOG/DIGITAL BOARD $99.00
- SUPER I/O BOARD $49.00
- MULTIPLE-SLOT EXPANSION CHASSIS $149.00
- SINGLE-SLOT EXTENDER $29.00
- WILDCARD II COPY BOARD ..... $109.00 *

SPECIAL PERIPHERALS

- COOLING FAN WITH SURGE PROTECTOR $39.00
- TITAN KEYBOARD $159.00
- LIFETIME EXTERNAL POWER SUPPLY $179.00
- SHIFT KEY MOD KIT $8.00
- SCREEN SWITCHER/ DRIVE STEPPER $74.00

APPLE SOFTWARE

- WORD STAR $195.00
- MAIL MERGE/SPELL STAR/ STAR INDEX $125.00
- INCOME TAX PREP ..... $199.00 *

UPS shipping, $4.00 per order plus $6.00 per printer or monitor

ORDERS & CALL BACK MESSAGES (ANSWERING MACHINE) (202) 362-9176

STORE HOURS:

12-8 M-TH
12-6 FRI
11-5 SAT

SPECIAL!!! APPLE IIc PARALLEL/ GRAPHICS INTERFACE $99.00*

VF ASSOCIATES

(202) 363-1313

6327 Western Ave., N.W. WA, D.C./20015 (Mail Order)
8231 Woodmont Ave., Bethesda, MD/20814 (Showroom)

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

ADDRESS CORRECTION REQUESTED

BULK RATE
U. S. POSTAGE
PAID
PERMIT # 5389
Silver Spring, MD
20910