$2

Washington Apple Pi

The Journal of Washington Apple Pi, Ltd.

Volume 6 April 1984 Number 4

Highlights

Integrating Frames With An Expert Program

Applesoft - Part 4

Modula 2 - Part 4

Six Assemblers Reviewed

In This Issue

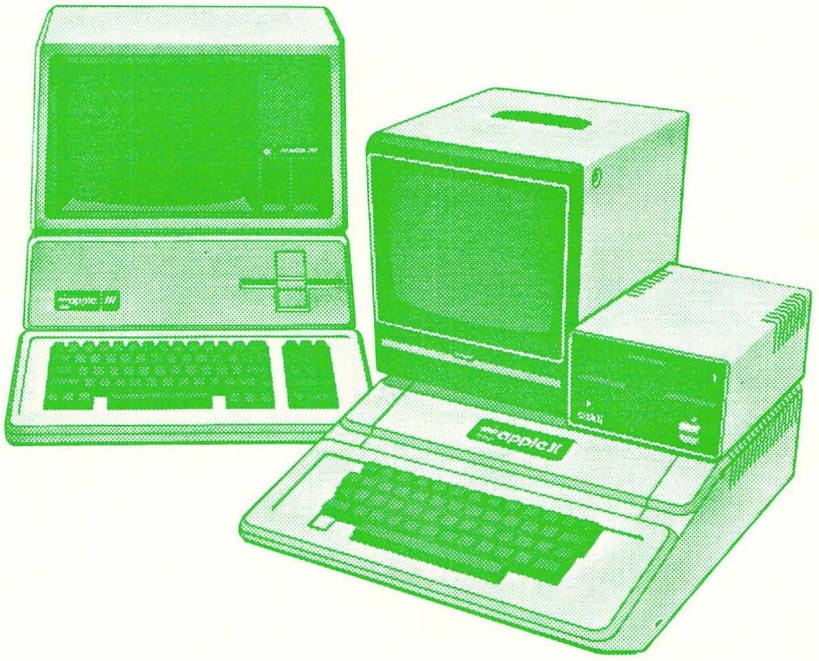
Officers & Staff, Editorial 3
President's Corner . . . . . David Morganstein 4
The Forth Column . . . . . Kevin Nealon 4
Commercial Software Library 5
Future Directions of the Pi 5
SIGNews, Classifieds, Commercial Classifieds . . 6
Event Queue, General Information 7
Apple Teas, Minutes, Hardware Helpers 8
EDSIG News . . . . . Peter Combes 9
Q & A . . . . . Bruce F. Field 10
WAP Hotline 14
LOGOSIG News . . . . . Nancy C. Strange 15
DisabledSIG News . . . . . Jay Thal 18
A Page from the Stack . . . . . Robert C. Platt 20
Hi-Res Sketch Program on WAP 25 . George V. Kinal 22
Macintosh Alarm Clock . . . . . Tom Warrick 24
Mac Notes . . . . . Tom Warrick 25
Wozniak Brings Mac to DC: A Reprint . .Bart Cable 26
More Mischief . . . . . Dan Robrish 26
Notes on Softcon . . . . . Richard D. Norling 27
Integrating Frames with Expert Program..Fred Naef 28
Intro. to Applesoft - Pt. 4 . . David Morganstein 30
Intro. to Modula 2 - Pt. 4 . . . Robert C. Platt 34
Pascal Print Program . . . . . Jerry Crawford 37
1001 Binary Tales: 6 Assemblers . . Raymond Hobbs 43
Oh . . . By the Way . . . . . John A. Love III 48
68000 AL Prog. A Book Review . . Robert C. Platt 49
VisiColumn: Spreadsheet Tmplts. . Walton Francis 50
The Bottom Line . . . . . Leon H. Raesly 52
CP/M Text Processing . . . . . George V. Kinal 56
Telecomm SIG News . . . . . Dave Harvey 58
Serial Comm Cards . . . . . George V. Kinal 58
Geopolitique 1990 & Data Capture . . Bob Oringel 59
Cataloging the Chaos . . . . . C. Swift, Prop. 60
Ultima III Tips . . . . . David Wehr 61
WAP Tutorial Registration 62
Library and Magazine Mail Order Forms 63, 64
Index to Advertisers 64

There's only one place to buy apples.

AT FREDERICK COMPUTER PRODUCTS !!!

As an Authorized Apple Dealer we offer a full selection of both Apple Hardware and Software at low, low prices.

Also, as an Authorized Service Center we provide fast and efficient service on all Apple products.



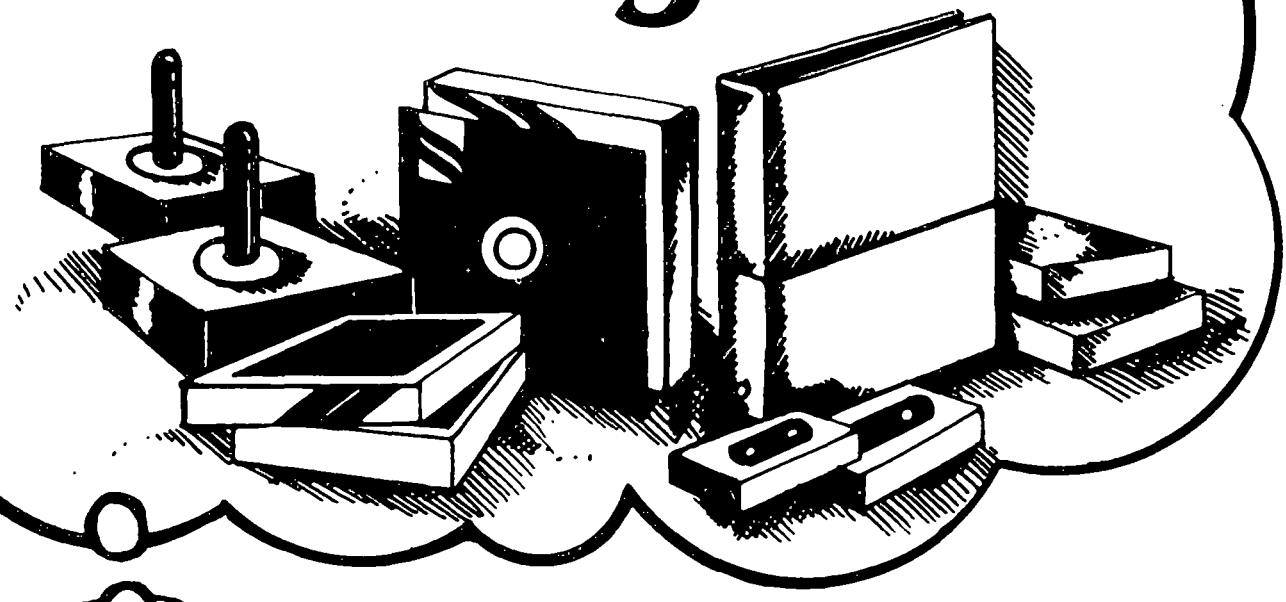
FREDERICK COMPUTER PRODUCTS, INC.

Microcomputer Systems And Peripherals

5726 INDUSTRY LANE-FREDERICK, MD.- (301)694-8884

apple computer
® Authorized Dealer

"I felt like a kid in a candy store."



That's what most people say on their first visit to Software City. Racks of software for business, home, education and recreation. Ready for browsing. Every one discounted. Come See. Come Save!

Programs, peripherals, disks and accessories, plus a complete selection of books and magazines.

SOFTWARE ALWAYS DISCOUNTED

Software City®

11621 Nebel Street • Bethesda, MD 20852

(301) 468-1001

MICROMASTER™

The MICROPOWER™ System for Applesoft Programmers

Applesoft is easier to use than most computer languages. But Applesoft is missing commands like "print using" found in other versions of BASIC. MicroMaster lets you keep the ease of programming in Applesoft, while adding powerful new commands. A few of them are:

&PRINT - a versatile "print using" command that formats numbers quickly and easily. It remembers the last format you gave it; and allows you to use the full syntax of the PRINT command (including strings, SPC(), TAB(), commas and semicolons).

&INPUT - "input anything" reads strings -- including commas, colons, quotation marks and other punctuation -- from the keyboard or a disk text file. When INPUTing to a numeric variable, you can type the number, or any valid Applesoft formula.

&TAB, &CEOP, &CEOL - Tab, clear to end of page, and clear to end of line commands that work on both 80 and 40-column screens.

&STORE, &RECALL - STORE and RECALL values of any array with binary disk file speed. Much faster than using text file commands.

&SUBSTR - finds one string inside another string at machine language speed.

&UNDIM, &SWITCH - undimension or switch arrays without clearing other variables.

&FRE - fast routine collects Applesoft string garbage in an instant.

&" - "run anything" command knows from the file name you give it whether the file should be RUN, BRUN, or EXECed.

&APEEK, &APOKE, &MPOKE - APEEK and APOKE commands handle 2-byte values, and MPOKE makes it easier to poke machine language routines into successive memory locations.

&GOTO, &GOSUB - GOTO and GOSUB to variable names instead of meaningless line numbers.

&ERRMS - print error messages without halting program execution.

&MERGE - a merge that works on machine language as well as Applesoft programs.

HOW MICROMASTER WORKS:

MicroMaster operates a subroutine library in your computer's memory outside your program. You can use the subroutines we provide, and also add your own subroutines written in either Applesoft or machine language. In addition to calling any library subroutine by name, your program can at any time delete subroutines from the library, load more subroutines into the library from disk, or rename subroutines.

You can use MicroMaster as a library for subroutines you use in your programs (without having to add the code to each program). And you can divide your Applesoft program into segments, and execute each segment as a library routine. For example, execute your program's start-up segment as a library subroutine, and then delete it to make room in memory for large arrays or the later segments of your long program.

MicroMaster works with Applesoft on an Apple II+ or //e with at least 48K of RAM, and DOS 3.3 in its normal location. It works alone, or jointly with your favorite editor (e.g., GPLE or CRAE) and programming tools (like RENUMBER or APA).

MicroMaster brings you over 50 commands! No copy protection to keep you from using it with all your programs. Full after-purchase support, including a periodic newsletter. MicroMaster is available now for $75 (add $3 shipping and handling, Maryland residents add 5% sales tax).

MICROPOWER, LTD.

Call (301) 495-2933 today
We take VISA & MasterCard

1100 East-West Highway
Silver Spring, MD 20910

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

OFFICERS & STAFF

President	- David Morganstein	(301) 972-4263
Vice President	- Dana Schwartz	(301) 725-6281
Treasurer	- Edward Myerson	(703) 759-5479
Secretary	- Sara Lavilla	(301) 926-6355
Directors	- Bernie Benson	(202) 546-0076
	- Peter Combes	(301) 445-6188
	- Bruce Field	(301) 340-7038
	- Nancy Philipp	(301) 924-2354
	- Gordon Stubbs	(703) 750-0224
	- Rich Wasserstrom	(703) 893-9147
Editor	- Bernie Urban	(301) 229-3458
Associate Editors	- Betsy Harriman	(202) 363-5963
	- Genevie Urban	(301) 229-3458
Journal Staff:		
Store Distrbtn.	- Ray Hobbs	(301) 490-7484
Columnists:		
Applesoft	- James T DeMay Jr.	(301) 779-4632
DisabledSIG	- Jay Thal	(202) 244-3649
EDSIG	- Peter Combes	(301) 445-6188
LOGOSIG	- Nancy Strange	(703) 691-1619
Q & A	- Bruce Field	(301) 340-7038
Telecomm	- Dave Harvey	(703) 527-2704
VisiCalc	- Walt Francis	(202) 966-5742
Group Purchases	- Rich Wasserstrom	*(301) 654-8060
	*(Call Kevin at office on M,W,Th,F)	
Head Disk Lib.	- John Malcolm	(301) 384-1070
Library Staff:	- Dave Weikert, Joy Aso, Bob Hicks,	
	- Ed Lang, Jim & Nancy Little,	
	- Terry Prudden, Bruce Redding,	
	- Gordon Stubbs	
New Disks	- Bob Platt	(202) 223-1588
Pascal Lib.	- Mike Hartman	(301) 445-1583
CP/M Lib.	- Kit Leithiser	(703) 569-8037
Head Reading Lib.	- Walt Francis	(202) 966-5742
Apple Tea Coord.	- Paula Benson	(202) 546-0076
Arrangements	- Jim Taylor	(301) 926-7869
Demonstrations	- Signe Larson	(703) 524-4541
General Counsel	- Jim Burger (Shaw, Pittman, Potts & Trowbridge)	day (202) 822-1093

Membership	- Dana Schwartz	(301) 654-8060
Program	- Cara Cira	(301) 468-6118
Publicity Chairman	- Hunter Alexander	(703) 820-8304
Public Relations	- Lee Raesly	(301) 460-0754
Rules & Elections	- Bob Platt	(202) 223-1588
School Coordinators:		
Virginia	- Barbara Larson	(703) 451-9373
	- Nancy Strange	(703) 691-1619
Mont. Co. MD	- Margie Stearns	(301) 657-2353
Pr. Geo. Co. MD	- Conrad Fleck	(301) 699-8200
Special Publctns.	- Betsy Harriman	(202) 363-5963
SYSOP	- Tom Warrick	(301) 656-4389
Tutorials	- Steve Stern	(301) 881-2543
	- Leon Raesly	(301) 460-0754
Volunteer Coord.	- Boris Levine	(301) 229-5730
SIG Coordinator	- Bob Platt	(202) 223-1588
SIG Chairmen:		
Appleseeds	- David Stern	(301) 881-2543
Apple ///	- Jerry Chandler &	(703) 790-1651
	- Bill Hershey	(301) 588-1992
ASMSIG	- Ray Hobbs	(301) 490-7484
CESIG	- John Kapke/	(301) 694-5968
	- Roy Rosfeld	(301) 340-7962
CP/M	- Charles Franklin	(301) 997-9138
DISABLEDSIG	- Curt Robbins	ABBS WAP428 or
write 8805 Barnsley Court, Laurel, MD 20708		
(or phone)	- John Molineaux	(301) 341-7391
EDSIG	- Peter Combes	(301) 871-1455
FORTH SIG	- Kevin Nealon	(703) 280-1136
Games SIG	- Jim Eatherly	(202) 667-2287
Home Control SIG	- Russ Eberhart	(301) 596-4995
LAWSIG	- Charles Field	(202) 265-4040
LISASIG	- Gordon Stubbs	(703) 750-0224
LOGOSIG	- Nancy Strange	(703) 691-1619
NEWSIG	- Bernie Benson	(202) 546-0076
Pascal (PIG)	- Harry Bishop/	(703) 931-4937
	- Jim Harvison	(703) 593-2993
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

Copyright 1984, Washington Apple Pi, Ltd.

EDITORIAL

Now I can understand better the problems facing the National political polsters. The Pi has, over the years, attempted to gain feedback from its members through our monthly meetings, several survey forms and these editorials. Our efforts have had mixed results and I am at a loss to explain why. Our last attempt at the January meeting and the followup in the pages of the Pi has provided less than 10 percent returns. What has happened to the concept of participative management, alias democracy? The answer, however, is beyond the scope of this editorial, e.g. don't ask me!

I have scanned the responses (about 350) that we did receive and I would like to respond to three of them. It appears that those whose interests are more or less in line with the purposes of the Pi, and who have already volunteered their efforts in its support, take these surveys more seriously than most others. One member who is a very active hotliner and sometimes columnist asks why can't the ABBS be used for identifying patterns of questions and for articles which would be responsive to those questions. Why not? See George Kinal's article in this issue which responds to the rush of questions he has received on interface cards for modems. Right on, Dianne.

Another member comments that s/he cannot properly respond to the request to identify the most favorite Journal column: "This is tough. This is the only computer magazine I read cover to cover." Nice to hear that. But why not comment a bit further and say what is missing? A third respondent indicates the importance and utility of the monthly Q & A sessions but laments the opportunity for more of the same on less technical questions. Our NEWSIG is created for just such a purpose. It meets after each monthly meeting, and volunteers are also available each Thursday evening at the office. Surprisingly few takers, though.

Our best feedback results have come from the special organizational meeting we had about two years ago. Another one is coming up on April 21. Perhaps then...

PRESIDENT'S CORNER

by David Morganstein

SPECIAL MEETING. We will hold a special meeting on Saturday, April 21 at the USUHS. The meeting will begin at 10 AM and end at noon. The subjects are described elsewhere in this months Journal. The Exec Board wants to obtain a wide range of views about the club's current and future activities. Among the topics will be: the role of group purchase, the appearance of our Journal and the size and growth of membership. In part the meeting will be used to formulate a budget proposal for the next fiscal year and to prepare any necessary referenda for this year's election.

HOW FAST IS THE MAC? In a quick experiment, I set up the same Multiplan sheet on the Apple (under CP/M) and on the Mac. Just because the clock speed of the Mac is almost eight times faster then the][is no reason to expect that kind of performance improvement on most applications. The result of recalculating a 200 row by 2 column table involving square roots: the Apple - 90 seconds, the Mac - a "blinding" ten!!!

HELP FROM SHELTERED WORKSHOP. The WAP is obtaining help from a sheltered workshop in the distribution of the newsletter. Jay Thal suggested that this approach would both help unburden our office staff and provide mutual benefit to both the WAP and the handicapped community. We believe it will result in receiving your Journal more quickly, as well.

VIDEO ACCESS. We are pleased to have the help of Richard Langston II in the video-taping of our monthly meeting topic. Richard is interested in obtaining the help of others to lend equipment, video camera and lights, and to man the camera. If you want to volunteer some assistance in either area, leave your name with the office folks. The tapes which Richard puts together will be available at our office along with a video recorder and TV to permit viewing by any member. Since many of you cannot attend all meetings we thought this would at least provide an opportunity to hear the monthly speaker on your own schedule. (Note below that the office is now open on all Saturday mornings, except meeting Sat.). In addition, Tom DeMay is discussing with a public TV station the possibility of carrying our meetings to their subscribers.

IN NEED OF DESKS. We can use two more desks at the office. If you have an old slightly worn one that you are dying to donate, please give us a call.

WOZ TAPE. As of early March, about ten people had borrowed a copy of the WOZ visit tape. These are available for a two week loan. Three formats of video tape are available: Beta, VHS and commercial. Contact the office to arrange for access.

SCHOOLS OBTAINING WAP SOFTWARE. Over twenty schools have taken us up on our offer of software from our library. Your school need only send in a box of ten diskettes and agree to use the selected disks for educational purposes to obtain a selection from our disk service. Call the office for an agreement form to be mailed to you.

COMMERCIAL SOFTWARE. In this issue you will find a list of the commercial software currently available at the office for your examination. We are sending letters to several dozen distributors of products, many suggested by you, to try to expand this collection. If you want to be sure that a particular program is available when you plan to come by, you should contact the office to reserve its use for the time you require it. Remember, the purpose of this collection is to give you an opportunity to try out the products before you commit yourself to a purchase. IMPORTANT NOTE: Our office staff will NOT be able to help you use the products. Please do not ask for their assistance because they are not versed in their use. If you can not figure out how to use the program on your own, you should consider that an indication of the advisability of buying it.

OPEN SATURDAYS. As of March 1, our office will be open on all Saturdays for a trial period of two months. If there is sufficient interest, we will continue the practice. During the two month period, one of our paid staffers will be joined by a volunteer.

TUTORIALS. Besides our usual Tuesday evening series of tutorials, several special topics will be treated in the upcoming months. Bob Fretwell will be discussing the widely used CP/M operating system on April 14. Lee Raesly will be giving an Apple Writer II tutorial on April 21 and a dBase II session on May 5. All of these will be held at the office on Saturday mornings. The Pascal SIG will be sponsoring a Pascal series in June, check the back pages for dates. We want to give an appreciative thanks to the instructors of the previous and upcoming courses. Richard Untied did a marvelous job in March before an enthusiastic group seeking to improve their Applesoft skills. To all of you, thanks for sharing your knowledge!

THE CALL-A.P.P.L.E. DECISION. We were surprised and disturbed to receive a package from Call-A.P.P.L.E. in early March. The package contained all of the applications we had sent since January. Attached was a form letter indicating that, as of January 1, they were no longer offering "user groups" a discount for membership. Since the arrangement of the discount had been made directly with the President of Call-A.P.P.L.E., this "announcement" came as a total surprise to us. We can appreciate their right to change any agreed upon relation with the WAP. We would have preferred a more professional approach, such as discussing the decision with us in advance and giving us time to alert our members, not sending us a form letter two months after the effective date of the policy change. To those of you who have sent in an application, our apologies for the disappointment. We have already mailed your application back to you with an explanation of the events.

THE FORTH COLUMN

by Kevin Mealon

On March 3 the Forth SIG, like a Phoenix risen from its ashes, met with a few Forth programmers and would-be Forth programmers present. It was decided that this SIG's main function is to instruct members in writing Forth programs, and to suggest why they might choose that language over another.

The next meeting will be on April 7 at 1:00 PM at the WAP office, and will serve as an introduction to the language and how to install the club's Fig-Forth on your Apple computer.

COMMERCIAL SOFTWARE LIBRARY

The following software items are presently available in the WAP Commercial Software Library at the office. Though we have a few items that are of recent vintage, many of the ones listed were donated by various commercial outlets because they were a bit "out-of-date", but you may still find them useful.

WORD PROCESSORS:

Easy Writer, Pro System	Information Unlimited
The Executive Secretary	SOF/SYS
SuperScribe II (1981)	On-Line Systems
Magic Window (1980)	Artsci, Inc.
Super Text (1980)	Muse
Gutenberg Jr.	Micromation Ltd.
The Writer (][, //e)	Hayden

ACCOUNTING, PAYROLL, TAX, ETC.:

VisiFile 1.1	VisiCorp.
E-Z Tax	
The Home Accountant (][, //e)	Continental Software
Payroll (written in Pascal)	Broderbund Software
Desktop Plan II	Personal Software
Accounts Payable, Module 3	Continental Software
Business Accounting Systems:	BPI Systems
Job Cost	
Accounts Receivable	
Time Accounting	
Inventory Control System	
Individual Tax Plan (demo only)	Aardvark Software
Tax Manager (1981)	Micro Lab.
EZ Ledger	Highlands Comp. Serv.

UTILITIES:

Amperware	Scientific Software
Litmas 1983	Eric Sohr
The Inspector	Omega Microware
Apple-Cillin II (diagnostics for][,][+ - 1982)	XPS INC.
Graphic Writer 1980 (graphics dump for IDS 440 or 445G)	Computer Station
MicroMaster (1983-84, extended commands for Applesoft)	MicroPower, Ltd.
Agil Paint Prog. & Slide Show	Animation Graphics
Optimized System Software (Operating System Utilities: Business Basic, Editor/ Assembler/Debug Ver 1.0)	Shepardson Mircrosys.

MISCELLANEOUS:

The Moonshadow (text formatter)	Merrimack Systems
Sargon II	Hayden
The Arcade Machine	Broderbund
Electronic Catalog	Edu-Ware
Micro-Telegram (1981) (links Apple to WU,Telex,TWX)	Microcom
PFS: Report	Software Pub. Corp.
Trend Spotter (1980, forecasting tool for management)	Software Resources
The Data Factory (1980)	Micro Lab.
The Analyzer (bus. software)	Dakin5
Soft Seventy	Synergistic Software
Mixed Numbers, Decimal Skills, Division Skills, Punctuation (commas), Vocabulary Skills	Milton Bradley

We have written to quite a few software houses asking for donations of software. As we receive them, we will list them in the Journal within "Notes from the Office." See "President's Corner" elsewhere in this issue for information on use of the Commercial Software Library.

FUTURE DIRECTIONS FOR THE PI

With more than 3,500 members and the need to support an increasing variety of Apple machines, Washington Apple Pi is at a crossroads. Now is the time for reflection on where WAP has been and for careful planning regarding its future course.

The future of WAP will be the subject of a special membership meeting to be held on Saturday, April 21 at 10 a.m. at USUHS. The items to be discussed at that meeting include:

1) What is the purpose of the WAP? Who should WAP serve and how should it channel its resources and volunteer efforts?

2) Should specific criteria be developed to determine which products should be offered through Group Purchase? Should Group Purchase test and rate products similar to the way Consumers Reports does?

3) Should the WAP Journal be expanded? How can its format be improved?

4) Should WAP actively solicit members and publicity?

5) Should a larger meeting site be found?

6) What educational projects should WAP undertake? Should WAP publish books on specific subjects such as Pascal or Logo? Should we prepare videotaped educational materials? Should we prepare audio cassette tutorials?

7) Should WAP set up affiliate chapters in outlying communities? We have tried to preserve the "small club" feeling with Apple Teas, but many members find traveling to an overcrowded central monthly meeting to be inconvenient. If WAP set up local chapters, what would be their role?

8) What should WAP's relationship be with Apple Computer, Inc.?

9) What additional services should WAP provide to members?

These topics were prepared by a special committee appointed by the Executive Board. The committee, whose members are Peter Combes, Bob Platt, Bernie Urban and Tom Warrick, is also considering a number of internal organizational issues that are related to these major policy issues. Your views on April 21 will help determine the future of Washington Apple Pi.

See you there!

SIGNEWS

APPLE /// SIG meets on the second Thursday of the month at 7:30 PM. The next meeting will be on April 12 at Universal Computers, 1710 Fern Street, Alexandria, VA.

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

ASMSIG meets immediately after the regular Washington Apple Pi meeting.

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

DISABLEDSIG - See "DISABLEDSIG News" elsewhere in this issue.

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

FORTHSIG has been revived. See "The Forth Column" elsewhere in this issue.

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

LAWSIG usually meets in downtown Washington, D.C. at noon once a month. For information call Charles G. Field, Chairman, 265-4040, or Jim Burger, 822-1093.
LOGOSIG meets monthly at 12:45 after the regular WAP meeting at the Barrie School, 13500 Layhill Road, Silver Spring, MD. See "LOGOSIG News" elsewhere in this issue.

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

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

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

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

STOCKSIG meetings are on the second Thursday at 8:00 PM at the WAP office. Call Robert Wood, (703) 893-9591.

Telecomm SIG usually meets after the regular WAP meeting.

Our latest SIG: SIG MAC! If you own a Mac, or are thinking about buying one, come to our second organizational meeting for our Macintosh Special Interest Group. SIG MAC will meet immediately after the March monthly meeting. For further information, contact Bob Platt, our SIG Coordinator. ¢

CLASSIFIEDS

FOR SALE: Epson MX-80 printer with Graftrax option and Apple parallel interface; Novation Apple CAT 300 baud modem with expansion module; Word Star and 6 mHz PCPI Z-80 card (3 mos. old). Joe Jacobs. Fri-Sun (301) 587-3735; weekdays (215) 898-4320; weeknites except Fri. (215) 387-3873.

ESTATE SALE: 64K Apple //e, 2 Disk II's, 80 cols., Apple /// monitor, MX-100 printer with Grappler and EPS 16K printer buffer, system saver fan and surge suppressor, computer and printer stands, plus VisiCalc, PFS Report Write, Sampler and Build Using. Tom Nolan, 384-7022.

FOR SALE: Apple Silentype Printer with card, used three months. $200. Call Steve Zawitz at 466-5333.

FOR SALE: NEC 8201 Notebook Computer with 64K RAM, cassette recorder, power supply, Centronics printer cable, 8 x 40 character LCD display, serial port, word processing, spreadsheet, communications and other software. Retail value $1600+. Asking $1100, cash, Visa or Mastercard. Call (202) 387-6022 and leave message.

FOR SALE: IDS Prism 132 dot-matrix printer. Approx. 2 yrs. old, with card and cable for Apple][+. $2,000 new, needs work. Make offer. Call 762-1424 or 424-4120 Mon-Fri from 9:30 - 4:30, ask for Pat.

FOR SALE: Factory-sealed Apple IEEE-488 interface board, $350 or BEST OFFER. Was $450 new. Can be used for personal instrumentation, auto-control, measurement, logging, etc. Contact Tom Vier at 887-7588 (work), or 860-0083 (home) till 7 pm.

FOR SALE: Heathkit H-14 tractorfeed printer. Features 8 baud rates, fwd & rev linefeeds, self test, 80, 96 or 132 chr per line, complete w/cables and doc for any computer w/RS-232 serial interface. $325/offer, must sell. Don Mayes (301) 589-4190.

FOR SALE: Mountain Hardware Super Talker. Let your Apple speak for itself. Comes with interface card, microphone and speaker, all doc and software. Not used much. $200 negotiable. Don Mayes (301) 589-4190.

FOR SALE: RF Sig Gen. Old but works great. Hobbyist delight. Asking $5. Also various back issues of BYTE magazines over the last 2 to 3 years. Approx 30 issues, $30 for the box. Don Mayes (301) 589-4190. ¢

COMMERCIAL CLASSIFIEDS

* APPLE'S APPRENTICE ... The easy to understand Apple magazine for kids 8 to 80. Graphics, Comics, Fun! 12-issue special introductory price, $18. Write the secret word $4A on your check and get a 13th issue free! Emerald City Publishing, P.O. Box 582-AA, Santee, CA 92071.

* NAMES & ADDRESSES of over 200 SOFTWARE COMPANIES, recently compiled. Printout, $20; on disk, $25. Call Newton Steers (301) 320-5820, 9 am - 11 pm.

* FOR SALE: Apple /// 128K, 2nd disk drive, parallel card, Pascal, Advanced VisiCalc, PFS File & Report, Business Graphics, Word Juggler. All parts and labor service costs covered by AppleCare PLan through Jan 85. $2,995. BMC monitor also available, $95. Equipment hardly used. Contact Bob Johnson at (703) 522-2440 during the day. ¢ *

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:

April	28	- Memory Boards
May	26	-
June	23	- Garage Sale

In addition to the regular monthly meeting we are planning a special meeting on Saturday, April 21 at 10:00 AM, USUHS, to discuss the future directions of the WAP. See an outline of planned topics elsewhere in this issue.

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

GENERAL INFORMATION

Apple user groups may reprint without prior permission any portion of the contents herein, provided proper author, title and publication credits are given.

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

Current Office hours are:

Mon, Wed, Fri	- 10 AM to 2:30 PM
Tue	- 12:30 to 2:30 PM & 7 to 9:30 PM
Thurs	- 10 AM to 2:30 PM & 7 to 9:30 PM
Sat	- 10 AM to 1 PM (except meeting Sat)
	- 12:00 to 3:30 PM (meeting Sat only)

TRI-STATE SYSTEMS

DISCOUNT APPLE SOFTWARE

	Retail	Our Price
Serpentine	34.95	25.95
Zork I, II, or III	39.95	29.50
Zaxxon	39.95	27.50
Choplifter	34.95	24.50
Kraft Joysticks	64.95	46.95
Choplifter & Kraft Joystick	99.90	67.95
Exodus: Ultima III	54.95	38.95
Frogger	34.95	24.50
Lode Runner	34.95	24.50
Wizardry	49.95	37.95
Wizardry II-Knight of Diamonds	34.95	25.95
Wizardry III-Legacy of Llylgamyn	39.95	29.95

	Retail	Our Price
The Accountant	129.00	94.95
DB Master	229.00	149.95
Screen Writer II	129.95	89.95
Master Type	39.95	27.95
Bank Street Writer	69.95	49.95
Snack Attack	29.95	19.95
Galactic Adventures	59.95	42.95
Doss Boss & Utility City	53.50	37.95
Verbatim (10 disks) 5¼"	42.00	26.95
Home Accountant	74.95	56.95
Sensible Speller	125.00	89.95
ASC II Express: The Professional	129.95	94.95

Mail orders to:
TRI-STATE SYSTEMS
P.O. Box 2544
Springfield, VA 22152

or call: (703) 569-9363
HOURS: 9AM-6PM LEAVE MESSAGE
7PM-8PM CALLBACK

VISA
No credit card penalty!
MasterCard

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

THANK YOU FOR YOUR ORDER!

Apple Teas

WAP is conducting small discussion groups around the D.C. area. Below you will find a list of volunteers who will be holding seesions in the next few months. These will be informal and last about 2 hours. If you would like to attend, call the host and register. Each host will limit the size according to his/her wishes and will let you know if there is room in that particular tea. Hopefully, there will be ample numbers of sessions to meet the interest.

Session leaders may be needed if the host does not feel knowledgeable about the Apple. If you would like to volunteer your help or be a session leader, contact Paula Benson.

APPLE TEA SCHEDULE

Host(ess)	Area	Phone	Date/Time	Topic
Carroll Washington	NE Washington	(202) 397-2759	Apr 25/7:30-9:30	Tax & Insurance
Robert Boyle	Carlisle, PA	(717) 245-0030	Apr 27/7:30-9:30	
David Einhorn	Wheaton/Kemp Mill	(301) 593-8420	May 24/8:00-10:00	DB Master
Joe McAllister	Fredericksburg, VA	(703) 786-6577	Arrange with host	
Sharon Eagle	Oxon Hill	(301) 839-3316	Arrange with hostess	
Randy Zittel	Woodbridge, VA	(703) 491-5493	Arrange with host	

MINUTES

SUMMARY OF FEBRUARY EXECUTIVE BOARD MEETING

The Executive Board of WAP, Ltd. met on February 13, 1984 at the WAP office. Areas of discussion included a budget update, enhancements for the cover of the WAP Journal, the videotape of Wozniak's visit, acquisition of a video system for the office, Clinton Computer's White Elephant Sale, WAP's participation in Apple Grantee programs, continued participation in the IAC, the program for the March meeting, renaming the disk software library, the need for another parttime office worker, a trial extension of office hours to Saturdays, results of the questionnaire which was distributed at the January meeting, contracting for a WAP Journal mailing service, a book on Pascal written by members, the possibility of forming associations with other Apple users groups, a formal cooperative alliance with Apple Computer, Inc., and the promotion of group purchase.

FEBRUARY GENERAL MEETING

WAP, Ltd. met at the USUHS on February 25, 1984 at 10:00 AM. President David Morganstein presided. Announcements included tutorials on Pascal and Advanced VisiCalc, opening of the office on Saturday mornings for a trial period of two months starting in March, a parttime secretary-receptionist position at the office, a special meeting on April 21 to discuss the future of WAP, availability of the January meeting videotapes, discontinuance of A.P.P.L.E.'s discounted membership to other user groups, a white elephant sale being sponsored by Clinton Computer on March 25, Apple Teas, and the containment of Appleseeds in the cafeteria. Volunteers were sought to help the office staff on Saturday mornings, to man the hotline on the Image Writer printer, and to provide expertise at various Apple Teas. Group purchase reported with details given on a Macintosh group purchase plan. Many members indicated interest in a SIGMAC. The members decided in favor of installing at the office a separate telephone line which would service an answering machine to provide group purchase information. Bob Platt presented a partial report on the questionnaire distributed in January. Richard Langston volunteered to present the Appleseeds' program on ProDOS. Ray Hobbs requested homework problems for Assembly Language students.

Sara LaVilla, Secretary

HARDWARE HELPERS

If you are having hardware problems with your Apple and/or peripheral equipment, the following persons have agreed to help. It will be at the discretion of the Hardware Helper just how involved he becomes. He may only suggest things for you to do, or he may actively assist in cleaning, removing or replacing parts.

Tilghman Broaddus
Rt 1, Box 246
Mechanicsville, VA 23001
(804) 779-2553 (till 10)

J.T. (Tom) DeMay Jr.
4524 Tuckerman Street
Riverdale, MD 20737
(301) 779-4632 (till 11)

Lyman Hewins
Route 2, Box 26
Leonardtown, MD 20650
(301) 475-9563 (till 11)

Bob Kosciesza
2301 Douglas Court
Silver Spring, MD 20902
(301) 933-1896 (till 10)

Richard Rowell
1906 Valley Stream Drive
Rockville, MD 20851
(301) 770-5260 (7-11)
(202) 651-5816 (9-4)

Dave Weikert
17700 Mill Creek Drive
Derwood, MD 20855
(301) 926-4461 (7-10 except
(Thurs. and weekends)

Gene Cartier
6026 Haverhill Court
Springfield, VA 22152
(703) 569-8450 (till 10)

Bruce Field
1402 Grandin Avenue
Rockville, MD 20851
(301) 340-7038 (till 10)

Pete Jones
1121 N. Arlington Blvd.
N. Arlington, VA 22209
(703) 430-1606 (7-10)

Mark Pankin
1018 North Cleveland St.
Arlington, VA 22201
(703) 524-0937 (till 10)

Jim Taylor
16821 Briardale Road
Derwood, MD 20855
(301) 926-7869 (till 10)

EDSIG NEWS
by Peter Combes

EDSIG Calendar

Tuesday, April 3 at 7:30 p.m.

Special Joint Meeting with Disabled SIG - see the special announcement elsewhere in this issue. (The meeting on sexist computers has been postponed - see below.)

Tuesday, May 1 at 7:30 p.m.

"Applications Programs in Schools". Betty Manchek discusses the use of word processors and other applications programs in education.

Tuesday, June 5 at 7.30 p.m.

"Are Computers Sexist?" A discussion chaired by Mary Brown.

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

Meeting Report

Tuesday, March 6 at 7:30 p.m.

"Recent Software"

Jerry McSpadden demonstrated The Assistant Teacher, a program to do "just about everything" from Overdrive in Reston, Virginia. This program will help the teacher produce tests, be they multiple choice or short essays, will weight and analyze answers, will produce new tests by pulling random items from previous tests, and will print out test sheets for students. Almost as an afterthought, it throws in a word processor for good measure. With the plethora of facilities that it offers, it is not surprising that the program takes some time to learn, but Jerry reported that the program was very well thought out, and was highly flexible. The documentation is clear, and "you don't have to know a lot". Evidence of good contact with the real needs of teachers was evinced by such details as the ability to go back to completed tests and add or even change scores. It offers several different standard forms, or the user can design his own. The package, containing a program disk and an analysis disk, comes for $99. "It's as good as I've seen for the price".

Jeanette Russell from Gaithersburg High School offered a fascinating glimpse into the state of the art in high school science teaching. She mentioned the now routine use of microcomputers as an extension of laboratory equipment, connected, for example, to light sensors to monitor plant growth. Jeanette showed "Bird Breed", a genetics program, written by Judith Canarr from Australia. Although the program is "essentially for bright students", it simulates the results of large numbers of breeding experiments on a scale that would be impracticable in the laboratory. The graphics are good, and the only snag seems to be that many students "do not stick with the program long enough" - once the routine is established there is little new stimulus for the student. Some very bright students notice that the "random" numbers in the program fail the Chi square test.

From the Chelsea Science Simulation Project Project in England came Evolute, in which students can study the effect of variables in breeding. The complexity of the science involved left some of the audience gasping, but the text only display was a little disappointing after the full color effects of Bird Breed.

Mary Brown showed Delta Drawing by Spinnaker - "for the very young children who get frustrated with Logo." Unlike Logo, Delta Drawing provides instant response by single key commands and stores procedures as numbers. Many of the features of Logo are conspicuously lacking - you can't have inputs to procedures, for example - but for many four and five year olds it is great stuff.

DO YOU TRADE STOCK OPTIONS?

If you use your computer to trade stock options, you know how difficult it can be to pinpoint the most profitable trades. Even with the best software you can spend hours of time and many hundreds of dollars in data base charges. Let the ***Option Value Reporter*** save you time and expense. You get:

- State-of-the-art fair value analysis for puts and calls on over 300 stocks weekly
- Best positions selected for a minimum 30% probable annual return
- Incisive commentary, examples, etc.

Make it easy to find the best trading opportunities! Send us your name and address with $15 for your 5 week trial subscription. Six (6) months (25 issues) is $100, 1 year (50 issues) is $180. Maryland residents add 5% sales tax.

OPTION ANALYTICS, INC.
Scientific Stock Option Analysis • Department A
P.O. Box 529 • Bowie, MD 20715

TYSONS CORNER CENTER'S

HomeInform

Information on Store Names, Sales, Events, Restaurants, Theatres, Gifts, Metrobus Schedules and Much More

Computer Access Number

(703) 893-0874

Q & A

by Bruce F. Field

Q. The enclosed listing is an Applesoft program I wrote around a Morse code program to permit disabled persons using the Morse key to go in and out of programs on the disk. It works well on the Apple][+ but not on a //e. On the //e when it gets to the point where a selection is to be entered, the //e beeps continuously and I have to kill the program with RESET. Is the memory so different between the][+ and //e?

A. The //e and][+ are actually very similar. A][+ with a Language card has RAM memory configured exactly the same as a 64K //e. The Applesoft interpreter program in ROM is also the same in both machines. If you boot DOS 3.3 from the same disk on both machines, then the DOS is the same. Thus it is quite surprising that a "plain vanilla" Applesoft program will not work on both machines. In your case I suspect the problem is with the machine language Morse code routine. At the top of ROM memory in the Apple is a series of routines that control the basic functions of the Apple such as reading the keyboard, printing to the screen, beeping the speaker, etc. Collectively they are called the Monitor ROM. When Apple designed the //e they changed where some of these routines are in memory. The routines with documented starting points have generally had the starting points left at the same addresses as they were in the][+. But, there is nothing to prevent a machine language programmer from jumping into the middle of one of these routines. It seems likely that the Morse code program jumps into the middle of a routine that has been moved or changed in the //e. Not having a listing of the Morse code routine it is nearly impossible to tell exactly what is happening or why the speaker keeps beeping. Once things go haywire with a machine language program anything can happen.

Even though the][+ and //e are very similar, there are other differences besides the obvious ones of a different keyboard and lower case on the //e. See the next question.

Q. I recently wrote some BASIC programs on a][+ and put them on a disk. The HELLO program immediately prints ASCII 4 "RUN <filename>", and <filename> begins by loading "HR.PACKER" and "HR.UNPACKER", two utilities for doing compressed graphics; it then loads a compressed graphic. This all works fine on the][+, but when tried on a //e the disk starts to load <filename>, then stops. The screen fills with lo-res symbols, and the system locks.

By experimenting I found that if any BASIC program is run on the //e which loads a hi-res screen, then the above HELLO program can be RUN and it works, i.e. <filename> runs. Based on this I put a command HGR into HELLO just before PRINT ASCII 4 "RUN <filename>", and the HELLO program then boots on the //e and runs <filename>.

The manual says the //e and][+ have the same DOS 3.3 and Applesoft, and I am wondering why the HGR command is needed on the //e but not the][+. Since I am doing a graphics package which needs to run on either machine, not knowing makes me nervous.

A. Dear Nervous. I understand your apprehension. However, there should be no problem with RUNning <filename> from your HELLO program on a //e. (I just tried it to be sure and it works fine.) It's possible that something else is going on with your HELLO program before you RUN <filename>. Or, it may be that HR.PACKER and HR.UNPACKER are being loaded in O.K. but when HR.UNPACKER tries to load in and display the graphics picture the problem occurs.

Some of the soft-switches that control the graphics/text display operate differently in the //e. This is because the //e has an 80-column mode and an alternate character set built in. There are also additional switches to bank switch the extra memory on the 80-column card. Also, provision has been made to read the status of these switches, a nice feature that is not available on the][+. I would guess that HR.UNPACKER is not setting these switches properly for the //e. When Apple came out with the //e they also released a new version of DOS 3.3. Unfortunately they didn't change the version number so many people aren't aware that there is a slightly different version for the //e. This version takes care of a few additional initialization tasks associated with the 80-column card and the extra soft-switches. I'm pretty sure the new version will also run on a][+. Try copying your programs to a disk with the new version of DOS 3.3 and this might solve your problem.

Another alternative is to modify HR.UNPACKER to make sure all the soft-switches are set properly. Now that you've read all this garbage, probably the best thing to do is what you have already done, put an HGR at the beginning of the program.

As a corollary to this I have discovered one undocumented "feature" of the soft-switches on the //e. If you are in the 80-column mode it is impossible to switch to the hi-res graphics mode (presumably it is also impossible to switch to lo-res graphics although I haven't tried it). This problem is fundamental in the //e. With the 80-column soft-switch "ON" nothing happens if you try to change the soft-switch from text to graphics mode; the display stays in the text mode. The only way to get to graphics is to first switch back to the 40-column mode. For Applesoft programmers this means that if you have turned on the 80-column card with PR#3, the HGR command will work peculiarly. Although your graphics will be written properly in the graphics memory you will not see them as the //e is still displaying the text page. You must first turn off the 80-column card by typing <ESC> control-Q or by printing a control-U from your program (use PRINT CHR$(21) to print a control-U).

Q. I did a dumb thing the other day - I pulled a card out of my Apple while it was turned on. I was trying to see the position of the little switches on the card and without thinking pulled it out. Now my Apple doesn't do anything when I turn it on. The power light comes on but it doesn't beep, won't boot a disk or anything. Is there anything I can do short of taking it to a dealer?

A. Happens to the best of us. There are one or two

contd.

—— Operant Systems ——

— HARDWARE —

DISK DRIVES—
- MicroSci A2 drive (100% Apple-compatible Shugart 390).. 239
- Rana Systems Elite One drive (40 track, 163K)..... 265
- Elite Two (40 track, double side, 326K)... 425
- Elite Three (80 track, double side, 652K). 549
- TEAC Thinline drive (40 track, 100% Apple compatible).. 259
- Indus GT half-height drive (40 track, Apple compatible) 249
- Davong, Corvus, and Corona Winchester drives.....(call)

CP/M 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) 325
- Softcard (includes CP/M 2.2 and MBASIC)..... 225
- ALS CP/M Plus System (6 Mhz Z-80, 64K RAM, CP/M 3.0)... 275
- Titan Systems Accelerator II (3.6 Mhz 6502 processor).. 445

MONITORS—
- Amdek 300G (12" green anti-glare screen, 18Mhz)..... 145
- 300A (12" amber anti-glare screen, 18Mhz)..... 155
- Color I (40-column text/color graphics)..... 289
- NEC JB-1201/1205 (green/amber anti-glare screen, 20Mhz) 159
- JB-1260 (12" green, 15Mhz, best value for money)... 110
- USI PI-2 (12" green anti-glare screen, 20 Mhz)..... 145
- PI-3 (12" amber anti-glare screen, 20 Mhz)..... 155

MODEMS—
- Hayes Microsmodem IIe (tone dialing/speaker/Smartcom I). 245
- Smartmodem 300 (300 baud, RS-232, direct-connect) 210
- Smartmodem 1200 (300/1200 baud, as above)..... 495
- Novation Apple-Cat II (w/ Cosmare; 1200 baud capable).. 245
- Smart-Cat 300 (RS-232, direct-connect)..... 175
- Smart-Cat 300/1200 (as above)..... 389
- J-Cat 300 (miniature RS-232, direct-connect).. 105
- SSM ModemCard (300 baud, audio monitor, emulates Hayes) 235
- US Robotics Password (300/1200 baud, auto-dial/answer). 355
- Anchor Automation Volksmodem (300 baud, RS-232)..... 59
- Mark XII (300/1200 baud, RS-232)..... 269

PRINTERS—
- Epson FX-80 (160 cps, tractor/single sheet, graphics).. 489
- FX-100 (wide carriage version of the above)..... 679
- RX-80F/T (100 cps tractor/single sheet, graphics) 379
- RX-100 (wide carriage version of the above)..... 539
- Okidata 92 (160 cps, graphics, BEST print for price)... 499
- 93 (132 column version of above)..... 715
- IDS Microprism (110 cps, prop spacing, excellent print) 489
- Prism-80 (200 cps, buffer, correspondence quality). 999
- Prism-132 (wide-carriage version of above)..... 1149
- NEC 8023 (120 cps, tractor/sheet, same as Prowriter)... 395
- Gemini 10X (120 cps, tractor/single sheet, graphics)... 289
- 15X (wide-carriage, same features as Epson MX)(call)
- Itoh F-10 Starwriter (40 cps daisywheel, Qume compat). 1099
- A-10 (18 cps version of the above)..... 559
- Transtar 130 (18 cps daisywheel, Diablo compatible).... 615
- Silver-Reed 500 (14 cps daisywheel—goodbye typewriter) 439
- NEC 7710 (55 cps daisywheel, built like a tank)..... 1975
- Diablo 620 (25 cps daisywheel)..... 950
- Qume Sprint 11/40 (40 cps daisywheel)..... 1349

INTERFACES & BUFFERS—
- Pkaso/U printer interface (superior graphics & more!!!). 135
- ShuffleBuffer (32K—128K w/cut & paste/serial and par). 235
- Grappler+ printer interface (parallel w/ graphics)..... 120
- Buffered Grappler+ (16K to 64K buffer plus graphics)... 169
- CPS Multifunction (serial, parallel, and clock)..... 165
- Wizard BPO (16K-32K buffered parallel w/ graphics)..... 135
- IPI (graphics, text dump, page formatting)..... 69
- CCS 7710A (RS-232 serial for printers & modems)..... 115

VIDEO & KEYBOARD—
- Videx Ultraterm (160 column/48 row display !!!)..... 259
- Videoterm (80-column w/ softswitch & inverse).... 289
- Wespercorp Wizard-80 (softswitch & inverse built-in)... 155
- ALS Smarterm II (80 columns at a bargain price)..... 129
- MicroSci 80-col card w/64K RAM for IIe..... 125
- Keytronic KB-200 low-profile detached keyboard..... 235

MEMORY EXPANSION—
- Wespercorp Wizard 16K RAM card (2-yr warranty)..... 63
- Titan Systems 128K RAM card..... 375

— SOFTWARE —

WORD PROCESSING—
- Wordstar 3.3 (including 6 Mhz Z-80 Applicard !!!).. 299
- ScreenWriter II (70 col display, spooling, more!!).. 85
- Super-Text Professional..... 69
- Bank Street Writer or Speller..... 49
- pfs: Write IIe..... 85
- Word Handler + List Handler + Spell Handler..... 89
- MouseWord (easy-to-use icon-based system)..... 39
- Perfect Writer (edit/view multiple files in CP/M).. 175
- Incredible Jack (word processing, data base, calc). 119
- Sensible Speller IV (checks ANY file type)..... 89
- The Word Plus (super spelling checker for CP/M).... 109

SPREADSHEETS & FORTUNE-TELLERS—
- Multiplan (state-of-the-art spreadsheet)..... 135
- VisiCalc (IIC+ and IIe versions available)..... 165
- SuperCalc 2 (powerful CP/M spreadsheet)..... 179

INFORMATION MANAGEMENT—
- dBASE II (w/ ZIP screen generator)..... 409
- Quickcode (dBASE program generator)..... 185
- The General Manager 2.0..... 149
- Thinktank (electronic thought organizer)..... 99
- pfs: File, Report, or Graph..... 85
- Infostar (including 6 Mhz Z-80 Applicard !!!)..... 299
- Data Perfect..... 99
- VisiFile..... 165

BUSINESS & ACCOUNTING—
- BPI Accounting (AR/AP/PAYROLL/INVENTORY) ea module: 249
- Peachtree Peachpak (GL/AR/AP)..... all three: 229
- Dollars & Sense (home accounting + graphics)..... 69
- The Accountant (double-entry bookkeeping system)... 99
- Home Accountant..... 55

COMMUNICATIONS—
- Ascii Express Professional (for DOS 3.3)..... 89
- Z-term Professional (for CP/M)..... 99
- Data-Capture IIe..... 65
- CompuServe Starter Kit (password/user guide)..... 29

LANGUAGES—
- Einstein Applesoft Compiler..... 85
- Softech UCSD p-System..... 425
- Digital Research Pascal/MT+..... 249
- Microsoft Fortran-80..... 129
- BDS C compiler..... 115
- Microsmotion FORTH-79..... 79
- Terrapin Logo..... 99

ODDS & ENDS—
- Kensington System Saver Fan (w/surge protector).... 66
- Kraft Joystick / TG Joystick..... 35/40
- Trace SoundTrap (silence your printer...)..... 99
- Mockingboard (sound synthesis w/speech option)...(call)
- Wildcard Plus (hardware-based copy unprotection)... 129
- Locksmith 5.0 (...the best gets better!)..... 85
- KoalaPad Graphics Tablet (with graphics software).. 89
- Maxell, Dysan, TDK, Memorex, Wabash disks..... from 20

Call for prices of items not listed.
We can supply HUNDREDS of other accessories, programs, and computer systems—most WITHIN 24 HOURS.

—) PLEASE COMPARE OUR PRICES (—
If you find a lower price, give us a chance to beat it.

Feel free to call for answers to technical questions.

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

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

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

things you can try. It's possible that one of your peripheral cards was damaged and this is preventing the computer from operating. First thing then is to "turn the Apple off" and remove all the peripheral cards. Then try running it to see what happens. If you get the Applesoft prompt (assuming you have a][+ or //e) everything is probably okay with the motherboard. If you have a //e you can run the internal diagnostic program by simultaneously pressing CONTROL, CLOSED-APPLE, and RESET. If the basic computer works you can isolate which peripheral card is causing the problem by putting in the peripheral cards one at a time and try running the machine each time. More than one card may be damaged so try them all. If on the other hand you computer is still dead with all the cards removed I'm afraid you are in for a trip to your dealer. Be sure you take all your peripheral cards with you as there may still be a problem with one or more of them.

The power supply in the Apple is designed to turn itself off if there is a short circuit somewhere in the circuitry. If you turn the Apple on and you hear a clicking sound and the power light is off or blinking the power supply is badly overloaded. Although leaving the computer on while this is happening won't damage the power supply, it's not a good idea to leave it on for a long time. Again a first effort is to remove all the peripheral cards and see if the problem disappears.

Q. I have an Apple][+, an Okidata 92 printer, and Apple Writer II. My problem is that when I try to underline a group of words that are split between two lines the underlining starts where it should, continues to the end of the line, and then starts at the left edge of the paper and extends to the end of the group of words. Why is it underlining where the left margin should be? Do I have to stop the underlining at the end of the line and start it again at the beginning of the next line?

A. The problem is that there are two different ways to underline words. What you apparently are doing is sending a character sequence TO THE PRINTER telling it to underline. This works except for the case you describe. Apple Writer generates a left margin by printing spaces at the beginning of each line. If you have specified a left margin of 10 in Apple Writer, then 10 spaces are printed at the beginning of each line. Your printer isn't really aware of what is happening, all it knows is that it should underline every character including spaces. The way around this is to use the Apple Writer underline command, the backslash "\". Type the backslash before and after the words you want underlined and it won't underline the left margin. (Since Apple][+s don't have the backslash character Apple Writer II lets you use shift-control-P to generate it.) What Apple Writer does is to print the character, "print" a backspace, and print an underline character. This works fine for most printers but on some EPSON printers the underline character is one dot shorter than it should be so the underline comes out as a series of dashes. You can use the EPSON underline command to get a solid line but you should realize that you will run into the problem described above.

There is a bug in Apple Writer. When it stops printing the underline it prints an extra blank character. This is particularly annoying if the next character is punctuation and no space is desired. The way around this is to put a backspace character between the backslash (which turns the underlining off) and the next character. This can be done by typing control-V, left-arrow, control-V.

Q. I have asked everyone I know as well as called many others to find out if anyone knows of a lo-res screen dump program. A few have said that they seem to remember seeing something like that in one of the computer periodicals but can't exactly remember. Do you know of such a program?

A. I am sure that there are many such programs around. I have received a rather unique one in the mail from Douglas Seeley of High Bridge, NJ. Doug's program (listing 1 below) draws an outline of the lo-res picture, and as Doug says, "In order to complete the pictures, you need one additional piece of hardware - a box of crayons". Although Doug doesn't say, his program is apparently written for EPSON printers, witness lines 60 and 220. However it should not be too difficult to modify it for other printers. Line 60 changes the printer to condensed printing and the line spacing to 8 lines per inch. The CHR$(14) in line 220 returns the printer to normal type size for printing the heading. Just substitute the appropriate codes for your printer. If you don't have a //e you won't be able to enter the "|" character that appears in several lines. Replace the |, the spaces, and the quotes with CHR$(124)" ", CHR$(124)" ", CHR$(124), and " " CHR$(124) respectively for lines 90, 120, 130 and 140. The underline character is printed by CHR$(95).

If you are willing to compromise on quality somewhat (or the doctors won't let you play with sharp things like crayons) it is not hard to write a program. The problem is that it is difficult to represent the 16 colors of the lo-res screen on a single color printer. One way is to use 16 different symbols to represent the colors. Listing 2 shows how to do this. Each symbol is printed twice to better maintain the aspect ratio of the screen. For even better results you should change the line spacing to 8 lines per inch. You should have already loaded the picture into the graphics screen when you run this program.

Listing 1

```
10  REM PAINT BY NUMBER BY DOUGLAS A. SEELEY
20  LF$ =  CHR$ (10)
30  INPUT "LOAD WHAT PICTURE?";F$
40  GR
50  PRINT  CHR$ (4)"BLOAD"F$",A$400"
60  PRINT  CHR$ (4)"PR#1": PRINT  CHR$ (15) CHR$
    (27)"O"
70  PRINT " ";: FOR X = 0 TO 39: PRINT "___";: NEXT
    : PRINT LF$
80  FOR Y = 0 TO 39
90  PRINT "| ";: FOR X = 0 TO 38:SC =  SCRN( X,Y) :
    IF SC <  > SCRN( X + 1,Y) AND SC <  > SCRN(
    X,Y + 1) THEN  PRINT  CHR$ (SC + 97);: GOTO 110
100  PRINT " ";
110  IF SC =  SCRN( X + 1,Y) THEN  PRINT "  ";:
     GOTO 130
120  PRINT "| ";
130  NEXT : IF  SCRN( X,Y) <  > SCRN( X,Y + 1)
     THEN PRINT  CHR$ ( SCRN( X,Y) + 97)"|":
     GOTO 150
140  PRINT " |";
150  IF Y = 39 THEN 200
160  PRINT " ";: FOR X = 0 TO 39: IF  SCRN( X,Y) =
     SCRN( X,Y + 1) THEN  PRINT "   ";: GOTO 180
170  PRINT "   ";
180  NEXT : PRINT LF$
190  NEXT Y
200  PRINT " ";: FOR X = 0 TO 39: PRINT "___";:
     NEXT : PRINT LF$
210  PRINT LF$: PRINT "a=black b=magenta c=dk blue
     d=purple e=dk green f=gray g=blue h=lt blue
     i=brown j=orange k=gray l=pink m=grn n=yellow
     o=aqua p=white"LF$LF$
```

contd.

```
220  PRINT  SPC( 66 -  LEN (F$)) CHR$ (14)F$LF$LF$
230  PRINT  CHR$ (4)"PR#0"
240  END
```

Listing 2 - Generic lo-res screen dump

```
100  SY$ = "#%&?*<!:@;>.+,/ "
110  PRINT  CHR$ (4)"PR#1"
120  REM SET PRINTER TO 8 LINES/INCH HERE
130  FOR Y = 0 TO 39
140  FOR X = 0 TO 39
150  C$ =  MID$ (SY$, SCRN( X,Y) + 1,1)
160  PRINT C$;C$;
170  NEXT X: PRINT
180  NEXT Y
190  PRINT  CHR$ (4)"PR#0"
200  END
```

(Ed. Note: Watch your language in line 100 of that last listing!)

ACADEMY ON COMPUTERS AT WETA

WETA, Television 26, is sponsoring an ACADEMY ON COMPUTERS to teach basic computer literacy. The series will begin on April 15 and will run for twelve weeks, with 8 hours weekly. Registration deadline is April 6.

In connection with this series, WETA is looking for Apple hotline experts to act as mentors for participants in the course. They will pay $7.00 per hour for this service. For details on this or registration contact Barbara Cohen, 998-2864.

Why are you using diskettes with black jackets? Because you have no choice?

Now you do.

SUNSTAR offers you high quality diskettes with the advantage of **color**. And they are guaranteed. Forever.

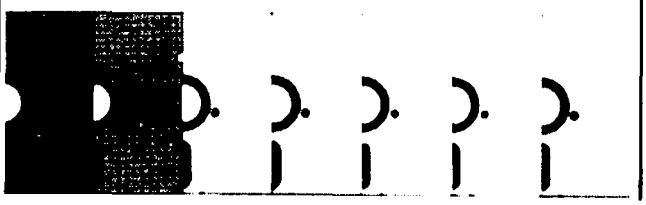
SUNSTAR

Premium Diskettes in Color

And as an added bonus—at no extra cost—SUNSTAR diskettes are packaged in a handsome and durable polyvinyl library file.

Choose your colors: red, burgundy, yellow, green, dark blue, light blue, orange, gray, dark brown, light brown.

Order now using VISA or MasterCard.
Call our 24-hour, toll free number: (800) 227-3800 Ext. 61.



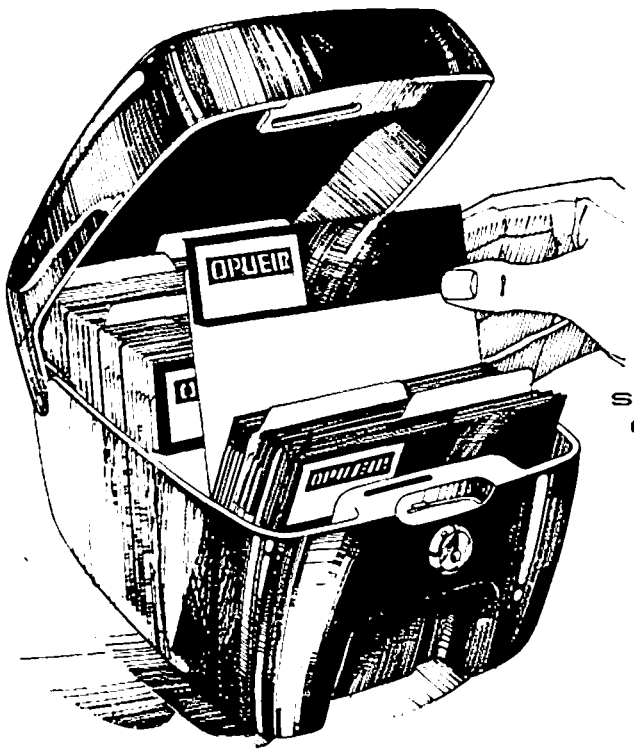
Dust. Grit. Things that poke, scratch and bend. Each one is an enemy of your mini-diskettes and of the valuable information stored on them.

The Ring King 070 Tray keeps up to 70 mini-diskettes out of harm's way—and keeps them conveniently organized. The 070 Tray combines the durability of specially formulated copolymer plastic construction with the practicality of a hinged lid and the convenience of easy-lift handles and rigid interior dividers.

THE TOP STAYS ON AND STAYS SHUT.
Keeping dust away from your diskettes is important. So the tray and top of the 070 feature an interlocking pattern that keeps the lid snug when closed. For extra security, the 070 Tray comes complete with a diskette-safe **metal** keyed lock. **2 keys included.**

The lid is also hinged so it won't get separated from the tray or misplaced. (A lost lid doesn't do much to protect your diskettes from dust or damage.) When open, the lid swings back out of way and stays there until you want it shut—it won't keep falling back down while you're working.

EASY TO CARRY.
When closed and locked, the Ring King 070 Tray is ready to move. Built-in, easy-lift handles make it easy to carry your diskettes safely from one work station to another, or in and out of storage.



Patent pending

CUSTOM MOLDED INTERIOR.
The interior of the 070 Tray is engineered to wrap around and cradle your diskettes. The tough, durable copolymer shell resists cracking and crushing—so your diskettes stay safe through even heavy abuse. Rigid interior dividers help keep the contents organized and indexed. **Labels also.**

The 070 Tray isn't an ugly metal box. Its design is sleek and attractive to complement your computer work areas. Safety, convenience and attractive design—good reasons to make the Ring King 070 Tray your first line of mini-diskette data defense.

SPECIAL OFFER!
ONLY $20.00

SEND CHECK OR M.O.

MAILMART
P. O. BOX 888
SEVERNA PARK, MD. 21146
TEL: (301) 647-1942

WAP HOTLINE

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

General	Dave Harvey		(703) 527-2704
	Robert Martin		(301) 498-6074
Accounting Packages			
Accountant(Dec.Sup.)	Mark Pankin		(703) 524-0937
Home Accountant	Leon Raesly	*	(301) 460-0754
APPLE SSC	Bernie Benson		(202) 546-0076
Apple TechNotes	Ed Schenker		(301) 977-7349
	Lance Bell		(703) 550-9064
Basis 108	Loftus Becker		(202) 338-5217
Communications Packages and Modems-Telecom.			
Anchor Mark 12	George Kinal		(202) 546-7270
Anchor Sig. & BIZCOMP Modem	Jeremy Parker		(301) 229-2578
Apple CAT II	Ben Acton		(301) 428-3605
ASCII Express	Dave Harvey		(703) 527-2704
CompuServe	Jerry Michalski		(703) 442-8835
General	Tom Nebiker		(216) 867-7463
	Tom Warrick		(301) 656-4389
Hayes Smartmodem	Bernie Benson		(202) 546-0076
Micromodem	Tom Warrick		(301) 656-4389
Omninet	Tom Vier (1-6 PM)		(703) 860-0083
Source & Transcend	Jerry Michalski		(703) 442-8835
VISITERM	Steve Wildstrom		(301) 564-0039
XTALK CP/M Comm.	Bernie Benson		(202) 546-0076
Corvus Hard Disk	Tom Vier (1-6 PM)		(703) 860-0083
Expediter Compiler	Peter Rosden		(301) 229-2288
Data Bases			
dBase II	Loftus Becker		(202) 338-5217
	Paul Bublitz		(301) 261-4124
	John Staples		(703) 759-3461
DB Master	Doug Daje		(301) 868-5487
	Dave Einhorn		(301) 593-8420
Data Perfect	Leon Raesly	*	(301) 460-0754
Data Factory	Bob Schmidt		(301) 736-4698
General Manager	Loftus Becker		(202) 338-5217
	Leon Raesly	*	(301) 460-0754
InfoMaster	Doug Daje		(301) 868-5487
List Handler	Jon Vaupel		(301) 977-3054
Graphics	Bill Schultheis		(703) 538-4575
Languages (A=Applesoft, I=Integer, P=Pascal, M=Machine			
A	Peter Combes		(301) 445-6188
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
P	Dottie Acton		(301) 428-3605
P	Donn Hoffman	*	(202) 966-2616
LOGO	Ron Murray (eve.)		(202) 328-3553
LISP	Fred Naef		(703) 471-1479
Macintosh Computer	Tom Warrick		(301) 656-4389
Math/ O.R. Applns.	Mark Pankin		(703) 524-0937
Operating Systems			
Apple DOS	Richard Langston		(301) 258-9865
	Richard Untied		(703) 241-8678
CP/M	Robert Fretwell		(703) 971-2621
Paddles	Tom Riley (eve.)		(301) 340-9432
Pers. Filing Sys.	Bill Etue		(703) 620-2103
	Ben Ryan		(301) 469-6457
	Jenny Spevak		(202) 362-3887
Printers			
General	Walt Francis		(202) 966-5742
Anderson Jacobson	Bill Etue		(703) 620-2103
	Leon Raesly	*	(301) 460-0754
Apple Dot Matrix	Joan B. Dunham	*	(301) 585-0989
Daisywriter 2000	Henry Greene		(202) 363-1797
IDS 460	Jeff Stetekluh		(703) 521-4882
MX-80	Jeff Dillon		(301) 434-0405
Okidata	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
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	Doug Daje		(301) 868-5487
	Dianne Lorenz		(301) 530-7881
	Leon Raesly	*	(301) 460-0754
	Tom Warrick		(301) 656-4389
Gutenberg	Neil Muncy		(301) 251-9330
Letter Perfect	Cara Cira		(301) 468-6118
	Leon Raesly	*	(301) 460-0754
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) 445-6188
Supertext II	Doug Daje		(301) 868-5487
	Peter Rosden		(301) 229-2288
Word Handler	Jon Vaupel		(301) 977-3054
	Christopher Romero		(703) 471-1949
Word Star	Christopher Romero		(703) 471-1949

*Calls up until midnight are ok.

LOGOSIG NEWS

by Nancy C. Strange

TURTLE TRACKS

MARCH 24, 1984 MEETING: 12:45 PM AT BARRIE SCHOOL

Today's LOGOSIG meeting's presentation will be ATARI LOGO by Dave Weaver, a Montessori director, and his students. The Barrie School where Dave teaches, and LOGOSIG meets, uses SYSCOM (Apple Clones) and ATARI computers with LOGO in conjuntion with the Montessori curriculum. Dave's Jr. Class students, ages 6-8, have been using ATARI LOGO since last Fall. The ATARI LOGO is a another product of Logo Computer System, and therefore has very similar commands to APPLE LOGO and IBM LOGO, where the ATARI computer's capabilities are compatible. Since ATARI LOGO has music and graphic primitives for 4 Sprites, we look forward to seeing their presentation. There will be an ATARI LOGO report next month.

```
!                                                !
!  In addition to today's presentation, we will  !
!  have our normal format, which is:             !
!                                                !
!     SHARING LOGO EXPERIENCES & BUGS            !
!     LOGOSIG BUSINESS                           !
!           break                                !
!     PRESENTATION                               !
!     TEAM PROJECTS                              !
!                                                !
```

February LOGOSIG Report - by Barbara Beam

LOGO Valentines--Everyone was invited to bring one. Valentines were shared by numerous people. Some were family projects which were designed to teach subprocedures including RTFEATHER, LTFEATHER, and ARROW. Another used random placement and color of hearts. One combined text and hearts using SPRITE LOGO. Young students used both the text screen and turtle graphics for Valentines. An old-fashioned Lacey valentine was achieved by combining triangles, squares and circles with hearts in the middle. These procedures will be put on the Logo disk being created, and may appear in this column next January.

LOGO ROBOT RETURNS:

June Wright, Computer Discovery Project Coordinator, at the Center for Young Children, University of Maryland, returned with her friendly robot and demonstrated how the Tasman Turtle is used with Logo in their work with Kindergarten students. Guided discovery, equipped with a version of Instant Logo, is used with the children. Four steps are observed: Discovery, Involvement, Self-Confidence, and Creativity. Two children at a time are introduced to Logo in a separate computer room. When all have had several periods, the robot is brought into the regular classroom.

She mentioned a new robot that costs under $500, the Turtle Tot, which is also made by Harvard Associates. It has a longer cable, and can be fitted with voice chips.

Some tips offered by June are:

Have students work in pairs for best learning. They set up challenges for each other and then help in the solutions.

Use a puppet as a companion to the robot. Label right, left, forward and back on the puppet and robot.

Place the computer low to the floor facing the same way the robot faces. This gives you more cable and helps students see what happens when they type commands.

Students are drawing an environment for the robot, stores, homes, playground. A pen is not yet used for the robot to trace its path.

Students are programming the sound - high and low horn pitches that the robot can make - into a language, with great enthusiasm.

When a pen is used, June suggests a brush point color marker. Trax is a reliable brand.

(June is a regular member of LOGOSIG and we're always glad to hear updates of the work being done by June and the Center.-- NCS)

LOGOSIG ANNOUNCES A SPECIAL MEETING FOR MAY: A ROUNDTABLE DISCUSSION OF LOGO AND ITS USE IN SCHOOLS. ALL INTERESTED PARTIES THAT ARE USING LOGO ARE WELCOME TO COME AND JOIN IN THE DISCUSSION. More details next month. If you have any suggestions for the roundtable contact Barbara Beam at 820-4029 or Karen Berlin at 927-3534.

PRINTING PROCEDURES

The following printing procedures are written for Apple Logo and a printer using the Grappler interface card, but are easily adapted for the Terrapin Logo. They will be placed on a club Logo disk that is now in development for both Apple and Terrapin versions. The procedures driven by PRINT.PICT.PROCS, or PPP for short, do the following after a Logo user has drawn a graphic:

Print a Picture, if desired, using one of four methoods: G (normal size); GE (normal size with 2 passes); GDR (large size, rotated 90 degrees and 1 pass); and GDRE (large size, rotated 90 degrees and 2 passes). There is an option to print another picture before continuing. (PRINT.PICT)

Print a Caption to the Picture - a one line caption is permitted, with the suggestion that the name of the picture, author and date be included. (PRINT.CAPTION)

Print Out all the Procedure Titles in the workspace, POTS, which in some cases may be useful, especially when the PPP is buried (not available to Terrapin users). (PRINT.POTS)

Print Out Procedures. The user can select specific procedures or ALL to be printed out. To indicate the procedures desired, list the procedure titles on one line (wraparound is okay) with no brackets or enter 'ALL' to have all the procedures in the workspace listed. (PRINT.PROCS)

contd.

There is also an INFO file which provides the above information and a sample Square procedure. I would suggest Logo users save one copy of the entire PPP procedure package as it is for reference, and make additional versions of it for ease of use and space economy, i.e. by making a version without the info file it will take less node space. In addition each component of the package was designed modularly and therefore can be saved and used as separate units, such as, PRINT.PROCS.

```
TO INFO
CLEARTEXT
PRINT [PRINTING PROCS]
PRINT [\-\-\-C1984 BY NANCY C. STRANGE\-\-\-]
PRINT [\-\-\-USED BY PERMISSION ONLY\-\-\-\-]
PRINT []
PRINT [APPLE LOGO W / GRAPPLER\+]
PRINT []
PRINT [- PRINT.PICT.PROCS \(PPP\) \-\-DRIVER.MENU !
TO START ENTER: PPP]
PRINT []
PRINT [- PRINT.PICT GRAPHICS SCREEN DUMP BY 4 METHODS]
PRINT []
PRINT [- PRINT.CAPTIONS \-\-1\-LINE CAPTION]
PRINT []
PRINT [- PRINT.POTS \-\- POTS]
PRINT []
PRINT [- PRINT.PROCS \-\- PO PROCS]
END

TO PRINT.PICT.PROCS
PRINT.PICT
PRINT.CAPTION
PRINT.POTS
PRINT.PROCS
END

TO PPP
PRINT.PICT.PROCS
END

TO PRINT.PICT
HT
CLEARTEXT
TEXTSCREEN
PRINT [PRINT PICTURE?\(Y\/N\)]
PRINT []
TYPE "<
MAKE "ANSWER READLIST
IF :ANSWER = [N] [STOP]
CLEARTEXT
PRINT [SELECT METHOD FOR GRAPHIC SCREEN DUMP:]
PRINT [G\-\-\-\-NORMAL SIZE, 1\-PASS]
PRINT [GE\-\-\-\-NORMAL SIZE, 2\-PASSES\(DARKER\)]
PRINT [GDR\-\-\-LARGE SIZE, RT 90, 1\-PASS]
PRINT [GDRE\-LARGE SIZE, RT 90, 2\-PASSES\(DARKER\)]
PRINT [X\-\-\-\-\-TO EXIT WITHOUT PRINTING A PICTURE]
PRINT []
TYPE "<
MAKE "PRINTMODE READLIST
IF :PRINTMODE = [X] [STOP]
PICT.PR :PRINTMODE
PRINT.PICT
ST
END

TO PICT.PR :PRINTMODE
.PRINTER 1
(TYPE CHAR 9 :PRINTMODE CHAR 13)
.PRINTER 0
ST
END

TO PRINT.CAPTION
CLEARTEXT
PRINT [WHAT IS THE CAPTION FOR THIS PICTURE?]
PRINT [( TITLE, AUTHOR & DATE )]
PRINT []
TYPE "<
MAKE "ANSWER READLIST
PRINT []
.PRINTER 1
PRINT []
PRINT :ANSWER
PRINT []
.PRINTER 0
END

TO PRINT.POTS
CLEARTEXT
PRINT [PRINT PROCEDURE TITLES? ( Y\/N )]
PRINT []
TYPE "<
MAKE "ANSWER READLIST
IF :ANSWER = [Y] [POTS.PR]
IF :ANSWER = [N] [STOP]
END

TO POTS.PR
.PRINTER 1
POTS
.PRINTER 0
END

TO PRINT.PROCS
CLEARTEXT
PRINT [PRINT PROCEDURES? \(Y\/N\)]
PRINT []
TYPE "<
MAKE "ANSWER READLIST
IF :ANSWER = [N] [STOP]
CLEARTEXT
PRINT [LIST PROCEDURES ON ONE LINE,NO BRACKETS]
PRINT []
TYPE "<
MAKE "PROC.LIST READLIST
IF EMPTYP :PROC.LIST [STOP]
PRINT []
PROCS.PR :PROC.LIST
.PRINTER 0
END

TO PROCS.PR :PROC.LIST
IF EMPTYP :PROC.LIST [STOP]
.PRINTER 1
IF :PROC.LIST = [ALL] [POPS] [RUN [PO :PROC.LIST]]
.PRINTER 0
END

TO SQUARE :SIZE
REPEAT 4 [FD :SIZE RT 90]
END
```

These procedures are being shared to help Logo users, but are copyrighted by the author, and not to be used by others for profit.

OTHER LOGO/LOGO-RELATED ITEMS:

TURTLE TRACKS by Scholastic Wizware

A product which appears to be designed to make Logo-like turtle graphics available for simplistic graphic constructions. The system requirements are Apple][with 48K and 1 drive with Dos 3.3. Designed for Ages 9 and up. Turtle Tracks is definitely not true-Logo. It has BASIC-like line numbers for its programs and contains no LIST processing primitives. The graphics created are of the lo-res quality. The commands are very un-LOGO, i.e., DF5 to draw forward 5 units, JF3 to Jump forward 3 units, TR to turn right. Interesting that some of these are reversal of some Logo commands, such as RIGHT primitive's abbreviation of RT, which takes an input of degrees. There is a goto command, GT50; Assignment statements, X = Y + 1; limited sound, B#10;100, beeps with pitch 10; and hold

contd.

for duration of 100; and looping commands, BL and RL. Once one creates a program it is BASIC-like to update and rerun. This product reminds me, in some ways, of Color Logo for the Radio Shack.

TERRAPIN LANGUAGE UPDATE:

I have just received my copy of Terrapin 2.0, and will review it completely next month. The update is available from Terrapin by returning your language disk and $20. If you want a backup copy, you have to also return your backup language disk and additional $20. Also available re the Words + Lists documentation which has been long awaited.

```
**************************************************
*                                                *
*  LOGO items in WAP HARDCOPY LIBRARY, located   *
*  at the WAP Office. The following books and    *
*  articles are now available for reference:     *
*                                                *
*  Apple Logo by Harold Abelson                  *
*                                                *
*  Apple Logo Primer by Gary Bitter & Nancy      *
*    Watson.                                     *
*                                                *
*  Discovering Apple Logo, An Invitation to      *
*    the Art and Pattern of Nature by David D.   *
*    Thornburg                                   *
*                                                *
*  Introducing Logo for the Apple II Computer,   *
*    Texas Instruments 99/4A, and Tandy Color    *
*    Computer, by Peter Ross                     *
*                                                *
*  Learning with Logo by Daniel Watt             *
*                                                *
*  Mindstorms, Children, Computers, and Powerful *
*    Ideas by Seymour Papert                     *
*                                                *
**************************************************
```


CONSULTING &

TEACHING

DATA BASE • WORD PROCESSING
BUSINESS PROGRAMS • ACCOUNTING PROGRAMS
BUSINESS SYSTEMS

• OPERATION PROCEDURES WRITTEN •

PERSONAL TUTORING
'CLASSES TAUGHT FOR YOU'
OFFICE CENTERED TRAINING

Staff Hand-Holding a Specialty!

Leon H. Rasely, L.C.S.W. **LRO inc.**
460-0754

$$$ DISCOUNT PRICES $$$

Monitors

Amdek Color 1 ..... $292
Amdek RGB Color II..... $425
NEC 1260 (Green) $120
NEC Color (Composite) $305

Modems

D.C. Hayes
Micromodem II e $245
D.C. Hayes
300 Baud Smartmodem..... $220
D.C Hayes
1200 Baud Smartmodem.... $500

Printers

Toshiba P1350 ..... $1550
Transtar 120P..... $470
NEC 8023 ..... $385
NEC 3510 Spinwriter $1425
IDS Microprism 480..... $480
Okidata Micro 82 A $380
Okidata Micro 83 A $565
Okidata Micro 92 ..... $445
Okidata Micro 93 ..... $700
Prowriter 8510 A $390
Epson FX80 ..... $545
Epson FX100 ..... $710

Synetix Disk Emulator 294 K. $510
Grappler Printer Card
(Specify Printer)..... $130
Buffered Grappler Plus..... $182
Amdek Digital Plotter..... $600
Z-80 Card $130
Softcard Premium
System IIe $350
Format II..... $125
Wordstar..... $250
Wordstar with Applicard..... $325
PBL Personal Investor $110
Saturn Accelerator II .....CALL
Videx Videoterm..... $215
E-Z Ledger (Highlands) $45
E-Z Invoice (Highlands) $45
Stock Option Analysis Program
(H & H Scientific)..... $250
Stock Option Scanner
(H & H Scientific)..... $350
d Base II..... $440
Dow Jones Analyzer..... $290
Dow Jones Manager..... $250
LJK Letter Perfect..... $105
Visicalc $185
Microsoft Multiplan $200
General Manager $120
Screenwriter II $100
Sensible Speller $100

VISA/MC (Add 3%), money order, certified check.
Prices subject to change. Shipping/handling $5.
MD residents add 5% tax. Mail order only.

CALL FOR ITEMS NOT LISTED
GOV'T PURCHASE ORDERS ACCEPTED

RAMADA COMPUTER PRODUCTS
A Division of H & H Scientific
13507 Pendleton St.
Ft. Washington, MD 20744
Tel. (301) 292-2958

DISABLEDSIG NEWS
by Jay That

* *

DISABLEDSIG APRIL MEETING

SPEAKER: Dr. Sally Blackstone, Kennedy Institute
SUBJECT: Prescription of Communication aids for Handicapped People

and

SPEAKER: Mr. Bud Reiser, Maryland Rehabilitation
SUBJECT: Models of Assessment

THURSDAY, April 12, 1984, 7:00 P.M.
Chevy Chase Community Center
Connecticut Ave. & McKinley St., NW, D.C.

* *

A FUNNY THING HAPPENED...

Several days before the March DISABLEDSIG meeting was scheduled, my greatest worry was whether the SIG would have an overhead projector available. My fear was that we'd have either none for our speakers to use, or we'd have a half a dozen. By the time the day arrived I had promises of that half dozen. So what did I have left to worry about? Uhuh! A snow storm that arrived just before the the evening rush hour. So that none of you will have missed out, our speakers have been rescheduled for the April meeting. Now all I have to worry about is an overhead projector....

UPCOMING CONFERENCES

Communication and Severe Speech Motor Disorders. Sponsored by the Hearing and Speech Division of the John F. Kennedy Institute, in Baltimore. The three day session, April 2-4, 1984, promises an exciting array of speakers and topics. The focus will include the use of Apples as augmentive devices for the handicapped. And, a goodly portion will deal with hands-on and engineering approaches in the construction of communications boards, speech synthesis, the adaptive firmware card, etc. The American Speech and Hearing Association has approved the conference for 2.1 hours of continuing education credit. For more information call: (301) 522-5450.

The Council for Exceptional Children (CEC) is holding its 62nd Annual Convention here in Washington, D.C. on April 23-27, 1984. The activities are too numerous to list. However, for those of the microcomputer persuaasion the major events will include the announcement of the winners of the CEC's national software search; uses with children with behavioral problems; uses with the visually and hearing impaired; and, interfacing to the physically handicapped. Call Elsa Glassman, (703) 620-3660 for more information.

SELECTION AND APPLICATION OF MICROCOMPUTERS FOR HANDICAPPED INDIVIDUALS. Sponsored by the TRACE Center, the meeting will be held in Rockville, MD at the Holiday Inn Crowne Plaza. April 27-28, 1984. Contact the Workshop Coordinator, TRACE Center, 314 Waisman Center, 1500 Highland Ave., Madison, WI 53706; (608) 262-6966.

DISCOVERY '84 -- to be held in Chicago, IL October 1-3, 1984, its focus will be on Technology for Disabled Persons. A call is out for proposals and exhibitors. For information contact: Office of Continuing Education, University of Wisconsin-Stout, Menomonie, WI 54751, or call (800) 45-STOUT.

VOLUNTEERS FOR MEDICAL ENGINEERING

The Volunteers (VME) are headed by John H. Staehlin, an engineer with Westinghouse in Baltimore. John has come to our recent meetings and his group is looking for additional volunteers to assist them in their efforts. The purposes of VME can be best summed up as: assisting doctors in the design and development of orthotic devices to assist the handicapped; developing means for cerebral palsy victims to communicate with others; and, assisting the handicapped to become more self sufficient. We look foward to a long and close relationship between the VME and the DISABLEDSIG.

Some of VME's work is quite intriguing. As a non-engineer, I can best describe one device as an exo-skeleton that fits over the hand of a neurologically damaged person. The device is servo-controlled and assists in the opening and closing of the hand. Another device allows for the full fingering of the keys of a saxophone by a person who has limited control of his fingers. A third project allows a young woman to use a joystick and an Eye Blink switch to communicate via an Apple and a telephone.

John Staehlin can be reached at (301) 765-4748.

RESOURCE BOOK FOR SPECIAL EDUCATION

We have just received our copy of the Microcomputer Resource Book for Special Education, by Delores Hagen. This 200+ page volume will prove an invaluable asset to teachers of special education as well as individuals needing reference to the technology.

Driven by their own family needs to explore this technology, the Hagens have made a substantial contribution to the field of interfacing people in need to microcomputers. The Hagens publish the well regarded bi-monthly newsletter: CLOSING THE GAP; and have coordinated a number of conferences in the field. Now, Delores Hagen has drawn much of that information together in a single manual. Like all manuals set to print the technology promises to eventually pass it by -- but for now it is the best compendium I've seen.

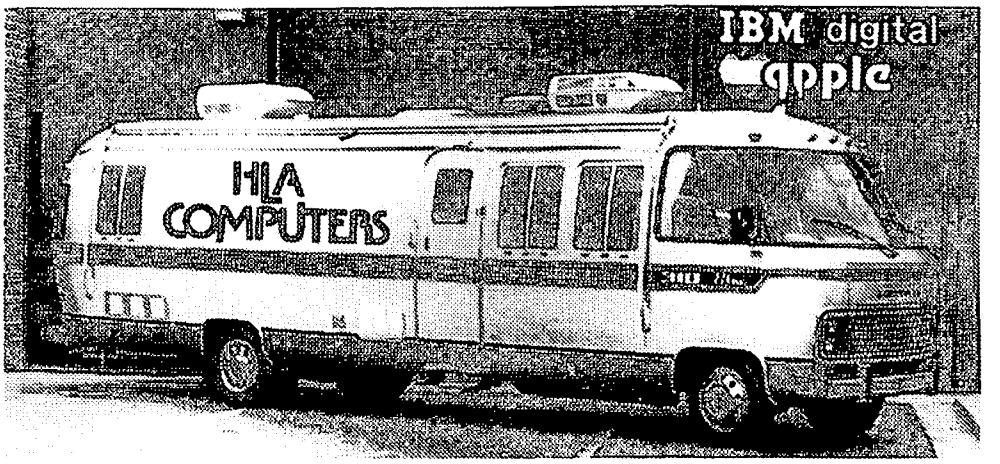
The book gives an overview of the field and deals with the fears of individuals delving into this area, provides rules and guidance, and a glimpse into the future. It follows with hints for implementation which address access, motivation, and authoring systems. What follows are chapters which deal with specific disablilities: hearing and vision impairment, mental retardation, physical handicaps; Logo; Communition; etc.

The last 100 pages are appendices which cross reference software publishers with the types of developmental materials they offer; subject oriented listings of software for special education, the physically handicapped, authoring systems, the blind, special hardware selections, AND a very useful bibliography.

Reston Publishing Company, $15.95, 11480 Sunset Hills Road, Reston, VA 22090; (703)437-8900.

THE HLA TRAVELING STORE

CURB SERVICE FOR THE BUSY BUSINESS EXECUTIVE.



ROAD TEST A COMPUTER IN YOUR OWN PARKING LOT.

Talk about service! It's our store-on-wheels that brings a selection of the best office computers right to your door . . . saving you valuable time and giving your employees a chance to help pick the equipment they will operate. You can test the computers while you're only seconds away from your office. We'll show you off-the-shelf hardware and software and tell you how our professional programmers will custom design software especially for your needs. Ask us about our installation, warranty, service agreements and training program for your entire staff.

You can pick and choose from a wide variety of personal computers. We have them all: The versatile and powerful IBM . . . the affordable and easily expandable Apple for the office, home or classroom . . . the Compaq you can take with you, wherever . . . the functionally designed Corvus Concept with its dual-orientation and full page word processor . . . Digital's high performance Rainbow and flexible Professional 350 . . the powerful Sage for the computer programmer . . . the HP 150 Touch Screen . . . the multi-user Altos.

To make an appointment with the HLA Traveling Store, call 301-345-8170

GSA schedule
345-8170

HLA COMPUTERS

5700-J Sunnyside Avenue
Beltsville, Maryland 20705
(301) 345-1123

A PAGE FROM THE STACK

by Robert C. Platt

Your library continues to grow and diversify. For example, a series of spreadsheet template disks debut this month. We are also making plans to expand the library to include Apple ///, ProDOS and Macintosh format disks. But all of these steps can be achieved only with your help. Please continue to donate your latest software creations! Remember that you get a free library disk for every disk that you submit. I will be at the library sales desk from 9-10 before the monthly meetings to meet you and to discuss your programs.

MAC SOFTWARE

I ordered a Macintosh in February and it should be delivered Real Soon Now. Needless to say, there is a dearth of public domain Mac software. So, help fill the void with your early efforts, whether coded in MacBasic, GW Basic, or even 68000 assembly language. We hope to use your contributions to assemble a new members disk for Mac owners. During the start-up phase of our Mac collection, we will give you the choice of a blank SONY 3 1/2" diskette or an I.O.U. on a future Mac library disk.

ProDOS v. DOS 3.3

New Apple //e's are sold with ProDOS, but most of our members have access only to DOS 3.3. Accordingly, the WAP library will continue to distribute most programs on DOS 3.3 format disks. The library uses "true 3.3" on its disks. This avoids the bugs and incompatabilities that were introduced with the versions of DOS 3.3 that were quietly substituted in January and November 1983 by Apple.

However, folks are writing useful disk utilities to run under ProDOS, and the library can play a useful role in disseminating such programs. We welcome your ProDOS contributions and will trade any 5 1/4" library disk for your donation. Please label your ProDOS disks, and indicate whether or not your program will also run under DOS 3.3 on the submission form.

DISK 135: ERRATA

In the WAPABBS 1.1 program, if you plan on using a user identification other than "WAP" or "WP", move line 26 to become line 20062. Also, you will need to change several lines where "WAP" or "WP" appear in text, rather than as the variables WAP$ and WP$. This has been corrected in versions of this disk sold at and after the March meeting.

DISK 136: ERRATA

If you bought disk 136 at the February meeting, please note that in the INSTRUCTIONS file on WAPABBS 1.1 Disk 2, there is a line that is more than 40 characters long and, what's more, doesn't make sense. This can be deleted with no ill effects. This has been corrected in versions of this disk sold after the February meeting.

DISKS 90-92: SPREADSHEET TEMPLATES

Last fall, the Comm Center held a Visicalc Seminar which included a template exchange. The Comm Center has generously donated the disks collected at that session to the WAP library. Walt Francis, our VisiColumnist, has reviewed these disks and has selected the most useful items for the library. See his column elsewhere in this issue for a detailed writeup of the disks. You must own a spreasheet program such as VisiCalc, or THE Spreadsheet 2.0 to use these disks.

DISKS 121, 135 & 136: ABBS

These disks will help you start your own Apple Bulletin Board System. You do NOT need these disks to use our ABBS.

Previously, we offered two different ABBS programs. John Moon's original one-disk Applesoft version was on Disk 121, and Tom Warrick's two-disk version was on 135-136. The library is discontinuing both programs, and is instead distributing a new three disk version that reflects all of the latest ABBS commands. We call it WAP ABBS Version 1.1. The program is on disks 135 and 136 and the documentation is on 121. If you decide to use these disks to operate your own ABBS, please contact our SYSOP, Tom Warrick.

DISK 152: IAC 31 MISCELLANEOUS

The Green Moutain Apple Club of Burlington, Vt. donated this disk.

{152.1} ALPHANUMERICS (by Norbert Vogl) allows you to position shapes (including characters) on the hi-res screen. To switch between upper and lower case characters, press the ESCape key. CTRL-P will home the cursor.

{152.2} AUCTION keeps track of bidders and running totals in a charity auction. This program has been used in church and PTA auctions in Vermont. The program assigns each bidder a unique number, and allows the operator to enter or modify the clients bids until "locked." The the program tells who bid the highest amount for each item. File AUTONSTARTOVER reinitializes the files. RUN AUCTION.DESCRIBE for documentation.

If you try to RUN AUCTION, you will get a PROGRAM TOO LARGE error. To avoid this, relocate DOS to your language card. Also, the program assumes that your printer is in slot 1. Modify lines 110 and 430 if this is not the case. You can customize the program to reflect the name of your auction by modifying line 440.

{152.3} SCREEN 2 allows you to use Apple Writer II to create text files that will be displayed as help pages from your Applesoft programs. This program will not work with an Apple //e, because Apple Writer II uses a non-standard character coding scheme. RUN SCREEN2 INTRO for details.

{152.4} CAPE'CANAPPLE' illustrates the force of gravity and the concept of escape velocity. You must select the correct take-off velocity to achieve an orbit of a given altitude above earth. Primitive graphics.

{152.5} CHARACTER CODE - (by Norbert Vogl) uses a special alphabetic encoding scheme to represent shapes or symbols for display under the ALPHANUMERICS program.

{152.6} DEFENSE SQUAD LEADER - (by Norbert G. Vogl, III) an Applesoft version of the popular Defender

contd.

arcade game. Press space to shoot, I to go up one line or M to drop down one line. The program uses files MOUNTAIN FALL and DEFENDER SUBROUTINE.

{152.7} DICE - (by Jim Silverman) will generate a series of random numbers between 1 and an upper limit picked by the user. May be useful for Dungeon and Dragon games.

{157.8} MISTER MATH 3 - Lo-res drills in addition, subtraction, multiplication and division. Three levels of difficulty available. User selects the number of problems, which are generated at random. When you get a problem right, a little head nods with approval.

{152.9} SOFTWARS - (by Andre Mehta) plays the theme from "Star Wars."

{152.10} SUPERDRAW - (by Steve Silverman) allows you to draw on the hi-res screen with paddles. You may use sketch, paint, line and text modes. An edit mode is available to correct errors. Saved drawings or shape tables can be loaded from disk, and your creations can be saved in binary files. Press CTRL-H for a help menu or RUN DRAWINSTRUCT for documentation.

{152.11} RECIPE FILE X - (by M. E. Griffith) Any program that's in its tenth version must be almost perfect! Well, this recipe file system has a lot to offer. I won't vouch for the sample recipes included on this disk however. Be sure that the data files are unlocked before storing new recipies.

{152.12} SPELLING BEE III - (by M. E. Griffith) You can enter your own list of words on that upcoming spelling test. (Otherwise, try SPELLFILE - OFTEN MISSPELLED as a data file.) Each word is flashed on the screen. If you didn't see it, press return. You have two chances to spell the word correctly. Any missed words are collected for review or saving to disk for later practice.

{152.13} STOP III - (by Aaron Griffith) uses lo-res graphics to show the breaking distance of a car traveling at various speeds. Test your own reaction time. Paddles required.

{152.14} DISK COMMAND EDITOR - (by Andre Mehta) changes the format of a DOS catalog display, file types, etc. There is a bug in the title page routine, so LOAD the program and then type RUN 10 to get the program started.

COMPUTER DAY INC.
237-9710

SOFTWARE AND ACCESSORIES

16 K RAM CARD	$99.00	DISKETTES	$19.95
GRAPPLER +	$137.50	JOYSTICK	$46.95
OKIDATA 82	$339.00	OKIDATA 92	$452.00
TRANSTAR 120	$482.00	NEC 8023 A	$432.00
GORILLA MONITOR	$117.95	CUMANA DRIVE	$216.00
WIZARDRY	$39.95	ULTIMA III	$47.95
SWORD THRUST 1	$23.95	ZORK I	$31.95
SNACK ATTACK	$23.95	HOME ACCOUNTANT	$59.95
BANK ST. WRITER	$55.95	6502 ASSEM LANG	$12.95
MICROMODEM IIE	$259.00	VERBATIM SS/DD	$29.95

SERVICE * QUALITY * PRICE

COURTYARD ENTRANCE AND PARKING IN REAR
129 S.WASHINGTON ST. FALLS CHURCH HOURS 10 TO 6

CALL FOR ALL YOUR COMPUTER NEEDS

Printers:	
C. Itoh ProWriter	345.00
ProWriter II	600.00
"Hot Dot" 180 CPS	475.00
180 CPS,132 column	675.00
Color, 180 CPS	600.00
Okidata Microline 92	429.00
Epson RX-80	320.00
RX-80 F/T	385.00
FX-80 F/T	485.00
FX-100	700.00
Accessories:	
SuperSprite Graphics Pkg.	325.00
NETWORX Filtered Power Tree	54.00
Taxan Amber Monitor	135.00
Videx Function Strip	58.00
TG Track Ball	40.00
Wico Joysticks (3-way Deluxe)	35.00
Koala Pad Touch Tablet	89.50
Micro-Sci Disk Drive, A2	235.00
FingerPrint (MX, RX Series)	45.00
(FX Series)	52.50
Grappler +	122.50
Buffered Grappler +	175.00
PKASO	122.50
SuffleBuffer (64K)	275.00
SuffleBuffer (128K)	350.00
TG Joaystick (IIe)	45.00
Hayes Mach III Joystick (IIe)	41.25
Quick-Vis	14.00
ASTROFIRE (Rapid Fire)	12.00
APPLEsurance Diagnostic Controller Card	80.00
Verbatim diskettes (10 packs)	
SS/DD	23.00
DS/DD	32.00
Holiday Packs (10 disks in plastic case, head cleaning kit)	
SS/DD	26.00
DS/DD	35.00

In stock word processing, utilities, and game specials:

Epson Printer Utility (condensed, italic, boldface, etc.)	30.00
The Artist	55.00
Super-Text 40/80 (II,II+)	55.00
Visidex	150.00
Desk Top Plan II	135.00
Ampersoft	19.00
Lexicom	19.00
V.I.P. II	12.00
Key Perfect	12.00
A.M.P.	10.00
Critical Mass	20.00
Epoch	19.00
Three Mile Island	20.00
Free Fall	16.00
Frogger	19.00
Mouskattack	19.00
Lunar Leeper	16.00
Apple-Oids	17.00
Firebug	16.00
Creature Creator	25.00
Spectre	17.00
Buzzard Bait	25.00
Sammy Lightfoot	18.00

COMPUTER DEN Ltd.
11716 KEMP MILL ROAD
SILVER SPRING, MARYLAND 20902
301-649-6868
Call for an appointment or to order
Sunday - Thursday, 10 A.M. - 9 P.M.
Free delivery to Crystal City
UPS shipping $4.00 extra
Quantity Discounts Available

THE HI-RES SKETCH PROGRAM ON WAP DISK 25

by George V. Kinal

HIRES SKETCH on WAP Disk 25 allows you to draw hi-res pictures, including text labels, using a joystick (or even game paddles) to control placement of dots, lines, simple shapes, and text. I realize that there are many commercial packages on the market now that do the same and a lot more, but this program is available at the usual bargain price and is sufficient for many "one time" applications.

The program was written in the Dark Ages of Appledom (1978!), and there are no instructions on the disk. Therefore I set out by trial and error to figure out how the program works. Here is what I found; there may be other more subtle features that I don't realize are there. A most useful addition would be to include the circle as one of the shapes available.

The program was written in Integer Basic (1978, remember), and Disk 25 is DOS 3.2 (but the Librarian is working on converting the early disks to 3.3). Use your BASICS disk, or "SWITCH 3.2.1/3.3.1" on WAP Disk #101, to use a DOS 3.2 program, or use MUFFIN to convert the program to 3.3. If you have 64K of memory, use the Integer Basic capability which you get by booting the System Master disk. If you have 48K, use INTEGER BASIC-DISK on WAP #100, and on the new member disk (#134).

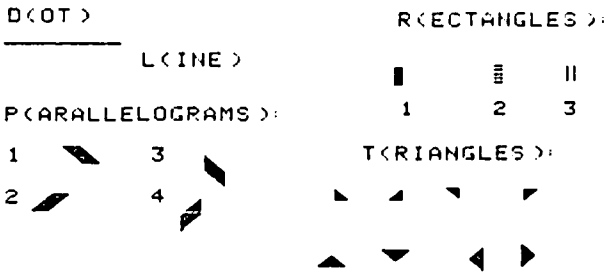
The following commands are self explanatory, especially once you have actually tried them. After each command is entered and acted upon, you must hit the space bar before the program will accept another command. The images created are saved as complete 8K graphics page dumps as binary disk files. You don't need the program to display the images thus saved, however. Simply type in HGR, then BLOAD the picture you want. Also you might be interested in the picture packing program on Disk 117. Simple line drawings of the kind produced by HIRES SKETCH can be compressed to a small fraction of the original 8K by means of the packing program. Below are two sample pages of graphics examples to illustrate the commands.

HIRES SKETCH COMMANDS

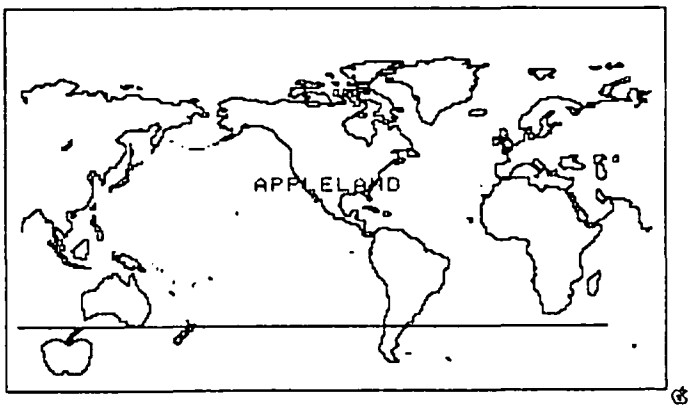
Pushbutton #1: Puts a dot cursor on screen
Pushbutton #2: Gives X,Y coordinates of position determined by joystick.

D: Places dot into image (permanently, unlike PB#1)
L: Draws line between previous "D" and current dot location.
P: Parallelogram; 4 types are possible
W: Write text characters onto image at defined location.
T: Triangle: Right of Isosceles, 4 types of each possible
S: Reads file from the disk.
H: Saves picture to disk file.
C: Turns dot off;
B: Turns dot back on.
M: Mask (erase) areas of screen.
R: Rectangle; 3 types possible.
E: Erase

P.S. - There is another use for this program which doesn't even need the joystick, and which may be of interest even if you have no intention of creating drawings from scratch. Since the program permits retrieval and saving of graphics page images, it may be used to add text labels to graphics material you already have. For example, you can add labels to graphs, or change portions of the pictures on WAP Disk #117 (after unpacking them).



HIRES SKETCH EXAMPLES



JOB MART

HELP WANTED

If you can make computing a fun productive family project and are interested in teaching Basic, Logo, word processing or other applications to new Apple users, send your resume to: Patt Montgomery, The Enchanted Village, Springfield Mall, Springfield, VA 22150.

COMPUTER SALES: An exciting new computer store in Springfield Mall is seeking salespeople to sell Apple and other personal computers, software and peripherals. Full time and part time hours available. Excellent compensation. To arrange for interview, call (703) 971-0666.

QUANTUM LEAP TECHNOLOGIES: We are looking for a person with extensive experience in understanding and using routines in Apple JL+ and //e Basic ROMs and Monitor ROMs, as well as DOS 3.3 and writing assembly code. Need to do development work for nationally marketed products. Will negotiate top deal. Send resume and phone to: One Corporate Center, Box 6440, Arlington, VA 22206, Attn. Paul Meaders.

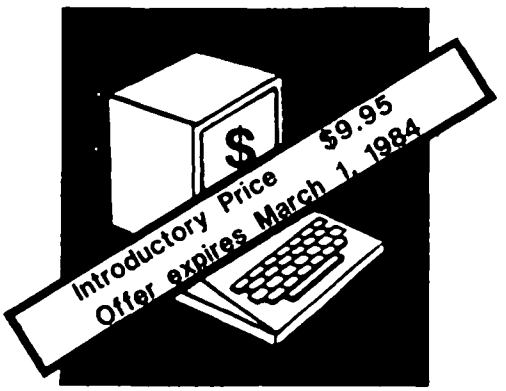
PARTTIME OFFICE HELPER NEEDED. Knowledge of Apple Writer for the //e, PFS, and good communication skills required. Duties include correspondence, production of mailing labels, go-fer responsibilities. 12 hours per week - flexible schedule. Office located in Bethesda. Salary, $6.00 an hour to start. Contact Deborah Blank, ELF, Inc., at 986-4929.

Hy-Quality Products from HYTEK LTD.

•New from the Publishing Division...

SELLING YOUR SOFTWARE

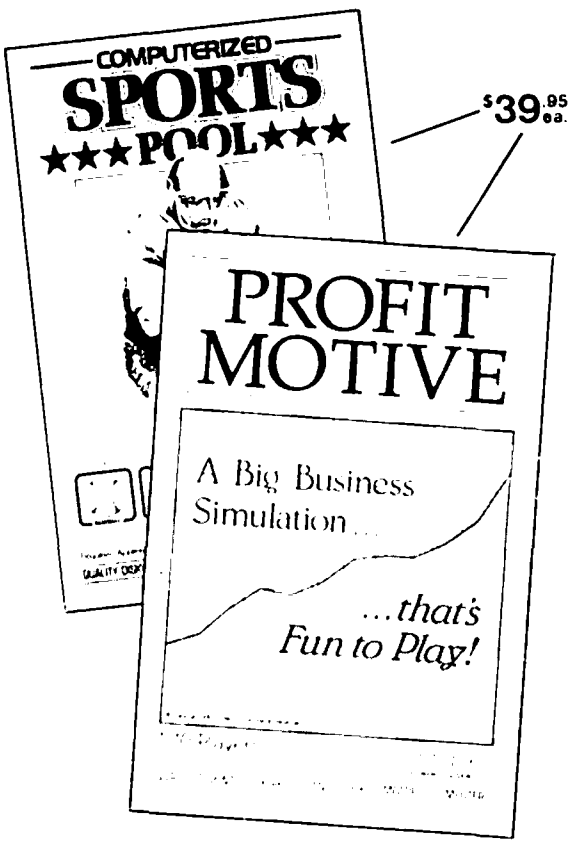
The Personal Computerist's Guide
to Fame and Fortune
.....maybe!



HYTEK LTD.

$19.95

•Other software products...



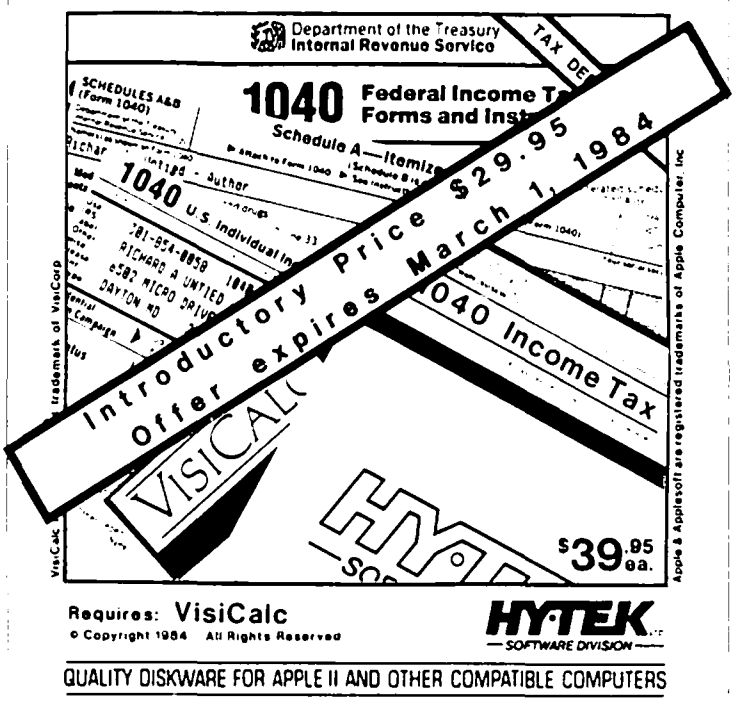
$39.95 ea.

•New from the Software Division...
•(by W.A.P. member Richard A. Untied)

1040 Income Tax

****

VisiCalc Template



Requires: VisiCalc

© Copyright 1984 All Rights Reserved

HYTEK LTD. — SOFTWARE DIVISION —

QUALITY DISKWARE FOR APPLE II AND OTHER COMPATIBLE COMPUTERS

Contact your local dealer!

Dealer inquiries invited!

HYTEK LTD.
Corporate Offices
6502 Micro Drive Dayton, MD 21036
(301) 854-0058

© Copyright 1984 Hy-Tek, Ltd.
All Rights Reserved

MACINTOSH ALARM CLOCK

by Tom Warrick

One of the more useful features on Apple's new Macintosh computer is an alarm clock. The alarm clock is a "desk accessory" that can be called up for viewing at any time, even during the execution of an application program such as MacWrite or MacPaint. The alarm clock sets up a small window containing the time, and the window can then be moved to an out-of-the-way location on the Macintosh screen (called the "desktop") where it will continue to provide the current time.

The alarm clock's utility, however, is diminished by the fact that the alarm feature is not explained in the otherwise excellent Macintosh documentation. In all likelihood, the alarm feature was added at the last minute after the documentation was sufficiently advanced such that it would have been too costly to revise it. As things stand, the alarm clock is an extremely pleasant feature that a user can discover for him or herself.

Figure 1 shows the alarm clock window open while MacWrite, a word processing program, is in operation. The small square at the left of the window allows the user to "close" the clock window by pointing to the box using the mouse and pressing the mouse button. In the center of the window the current time is displayed in hours, minutes and seconds in standard twelve-hour notation. (Astute readers will be able to determine when these figures were printed out.) The final symbol, above the pointer arrow, is supposed to be a lever that opens the "Change" portion of the window.

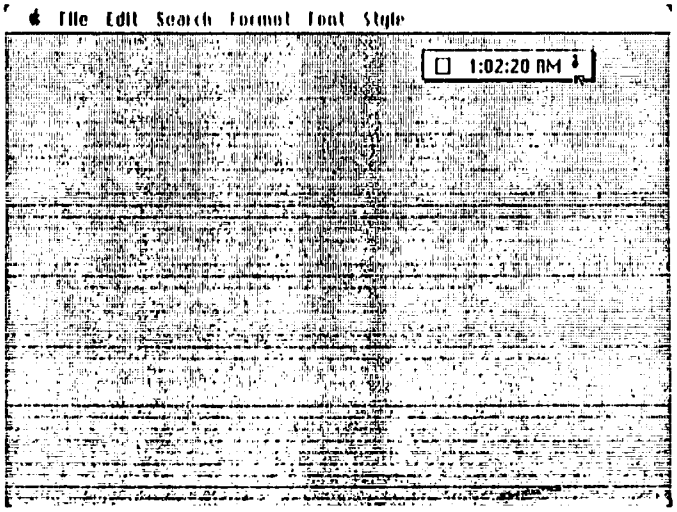


Figure 1

Pointing to the lever and clicking the mouse button reveals four additional areas, as shown in Figure 2. The three bottom areas indicate and allow the user to select what will be in the middle area. Clicking on the clock face in the lower-left area puts the current time in the middle window so that the user can change the time. (Changing the time can also be done from the Control Panel, another desk accessory.) Clicking on the calendar pages in the lower-center area, as was done in Figure 2, puts the current date in the middle window so that the date can be changed. (Changing the date can also be done from the Control Panel.)

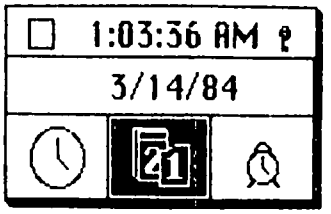


Figure 2

Clicking in the lower-right area, as has been done in Figure 3, brings the current alarm setting into the middle area. The time is shown in standard fashion. Whether the alarm is set or not set is shown in two ways. As it appears in Figures 2 and 3, the alarm on top of the clock in the lower-right area seems quiet. As shown in Figure 4, although it can barely be seen in this reproduction, dotted lines radiate away from the alarm bell. This indicates that the alarm is set to go off.

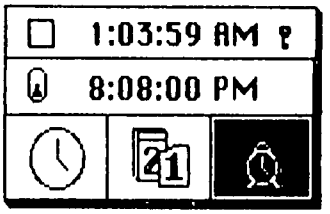


Figure 3

The little pictogram to the left of the time in the middle window is the on-off switch, and provides a second indication of whether the alarm is set to go off. "Down," shown in Figure 3, indicates that the alarm is off. Pointing to this pictogram and clicking the mouse button flips the switch up to the position, as shown in Figure 4, and sets the alarm to go off at the appointed time. The display in the lower right-hand window is changed accordingly. If the alarm is set, clicking on the switch clears the alarm.

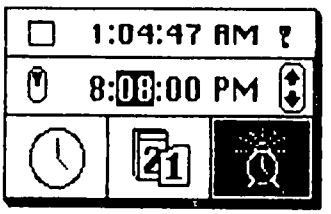


Figure 4

To change the time, the date, or the alarm setting, the user points to the portion of the time or date to be changed and selects it by clicking the mouse button. The month, date, year, hour, minute, second, or a.m./p.m. are each selected separately. Selecting one of these fields "highlights" it. ("Highlight" is the Macintosh word for inverse, or white drawings on a black background.) When a field is selected, two arrows appear to the right of the date or time, as shown in Figure 4. Pointing to the up arrow and clicking increases the number shown in the highlighted field, and pointing to the down arrow and clicking has the opposite effect.

contd.

When the alarm goes off, the effect is subdued as is appropriate in an office environment. The speaker sounds once the same pleasant bell tone that appears when the Macintosh is powered on. In addition, the Apple symbol on the left of the Menu Bar (see Figure 1) flashes repeatedly from inverse to normal and back to alert the user to the fact that the alarm has gone off. The flashing Apple can be cleared by turning off the alarm using the procedure described above. Because the flashing Apple is sufficiently distracting to have always attracted my attention, I have always turned off the alarm myself. I have not yet been able to discover whether the alarm will go off every twenty-four hours if the flashing Apple is not cleared.

MAC NOTES

by Tom Warrick

Macintosh owners should note that there appears to be two different and somewhat incompatible versions of the Macintosh operating system. The first appears on the Guided Tour disks and the second is on the System Disk. Attempting to read a disk created with the first operating system while running the second destroys the hierarchical structure (the "file folders") of the disk's primary file directory.

This is not fatal to the information on the disk, however, as the Macintosh disk operating system has saved a secondary file directory elsewhere on the disk, and when the primary directory is destroyed, it can be recreated using the secondary directory. While the files on the disk are recovered intact, all file folders are lost.

In normal use, this would be a trivial inconvenience, as file folders can easily be recreated. But for the Guided Tour disks, the placement of particular documents are in particular folders and the placement of folder icons on the desktop are important to the proper operation of the Tour. Further, Guided Tour disks are copy-protected and so cannot be backed-up. As a result, users should exercise caution when using Guided Tour disks. Errata to the Macintosh manuals advise turning off the Macintosh before running the Guided Tour, and this caution should be extended to turning off the Mac before even inserting one of the Guided Tour disks.

Loss of file folders on the Guided Tour disks will not make the tours meaningless, but it will make several of the demonstrations pointless or confusing, as the Mac will attempt to point to a non-existent pull-down window or open a non-existent file folder. Note also that it appears that Microsoft's BASIC for the Macintosh also uses the earlier operating system, and should be treated in the same way until an update comes out.

On a separate subject, it appears that there is a major bug in the initial release of Microsoft's Multiplan for the Macintosh. As I understand it, the bug materializes when the user attempts to force recalculation following a cut-and-paste operation. The effect of the bug may be the complete and irretrievable loss of data in memory. Microsoft is reported to be aware of the bug and has a team of programmers working on a fix. Indeed, by the time this appears, they may have solved the problem. People interested in purchasing Multiplan should make sure that the copy they purchase has the correction.

introducing

RECORD MASTER

THE COMPLETE DATA BASE PROGRAM FOR APPLE COMPUTERS - ONLY $49.95

RECORD MASTER is a full-featured data base program. Use it for addresses, bills, collections, employee data, inventory, investments, sales, student records, or any other data which need order and control.

COMPARE FEATURES	RECORD MASTER	OTHER
750 records - 36 fields	✓	
100 characters per field	✓	
5 field types - alpha, date, numeric, dollar, computed	✓	
Search: and/or, <, =, >, not =	✓	
Wildcard & substring search	✓	
Bulk change/update	✓	
Duplicate record check	✓	
Complete report formatting and print capability	✓	
Mailing labels - up to 5 across 3- and 4-line addresses	✓	
Sort 10 fields simultaneously	✓	
Ascending or descending sorts	✓	
Arithmetic functions: count, average, +, -, x, /	✓	
Complete Editor: add, change, delete fields. Merge and pack files	✓	
Password protection	✓	
64-page detailed manual; indexed	✓	
Unprotected disk	✓	
Menu driven, error trapped	✓	
DOS commands. Standard text files	✓	
No disk swapping. 1 or 2 drives	✓	
Multiple files on a disk	✓	
Easy to learn and use	✓	
PRICE	$49.95	

And there's much more! RECORD MASTER, under development and test for two years, has all the features of programs costing hundreds of dollars. Yet, you can order it now at the low, introductory price of $49.95, plus $1.50 for shipping/handling. Maryland residents add 5% sales tax. For the Apple II+/e. Requires at least 48K.

send check or money order to

BRIDGET SOFTWARE CO.
1309 CANYON RD.
SILVER SPRING, MD 20904

STEVE WOZNIAK BRINGS MACINTOSH TO D.C.

by Bart Cable

(Reprinted from Apple-Dayton, March 1984)

When I moved from Dayton to the District of Columbia this suumer I brought my newly acquired Apple /// with me. Finding that the Apple /// Special Interest Group of Washington Apple Pi was fairly sizable, I joined up and began to attend meetings. When it was announced that Steve Wozniak, designer of the Apple][, would address the general Pi meeting in January, I planned to attend. Little did I know that I was about to experience a true "Apple Happening".

Since Pi's invitation to Steve happened to coincide with the release of Apple's new Macintosh computer, he asked if he could bring a Mac along. It turned out that the meeting was just four days after Macintosh's much-heralded introduction, and Steve brought four key members of the Macintosh design team. He also had a special video projector flown in from Cupertino for use with the giant screen in the auditorium.

The crowd was standing-room-only, and I think that what we got was an informal version of the presentation given at the annual shareholders meeting earlier that week. First was a fantastic "video" synchronized to a rousing Flashdance-like song done by Irene Cara, called "We Are Apple". Three minutes of that, and I was ready to submit my resume to Apple on the spot! Next we saw the Orwellian-1984 ad that Apple has been running on TV. Then it it was time to hook the Macintosh to the projector, and it proceeded to introduce itself, through speech synthesis, just as it had done at the shareholders meeting. After the conclusion of the prepared presentation, the Mac designers took over and explained how the machine was developed over the last three years.

The real heart of the program was the demonstration of the software. The Macintosh has compressed and improved upon the concepts used in Lisa. Everything is menu-oriented and controlled by the mouse. This makes it extremely easy to use and fast! The operating system and applications software have many unique features, providing a wealth of capabilities. MacWrite, word processor, is extremely flexible, showing just how a document will appear when printed out and allowing many different type styles and sizes. With the new Image Writer printer, all of these variations can be printed out directly, so that quite literally "what you see is what you get".

MacPaint is a true wonder. It's the graphics program and allows an artist an unbelievable amount of capabilities in producing fancy design. Non-artists can use it very easily as well. The features seem endless and show the Macintosh at its very best. This program, more than any other, had the audience yelling and clapping in sheer delight. (That's probably why they saved it until the end of the presentation.)

For you gamers, the Mac probably means a whole new generation of computer games far surpassing what we see presently, even in the arcades. They demonstrated a game based on the Alice in Wonderland variation of chess, and it was mind-boggling!

The team explained that rather than develop a machine based on market studies of what users were thought to want, they designed it around the capabilities they themselves most wanted, pushing well beyond current state-of-the-art. This is how the Apple][had come about, and the resulting Macintosh is most impressive. I couldn't possibly cover it all here, or even remember all the unique features they demonstrated. The February Byte magazine should go into great detail, and the January Apple Orchard hinted that it would be covered in their February issue. And you simply have to see an in-depth demonstration at a dealer, but make sure they really put the Mac through its paces!

The $2495 price tag may seem a bit steep and will hold down volume sales initially, but you certainly do get a lot for the money. The team pointed out that they expect the price to gradually come down over the next couple of years.

Where does this leave all you Apple][users? Well, Steve emphasized that the Macintosh is not a replacement for the Apple][by any means. He expects Apple to continue to support and improve the][line "forever'. After all, the Apple][was his brainchild.

Will I rush out and trade my Apple /// in for a Macintosh? No, not at this point. My /// is a great machine in its own right, and support is really beginning to blossom for it. But I do feel that my next computer, whatever it is, will benefit from the Macintosh technology. And I fully expect that next computer to be an Apple.

In closing, when Steve Wozniak brought Mac to town, it was quite an event. Let's keep our eyes on the Macintosh and Apple Computer in the coming months. If the Mac takes off, it will cause another revolution in computing. And Steve pointed out that, after some recent growing pains, Apple Computer plans to stay at the forefront of computer technology. They will not be content with merely refining current state-of-the-art. Rather they fully intend to continue pushing the technology into ever greater frontiers for the future.

MORE MISCHIEF

by Dan Robrish

Recently an article in Washington Apple Pi, entitled "A Little Mischief", showed a short Applesoft program to drive obnoxious salespeople up the wall. It accepted any input next to an Applesoft prompt, but instead of doing anything it displayed another prompt. I have discovered a POKE that serves the same purpose (of getting even with the salesperson) by scrambling part of the character set, making it seem as if the Apple is broken. (Note: This has only been tested on the //e.) The POKE is:

```
POKE 50,253
```

The default value of address 50 is 255. Fooling around with address 50 will result in other strange character sets, but value 253 is the first one I have found that doesn't change the Applesoft prompt.

NOTES ON SOFTCON

by Richard D. Norling

On February 21, somewhere between 15,000 and 20,000 people descended on New Orleans for SOFTCON, the world's first trade show dedicated solely to computer software. I don't think it is possible to describe everything that happened in those three days in anything shorter than a book. What I shall share with you here are a few brief notes and impressions.

The show was huge -- the exhibits filled all three levels of the Louisiana Superdome, and the conference meetings on software industry topics filled the ballroom area of the near-by Hyatt Regency Hotel. One estimate that I saw claimed that over 1200 different software products were being shown.

The main advertised purpose of the show was for software publishers and distributors to make business deals with each other and with retail outlets. But there were also software authors like me looking for publishers who wanted our products. There were even a few publishers who were trying to sign big-name software authors to lucrative contracts. In all, there was a cross-section of the software industry.

The winner in terms of number of software packages exhibited for its machines appeared to be IBM. But, as I shall describe later, the momentum was all Apple. The striking absence was products working under CP/M -- if the SOFTCON exhibits were a true reflection of trends in the software industry, CP/M is dead. A few others like Commodore were represented, but the vast majority of the software shown was for IBM and Apple machines.

The first public event at SOFTCON was the keynote speech at 9 AM on Tuesday morning, an hour before the exhibits opened. The speech was delivered by Apple's Chairman, Steve Jobs, who described his view of the future of computers. Jobs pointed out that right now, computers have reached only the most innovative 5% of people who work at desks (Apple calls these people "knowledge workers"), and that those who have not yet joined the computer generation (my phrase, not his) want easy-to-use tools.

Jobs compared the current stage of the computer industry to the historical point at which the telephone began to replace the telegraph -- with the great increase in ease of use, the telephone became the first desk appliance. He contended that the change from traditional computer technology to the simpler-to-learn technology used in Macintosh will make it possible for the computer to become the second desk appliance.

In my opinion, Apple Computer took SOFTCON by storm. The main Apple booth was on the center aisle of the main floor, just inside the principal entrance. Once an hour, the aisle was clogged during big-screen demonstrations of Macintosh. The Apple booth was always busy, even between major Mac demos, with demos of 'AppleWorks:' (new software package for //e that includes word processing, data-base management, and a spreadsheet), the new Apple modem, Mac software, and other products.

In addition to its main booth, Apple had two other large rooms in which it ran special Macintosh sessions -- half-hour "hands on" sessions to give familiarity with the Macintosh user interface, and more detailed one-hour sessions aimed at convincing people to develop software for Macintosh. All of that activity was enough to establish a clear impression of movement towards making Apple's Macintosh the next industry standard. The finishing touch was the full-sized posters that Apple had printed with the familiar logo and the words "Macintosh Development Team" -- they were displayed in booths throughout the show by companies who are working on software products for Macintosh, and provided one of the few consistent visual themes in the exhibit area.

Those who comment on the microcomputer industry often mention the absence of neckties among the people who make the industry go. That is changing. The computer software industry still shows the frenetic activity of phenomenally fast growth, but it is also beginning to display the usual trappings of big industry. The people who are bringing big money and large-scale marketing experience to computer software from other industries are bringing their neckties with them.

I want to end with some advice to consumers. The key words at SOFTCON were, as you might suspect, words like "windows" and "integrated software". The overzealous use of these words by advertising writers has made them virtually meaningless. If an ad or a salesperson uses these buzzwords to describe a product, I would suggest you take that as a cue to begin asking questions to find out whether the product really has the features you want.

In the same light, I would examine Macintosh software carefully, especially if it bears the same name as a product for the Apple //e or the IBM PC. The race is on to be the first company with software converted for Macintosh, with the assumption being that the first one with Macintosh products could capture the market. A lot of the Macintosh software will be truly great -- but in the rush, some companies may fail to implement user interfaces that comply with the high standards Apple has set for ease of use on the Macintosh. A proper amount of skepticism and a request to try the software in the store before you buy should help you get beneath the advertising claims and find the best software product for your money.

RENT TIME ON A LETTER QUALITY PRINTER

Write your paper on your word processor and print it on our letter quality printer.

Hourly Rates

C C & ASSOCIATES
CARA W. CIRA
(301) 468-5718

INTEGRATING FRAMES WITH AN EXPERT PROGRAM

by Frederick E. Maef

This is the second in a series of articles about the use of LISP to develop a working expert program for the Apple][computer. These articles are being written during the program development process so that others might experience the process as well as the results. Of course, this means the reader must share the failures as well as the successes.

An expert program is artifical intelligence software that emulates the reasoning process of the human mind and attempts to replicate human expertise through the use of if-then rules. The present effort is being developed on an Apple //e with DOS 3.3 and P-LISP Version 3.2.

It should be emphasized that the Apple][will never match the power of a dedicated LISP machine, but developing an expert program on an Apple can be a valuable educational experience and a good way to learn LISP.

PROJECT STATUS

As reported earlier, the expert program functions provided in Ref. 4 have been converted to run on the Apple][, and have been tested with the animal expert toy program. The next step was to apply the functions to other applications - in this case, to a program that would apply a set of rules to all 100 members of the U.S. Senate in order to determine how they would vote on a piece of legislation. After a few failures, it became apparent that the animal toy worked well, but that a larger senate expert, with an attributes database of 100 members and a rules database of 30+ rules, exceeded the capabilities of the Apple][.

The workspace (available RAM) of the Apple][is small and any meaningful program must make use of virtual memory (disk storage or a RAM card psuedodisk). The time delay of reading and writing to a floppy disk, combined with the already slow process of a LISP interpreter operating through a 6502 microprocessor, produces slow operation of any reasonably sized expert on the Apple][. However, if the virtual memory is on a RAM card, then reading and writing are nearly instantaneous, and a useful expert program can be operated.

Another limitation of the expert system described in Ref. 2 was the difficulty in modifying the rules and attributes databases. A more efficient method was needed, and after studying several alternatives, the frames representation was selected. Thus instead of proceeding to develop the senate expert, it was necessary to first convert the animal toy into a frames-based expert, with the attributes database stored on disk. This has been done, and the program now operates as before, but by sequentially loading the frames of unknown animals, deducing each animal's identity, and posting that determination on a "blackboard" frame. After completing all the deductions, the expert then analyses the data on the blackboard, and displays the final results.

THE THEORY OF FRAME REPRESENTATION

A frame is a data structure that represent a packet of information about a stereotyped situation, environment, or procedure. Each frame acts like a miniature database, and has slots for data and relationships that would be appropriate to the situation. In a frame system, the notion of property value is generalized, so that a property can have an ordinary value, a default value, and a demon - a calculation procedure that can compute a value when one is requested. A frame system allows values to be inherited from other related frames. Frames organize knowledge in a way that facilitates recall and inference, and are particularly appropriate for expectation-driven reasoning which seeks confirmation of hypotheses by filling in the slots in the frame.

The frame representation appeared appropriate for two reasons: it closely matched the format that was planned for the senators voting situation, and it created packets of information that could be moved into the workspace for sequential processing. In addition, the rules were rewritten into the frames format, with each rule represented as a separate frame. This was done in anticipation that future programs may become large enough to require moving each rule, or blocks of rules, from virtual memory into the workspace. For example, one could use one set of rules to process the attributes and to post interim data on the blackboard, and then load successive sets of rules to further process the blackboard data.

FRAME MANAGEMENT

All the functions in Ref. 4 Chapter 22, were converted from MACLISP to P-LISP, were installed, and were found to work as described. Listings of these functions can be provided by the writer, and if arrangements can be made regarding the distribution of the LISP interpreter, a diskette will be provided to the WAP program library.

It was also found that not all of the functions are needed to integrate the frames representation into an expert program, and most are used for frame analysis and maintenance. It was concluded that more workspace would be available for the expert program if the frame maintenance could be done somewhere else. Since the frames are stored on a data disk, multiple workspaces were created - one with the expert program and one for frame maintenance. In this way, the databases are accessible to both workspaces, and the operator has better control over who changes the attributes.

INTEGRATION WITH EXPERT PROGRAM

The principal changes to the expert program functions were made in STEPFORWARD and INTHEN, as these are the "gatekeeper" functions that control information flow from the rules database to the inference engine. DIAGNOSE was modified to use a RULELIST frame that sets up the index to the rules. Finally, modifications had to be made to VERIFY THENP IFP TESTIF AND TESTIF+ due to the changed format of the rules.

The following is a listing of STEPFORWARD as it should be installed in the workspace:

```
(DEFINE(STEPFORWARD(LAMBDA()(PROG(READY INTEGER)
(SETQ INTEGER 1)LOOP(SETQ READY (FGET(IMPLODE
(LIST 'RULE) INTEGER)) INTEGER 'VALUE))(COND((NULL
READY)(RETURN NIL))((TRYRULE(CAR READY))(RETURN T)))
SETQ INTEGER (ADD INTEGER 1))(GO LOOP)))
```

In addition, a new function, PROCESS, was written to sequentially load the data frames, initiate a deduction, and post the conclusion on the blackboard frame. DISPLAY is another new function that presents the results after all the frames have been processed.

contd.

Finally, RESET was written to clear the databases and erase the blackboard prior to each run of the program.

The following is the format of a typical text file that can be EXECed into the workspace to create a rules frame:

```
(PUT 'RULE1 'FRAME '(RULE1(1(VALUE(RULE ONE(IF(ANIMAL
HAS HAIR))(THEN(ANIMAL IS MAMMAL)))))))
```

The following is the format of the text file that can be EXECed into the workspace to create the rulelist frame:

```
(PUT 'RULELIST 'FRAME '(RULELIST(AKO(RULE1)(RULE2)
(RULE3)(RULE4) ..... (RULE14)(RULE15))))
```

WHAT NEXT?

Having modified the expert to handle attribute files from virtual memory, work can resume on the development of the senate expert program. That work will be described in the next article. However, it is already clear that the vote of a senator sometimes depends on the voting decision of one or more other senators, and these decisions must be determined in proper order. Thus the ability to inherit properties from related frames will be valuable.

It also appears that the voting decision of some senators depends on weighted combinations of attributes of the bill, the senator, other factors, and/or information requested from the operator of the program. This requires the use of demons - embedded sub-procedures that can be "fired" to perform the calculation and return the appropriate value to the frame for further use. In some cases, the processing of a frame will have to be stopped, and the interim results will have to be stored, until other senators are evaluated. Thus the interim decision must be stored as local memory in the senator's frame, which is written back into virtual memory. After the first pass, those frames with interim data will be recalled until all analysis is completed.

All of the above will result in slow operations, but the 64K RAM on the extended 80-column card of the Apple //e can be used as a high speed pseudodisk that will permit ultra fast access to the attributes frames. This will restore the program to the faster operation that existed when only seven animals were in the database.

CONCLUSIONS

The Apple][expert program can be interfaced with virtual memory so it can handle large databases. However the program runs slowly if the virtual memory is a floppy disk. Most expert programs run on large dedicated computers and do not strive for compactness because memory is cheap and available. But the Apple has a restricted workspace, and this forces the programmer to optimize his code. The development of compact and elegant functions is difficult and challenging.

REFERENCES

1) Cherry, Stephen P-LISP Version 3.2 User's Manual, Gnosis/Pegasys Systems Inc., 1983.

2) Naef, Frederick E., "Implementing an Expert Program", Washington Apple Pi Journal, February, 1984.

3) Winston, Patrick H., Artificial Intelligence, Addison-Wesley Publishing Co., 1979.

4) Winston, Partick H. and Horn, Berthold K.P., LISP, Addison-Wesley Publishing Co., 1981.

FREE SHIPPING

VERBATIM DATALIFE disk(10 packs in plastic case. SS, DD)	24
MITAC MATE-I disk drive(100% APPLE compatible, SHUGART 390 mechanism)	189
MITAC disk drive controller	45
Z-80A card(4 MHz)	75
80 column card	80
16K RAM card	40
Parallel printer card(cable included)	59
EPSON MX80 F/T printer	409
EPSON FX80 printer	525
MITAC 12" amber monitor(20 MHz)	119
ZENITH 12" green monitor (ZVM-123)	89
AMDEK color I plus 13" monitor	289
MITAC professional joystick(metal case with 2 buttons, 360° cursor control, auto centering & 2 fine trimers)	22

MICRO STAR COMPANY
P. O. BOX 2307
COLUMBIA, MD 21045
(301)730-7172
M - F 10:00 - 7:00
SAT. 9:30 - 1:00

Terms: Add $1.00 handling fee per order. MD residents add 5% tax. Personal or company checks allow 2 weeks to clear. COD accepted by M.O. or cashier check only(add $1.65 COD charge). Prices are subject to change without notice. Q'ty is subject to availability. MC & VISA customers add 3.5% surcharge. Manufacturer or MSC warranty provided.

INTRODUCTION TO APPLESOFT - PART 4

by David Morganstein

Part 4? "Where are parts 1 through 3?", you might ask. Well, if your WAP number is below 3000 you may remember the series that began in April of 1983. In that first installment we talked about variables and why they are necessary if you are going to write a computer program. We gave some examples of numeric variables in BASIC and showed how numbers could be associated with a variable name, manipulated with expressions and displayed with the PRINT statement (abbreviated "?" in many BASICs.) In the May installment we added the INPUT statement to our repertoire of commands and we discussed the general form of a BASIC program (with line numbers, etc.). We also discussed the LIST command for displaying individual lines or ranges of lines in the program. We mentioned how a line could be edited through the use of the ESC key to move the cursor over the line and blank out or insert characters. The July Journal carried the third piece which talked about the IF statement and LOGICAL expressions. These constructs allow us to transfer control of the program to other than the next line, an important idea if a computer is going to do any useful work. We introduced the concept of an array of variables, which we said was a randomly accessible list of a fixed length. We said that the idea of an array makes our programming chores easier by permitting the computer to do what it does best, do repetitive things. We will pick up that idea in this installment and work an example of sorting an array of names. To make this problem easier to solve, we will discuss the programming construct of a loop.

Use of Arrays - A Brief Review.

In the previous installment we pointed out that simple variables, while useful, were not sufficient for programs to solve most practical problems. Often we have many items of the same type and would benefit by being able to arrange them in a handier way. For example, let's say that we are maintaining an inventory of parts and we want to store the quantity on hand of each item in the computer. We would have trouble storing this information in specific simple variables such as Q1 for the quantity of the first item, Q2 for the quantity of the second item and so forth.

Why will this not work? First, due to limitations of Applesoft, we can only have ten different simple variables which begin with a Q and end with a digit. We could add another 26 items by using QA, QB etc. However, this is not as useful since we lose the mnemonic of first item, second item, etc. Second, we can not easily make revisions to many items. We could not go through our inventory easily, selecting only those items for which stock has recently been received. For a different application, change "inventory item" to patients, recipes, accounts, phone numbers or whatever list you are interested in.

Since the computer loves to do things over and over again, a different type of data structure is needed beyond the simple variable. The array allows us to arrange many items of the same type in an orderly way, a way which lets us select any one of interest and which allows us to easily process all the items without many lines of code.

In the July '83 article, we showed a few lines of BASIC which would read a specified number of names into an array called NA$(.) and then print them out on the screen. To the computer, the expression NA$(7) refers to the seventh item in a list it maintains somewhere in memory. Some programmers would call the expression NA$(7) a pointer to the actual name of the seventh item (since we are not going to pretend to be programmers we will not call it that...) We don't know where the seventh name is stored, and what is more, we don't want to know. We want the computer to keep track of that for us. The array structure gives us added power and convenience since we can refer to NA$(I) where I is a simple variable whose value changes according to our need. In the July article we had the variable I go from one to the number of items we were reading. As the value of I increased, the computer placed the next occurring name into a different part of memory starting with some place it called NA$(1) and ending with some other place called NA$(N). The diagram below describes the relation between the variable names, NA$(1) to NA$(N), which point to memory locations, and the contents of those locations which contain the actual items.

```
Variable Name      Contents
 (pointer)          (somewhere in memory)

NA$(1)    ->       first item
NA$(2)    ->       second item
  .       ->            .
  .       ->            .
  .       ->            .
NA$(N)    ->       nth item
```

Below we will talk about a sorting routine which will arrange the names in alphabetical order and then print them out, this time to a printer. Before discussing how to sort them, we want to introduce a new BASIC construct, the FOR/NEXT loop.

The Loop.

If I want the computer to repeat a particular series of steps a fixed number of times, I can use the FOR/NEXT loop. It looks like this:

```
300 FOR I = 1 TO 100
...   some code to be repeated 100 times
310 NEXT I
```

In this first example, the variable I (the index variable) takes on the values 1, 2, 3, ... to 99, 100. The FOR expression defines four things: what the loop's "index" variable is, what value it starts with, what value it ends with and what the step size is. (In this example, the index variable is increased in steps of one.) The NEXT I defines the end of the loop signifying that the computer should go back to the FOR statement, having incremented the index variable by the step size. When the index variable has been incremented beyond the end point (100 here), the computer is to continue with the line following the NEXT I statement.

A loop need not go from 1 to something. It can start at any number and go to any number. The variable I need not increase in steps of one. You can say:

```
300 FOR I = 5 TO 100 STEP 2
...   some code to be repeated 50 times
310 NEXT I
```

In this example, the variable I will go from 5, 7, 9, ... to 97, 99.

contd.

If you had an array NA$(I) with fifty names in it, in positions 1 through 50, you could display all of the names with the following piece of code:

```
300 FOR I = 1 TO 50
305 PRINT NA$(I)
310 NEXT I
```

To get more "power" out of a program, you may want to have two loops going in tandem, one within the other. This will be needed to solve our sorting problem.

A Small Problem of Sorts.

Before you begin to write a program, you should be prepared to say in plain English what you want the program to do. Many people make the mistake of sitting down at the keyboard and trying to create a program on the fly. While an experienced programmer can often solve problems this way, it is not a recommended approach for the beginner. Instead, write out the series of steps which must be taken to solve your problem. These steps should be in the order they must be performed and may contain branches when decisions are to be made about the next step to be taken. We will attack the sorting problem this way.

We will assume we have N names stored in a string array named NA$(.). To arrange them in alphabetical order, we need an "algorithm" (procedure) for doing this. The simplest, though inefficient, method is called the bubble sort. Let us use this method because it requires few steps and is fairly easy to understand.

To sort in ascending order, Aardvaark first, Zorro last, we proceed as follows:

1. Compare the first and second names. If they are in reverse order, we switch them; otherwise, we leave them alone.

2. Now we compare the second and the third names, again if they are in reverse order, switch them.

3. We continue comparing adjacent names until we compare the next to last name with the last name.

   At this point, the alphabetically last name, Zorro, has been moved into the last, Nth, position, NA$(N). Think about this to make sure you see that it works. The comparison of adjacent array elements, NA$(I) with NA$(I+1), is like a bubble which floats to the end (call it the top) of the array.

4. Now we repeat the steps 1. to 3. beginning with the first array element but going only to the next to last element, N-1 since we are now looking for the next to last name. We continue this process until we are only comparing the first and second array elements to find the alphabetically first name.

In the example below, we use the variables NA$(.) for the array, I for an index which will move through the array, J as another index to control the number of times we must perform the fourth step. N$ is used for temporary storage when we are swapping two consecutive elements and N is the number of names in the array.

```
400 FOR J = N TO 2 STEP - 1
410 FOR I = 1 TO J - 1
420 IF NA$(I) < NA$(I+1) GOTO 480
430 N$ = NA$(I)
440 NA$(I) = NA$(I+1)
450 NA$(I+1) = N$
480 NEXT I
490 NEXT J
```

This piece of BASIC code works as follows: the outer loop (lines 400 to 490) are the repetition of step 4. The variable J sets the end of the comparison range. We are to begin by comparing the first N names, then the first N-1, N-2 and so forth until, on the last step, we only compare the first two names. Line 400 tells us that J is to begin at N, and decrease by one, the step size, until J reaches two.

The second, inner loop, lines 410 to 480, controls the search through the J consecutive names. I begins at one and continues up to J-1. Why J-1 you might ask? Think about the search for the last name, Zorro. How many comparisons are made? One less than the number of names since you compare the first and second, second and third, etc, up to the N-1th with the Nth.

The actual comparison is done in line 420. If there is no swap to be made, we skip to the next comparison by jumping to line 480, the end of the loop in I. If there is a swap to be made, the next three lines do this with the aid of a temporary variable N$. See if you can figure out how this swap works.

As a homework assignment, add these few lines to the earlier programs and try it out.

Next Lesson.

In the next installment we will look at a different kind of variable, the string. So far we have examined numeric variables which are useful for numbers representing money, counts, physical dimensions or any other measured quantities. Strings are used to store alphanumeric information such as names, addresses, labels and other information which contains letters and possibly numbers. We will introduce another programming construct, the subroutine and extend our understanding of arrays into other dimensions.

MINUTE MANUALS

Don't waste your valuable time trying to get your software to do what it is supposed to be able to do. Get the

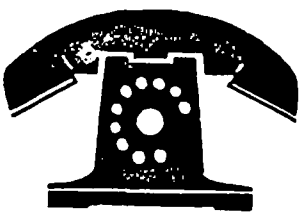
Minute Manual For Apple Writer //e	$7.95
Minute Manual For Apple Writer][+	$7.95
Minute Manual For DB Master	$12.95
Optional Data Disks (2) for DB Master	$9.95
Apple Writer Glossary Disk	$14.95

This disk contains glossary files for Epson FX/MX, NEC 8023A, Gemini 10/10X, Apple DMP/ Imagewriter, Prowriter, and Okidata dot matrix printers. Access any printing code with a single keystroke within Apple Writer //e or II+. Also contains FREE the alternate character set to do sub/superscripts on the Apple DMP. Also explains how to patch Apple Writer //e to do underlining and superscripts on the Epson MX and Gemini printers.

Available at many B. Dalton's, Comm Center, and Sidney Kramer (H St.) Send check plus $1 shipping to MinuteWare PO Box 2392 Columbia MD 21045 (301) 995-1166

WHEN YOU'RE LOOKING FOR

LOW PRICES, IN-STOCK MERCHANDISE, EXPERTISE



CALL

OUR FULL-TIME STAFF

at

(202) 364-0273

- VISA, MC add 3% (include card no. and expiration date)
- Allow 3 weeks for personal check to clear
- COD's require 10% deposit—all COD charges to be paid by customer
- Prices subject to change without notice—all items subject to availability.
- Money order, certified check, cashier's check or bank wire deposit accepted.
- Include full telephone number on all mail orders
- Include $2.00 for postage and handling per software shipment (UPS)
- DC residents add 6% tax (if tax exempt, include number)

MasterCard VISA

Description	List $	Sale $
NEW GAMES		
Tunnel Terror	29.95	21.95
Forel	29.95	21.95
Curse of Ra	19.95	14.95
Danger	19.95	14.95
Serpentine	34.95	26.95
Choplifter	34.95	26.95
Pig Pen	29.95	21.95
Death Race 82	29.95	21.95
Deadly Secrets	34.95	26.95
Hardhat Noah	29.95	21.95
Sea Fox	29.95	21.95
Cross Country Rallye	29.95	21.95
Space Cadet	34.95	26.95
Crazy Mazey	29.95	21.95
Mars Cars	29.95	21.95
Freefall	29.95	21.95
Ming's Challenge	34.95	26.95
Ultima II	59.95	44.95
New Gebelli		
Phaser Fire	29.95	21.95
High Orbit	29.95	21.95
New SSI		
Cytron Master	39.95	29.95
Galactic Gladiators	39.95	29.95
Guadalcanal Campaign	59.95	49.95
Old Favorites		
Borg	29.95	21.95
Cannonball Blitz	34.95	26.95
Deadline	49.95	39.95
Marauder	34.95	26.95
Russki Duck	34.95	26.95
Snack Attack	29.95	21.95
Threshold	39.95	29.95
UTILITIES		
Southwester Data		
Munch-a-Bug	49.95	39.95
The Routine Machine	64.95	49.95
Doubletime printer	149.95	119.95
On-Line Systems		
The Artist	79.95	59.95
Insoft		
GraForth II	75.00	59.95

CALL

for Information

about our

MONTHLY SPECIALS

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

Also available

Modems
Interfaces
Disk drives
Accessories
Terminals
Peripherals
Joysticks
Paddles
Keypads

and, hundreds more!

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

and much, much more!

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

COLUMBIA COMPUTER SYSTEMS

OVER 12,000 PRODUCTS AVAILABLE FOR YOUR APPLE

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

Mail your orders to: P.O. BOX 40813, Washington, DC 20016

or call (202) 364-0273 any time, day or night

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

INTRODUCTION TO MODULA 2 - Part 4

by Robert C. Platt

This is the fourth chapter in our tutorial on Modula. The last column ended with a problem: How do you write a procedure to convert a string which contains both lower and upper case characters into all capitals? Here is one solution:

```
PROCEDURE UP(IN:STRING);
VAR I:CARDINAL;
BEGIN
  I:=0;
  REPEAT
    Write(CAP(IN[I]));
    INC(I);
  UNTIL IN[I]=0C
END UP;
```

The loop will be repeated until the end-of-string character 0C is found. Note that the built-in procedures CAP and INC were used to capitalize each letter and to increment a variable, respectively.

FLASH CARD DRILL

Listing 1 is the long-promised flash card drill program. This listing shows the output generated by Volition's Modula 2 Compiler. The first column assigns a separate number to each line, and I will refer to lines in the listing by these numbers. The second column gives the "segment number" assigned to each procedure. As you can see, main programs are automatically assigned to segment 7. The next column, just before the colon, gives the "procedure number," and the final column shows how much memory is used by each program line. (The memory usage is cumulative for each procedure. To determine the memory used by a line, subtract the number after the colon from the number above it.)

Lines 34 to 46 were discussed in the February WAP Journal. This procedure displays a message on the screen.

Line 2 is an example of a compiler directive. In general, text enclosed by (* and *) is treated as a comment. However, if a dollar sign appears, the compiler will determine whether the user is using the comment to adjust the compiler's behavior. In this case, line 2 uses the compiler directive $TO to send a source listing to a disk file called '#5:JOHN.TEXT.'

Line 3 gives this module the name CAI. This same name must appear in the last line (120) as a part of the END statement. Lines 8 through 18 IMPORT library routines and definitions.

Modula, like Pascal, allows you to assign short-hand names to given objects so that you can refer to them in a consistent way. Here, maxw is the maximum number of lines to be displayed in response to an incorrect answer. I have set this value to 5 in line 19. If I later want to change this limit, I only need to alter line 19, and do not need to change other lines in my program since they all refer to maxw rather than 5. Because the value of maxw does not change during the program, it is called a CONSTant.

PROGRAM INPUT

The Flash Card program will read a text file (created by the Pascal editor or by ASE.) A typical problem would look like this:

```
Who is buried in Grant's tomb?
   A) Grant
   B) Lincoln
   C) Washington
@A { the correct answer }
@B { message for answer B follows }
No, he is buried in Springfield, IL.
@C
No, he is buried at Mount Vernon.
@H  { a hint message follows }
Look at the name of the tomb.
@end
{ more questions can follow here }
```

Given this input, the program must first display the question on the Apple screen (lines 59-64), load the hint and response messages for each possible answer (lines 71-89), get an answer from the student (lines 90-97), and display an appropriate response (lines 98-120).

PROGRAM STRUCTURE

By careful analysis of a problem and the use of loops and procedures, a well-structured program does not need any GOTO statements. (In fact, Modula does not have a GOTO.) In Listing 1, the loop between lines 58 and 119 repeats the processing of questions until the end of the input file. Nested within this loop is a second loop on lines 61-64 which displays the question until a line beginning with an @ is read. The second character on this line (remember line[0] is the first) is stored in CHARacter variable "ea" as the expected correct answer. Next the loop on lines 77-89 stores messages until a line with "@end" is read. Within this loop is the REPEAT loop on lines 77-88 that stores the indivdual lines of each message. Note that the case statement in this loop tests for the presence of either lower case or capital letters.

The remainder of the program handles interaction with the student. If a hint message is included for a problem, lines 92-93 tell the student that a hint is available. The loop in lines 94-116 gives the student three tries to answer the question correctly, before automatically moving on to another problem. Line 96 asks for the student's answer, which is placed in the CHARacter variable "a." After the appropriate message, line 110 matches variable a against the expected answer (ea) and leaves the loop if correct. If the student gives three wrong answers, lines 112-114 display a message and EXIT the loop.

CASE STATEMENT

Lines 78-85 and 103-109 are examples of CASE statements. We have previously seen how IF..THEN..ELSE.. END can be used to establish branching between two alternative paths. Well, the CASE statement branches between many alternative paths. For example, the student is expected to answer each question with an A, B, C or a "?" to request a hint. The case statement in line 103 provides a 5-way branch to respond to a student input, which is stored in the CHARacter variable "a." If a has the value "A", then line 104 is executed. (Line 104 calls the show procedure to display the message for an "A" answer.) After executing line 104, the program will skip past the END on line 109, so the next instruction to be executed will be the IF in line 110. If a has the value "B", then line 105 will be executed. If a has the value "C",

contd.

then line 106 will be executed, and line 107 will be executed for the value "?". (Because we do not want to count a request for a hint as an incorrect answer, line 107 not only calls the show procedure to display the hint message, but it calls DEC to reduce the value of "try" by 1.)

But what if the student typed in something other than A, B, C, or ?. Then all statements between the word ELSE in line 108 and the word END in line 109 will be executed. These statements display a message listing the student's available choices. In general, the format of a CASE statement is:

(1) The word CASE
(2) An expression to be compared
(3) The word OF
(4) For each alternative path:
    (a) The values to cause the branch to be taken, followed by a colon.
    (b) One or more statements to be performed
    (c) A ! or verticle bar to end the branch (except on the last branch.)
(5) Optionally, the word ELSE followed by statements to be performed if the expression does not match any of the above listed values.
(6) The word END.

This program uses a number of library routines to control the Apple screen. HomeCursor in line 59 moves the "cursor" (the square that marks where you are about to write on the screen) to the upper left hand corner. This is like the Applesoft HOME command. Line 60 calls the library routine ClearScreen to blank out the screen. In general, WriteLn is used after displaying text on the screen to move the cursor to the start of the next line. In some cases, such as lines 50 and 96, WriteLn is omitted so that the student's answer will appear next to the question.

The GotoXY library routine is called in lines 93, 95, 100, and 102 to move the cursor to a specific position on the screen. The two parameters passed to GotoXY give the column and row of the new cursor position. One final trick is used. The character variable EOS is given the value 11 in line 48. (This is the equivalent of EOS$=CHR$(11) in BASIC.) When this variable is displayed on the screen in line 101 everything past the cursor or below it is automatically erased. This erases the error message from the last response before writing out a message for the current response.

Next month, I will review the input-output commands used in the flash card program.

Listing 1

```
 2  7  1:D   0 (*$TO '#5:JOHN.TEXT'*)
 3  7  1:D   1 MODULE CAI;
 4  7  1:D   1 (*$NOT '(c) 1983 by robert c. platt'*)
 5  7  1:D   1 (* A SIMPLE DRILL DRIVER BY R PLATT NOV 83 *)
 6  7  1:D   1
 8  7  1:D   1 FROM files IMPORT (* use standard Modula 2 library *)
 9  7  1:D   1   file, open, create, close, FileOK;
10  7  1:D   1
11  7  1:D   1 FROM Texts IMPORT output, console, Read, ReadLn,
12  7  1:D   1   TEXT, Write, WriteString, WriteLn, Connect, Disconnect,
13  7  1:D   1   EOT, TextState;
14  7  1:D   1
15  7  1:D   1 FROM Strings IMPORT STRING, Length, Pos, Concat;
16  7  1:D   1
17  7  1:D   1 FROM Screen IMPORT HomeCursor, ClearScreen, GotoXY;
18  7  1:D   1
19  7  1:D   1 CONST maxw = 5; (* max number OF lines in wrong message*)
20  7  1:D   1
21  7  1:D   1 TYPE msg = ARRAY [1..maxw] OF STRING;
22  7  1:D   1
23  7  1:D   1 VAR i,try: INTEGER;
24  7  1:D   3     a: CHAR; (* student answer *)
25  7  1:D   4     ea: CHAR; (* expected answer *)
26  7  1:D   5     EOS: CHAR;
27  7  1:D   6     iname: STRING; (* input file name *)
28  7  1:D  47     t: TEXT;
29  7  1:D  48     f: FILE; (* the input file *)
30  7  1:D  49     LINE: STRING; (* CURRENT INPUT LINE *)
31  7  1:D  90     aw, bw, cw, hw: msg;
32  7  1:D 910     AU, BU, CU, HU: INTEGER; (* # ELEMENTS USED *)
33  7  1:D 914
34  7  2:D   1   PROCEDURE show(x:msg; XU:INTEGER);
35  7  2:D 208   VAR j: INTEGER;
36  7  2:D 209
37  7  2:C   0   BEGIN
38  7  2:C   0     IF XU=0 THEN
39  7  2:C  11       IF A#EA THEN WriteString(output,'NO, TRY AGAIN') END
40  7  2:C  40     ELSE
41  7  2:C  42       FOR j:=1 to XU DO
42  7  2:C  59         WriteString(output,x[j]);
43  7  2:C  80         WriteLn(output) END  (* FOR *)
44  7  2:C  86     END (* ELSE *)
45  7  2:C  96   END show;
46  7  2:C 110
47  7  1:C   0 BEGIN
48  7  3:C   0   EOS := CHR(11); (* ERASE TO END OF SCREEN *)
49  7  3:C   3   REPEAT
50  7  3:C   3     WriteString(output,"drill file =>");
```

contd.

```
 51  7  3:C  26     ReadLn(console,iname);
 52  7  3:C  35     i:=Pos('.',iname);
 53  7  3:C  52     IF i>20 THEN Concat(iname,'.TEXT',iname) END;
 54  7  3:C  75   UNTIL Open(f,iname) = FileOK;
 55  7  3:C  88   IF Connect(t,f) # TextOK THEN
 56  7  3:C 100     WriteString(output,"Text error"); halt END;
 57  7  3:C 125   ReadLn(t,line);
 58  7  3:C 133   LOOP
 59  7  3:C 133     HomeCursor;
 60  7  3:C 136     ClearScreen;
 61  7  3:C 139     REPEAT
 62  7  3:C 139       WriteString(output,line); WriteLn(output);
 63  7  3:C 154       ReadLn(t,line);
 64  7  3:C 162     UNTIL (line[0]="@") or (EOT(t));
 65  7  3:C 182     IF EOT(t) THEN EXIT END;
 66  7  3:C 192     ea:=line[1];
 67  7  3:C 201     AU:=0; BU:=0; CU:=0; HU:=0;
 68  7  3:C 217     REPEAT
 69  7  3:C 217       ReadLn(t,line);
 70  7  3:C 225     UNTIL (line[0]="@") or (EOT(t));
 71  7  3:C 245     LOOP
 72  7  3:C 245       IF (Pos('@END',line)<20) OR EOT(t)
 73  7  3:C 269         THEN EXIT END;
 74  7  3:C 277       a:=line[1]; i:=1;
 75  7  3:C 289       IF a='E' THEN EXIT END;
 76  7  3:C 296       ReadLn(t,line);
 77  7  3:C 304       REPEAT
 78  7  3:C 304         CASE A OF
 79  7  3:C 307         'A','a': aw[I]:=line; AU:=1
 80  7  3:C 329         'B','b': bw[I]:=line; BU:=1
 81  7  3:C 352         'C','c': cw[I]:=line; CU:=1
 82  7  3:C 375         'H','h': hw[1]:=line; HU:=1
 83  7  3:C 392         ELSE WriteString(output,'ERROR-ILLEGAL ANSWER CHAR');
 84  7  3:C 522              Write(output,a); WriteLn(output);
 85  7  3:C 535              WriteString(output,LINE); WriteLn(output)  END;
 86  7  3:C 550         ReadLn(t,line);
 87  7  3:C 558         INC(i);
 88  7  3:C 562       UNTIL (line[0]="@") or (EOT(t));
 89  7  3:C 582     END; (* LOOP ON '@END' *)
 90  7  3:C 584     (* GET AND EVALUATE STUDENT RESPONSES *)
 91  7  3:C 584     try:=1;
 92  7  3:C 587     IF HU>0 THEN
 93  7  3:C 594       GotoXY(0,23); WriteString(output,'press ? FOR hint') END;
 94  7  3:C 625     LOOP (* REPEAT to give student 3 chances *)
 95  7  3:C 625       GotoXY(0,15);
 96  7  3:C 630       WriteString(output,'your answer =>');
 97  7  3:C 655       Read(console,a);
 98  7  3:C 663       a:=CAP(A);
 99  7  3:C 668       IF a=ea THEN WriteString(output,' ok') END;
100  7  3:C 686       GotoXY(0,17);
101  7  3:C 691       WRITE(output,EOS);
102  7  3:C 698       GotoXY(0,17);
103  7  3:C 703       CASE a OF
104  7  3:C 706         'A': show(aw,AU)
105  7  3:C 715         'B': show(bw,BU)
106  7  3:C 725         'C': show(cw,CU)
107  7  3:C 735         '?': show(hw,HU); DEC(try)
108  7  3:C 747         ELSE WriteString(output,'PLEASE ANSWER A, B OR C');
109  7  3:C 800           WriteLn(output) END;
110  7  3:C 806       IF a=ea THEN EXIT END;
111  7  3:C 813       IF try=3 THEN
112  7  3:C 818         WriteLn(output);
113  7  3:C 824         WriteString(output,"let's try the next problem");
114  7  3:C 861         EXIT END;
115  7  3:C 863       INC(try);
116  7  3:C 867     END; (* loop *)
117  7  3:C 869     ReadLn(t,line);
118  7  3:C 877     IF EOT(t) THEN EXIT END;
119  7  3:C 887   END; (* LOOP *)
120  7  1:C 889 END CAI.
```

PASCAL PRINT PROGRAM

by Jerry Crawford

If you have a need for a fast-running program to print your Pascal text files on an Epson printer using some of its special features with a minimum of effort, or you would like to learn more about programming to use some of the Epson features, this article is for you. You expert PIGers may want to go oinking away elsewhere.

There are several programs which have been made available through articles or users groups that provide a capability to print programs or to make use of the Pascal Editor as a quick and easy word processor, as I do. Unfortunately, the programs I have seen have either been too simplistic, too complicated to use, or too slow. This article provides a relatively simple print program, along with some concepts for program development using Apple Pascal.

The starting point in the development of any software is, in a sense, the end point. Before even considering writing the first line of code, developing an algorithm, or preparing a flow chart (for those so inclined), the desired result must be determined. Then the programmer/analyst must determine what resources are required to accomplish the task. Resources include data or other inputs, hardware requirements, software capabilities, and perhaps also the capability and time available to the programmer. This analysis may result in modification of the desired result, scrapping the project, or using software already available as a substitute.

For the printing program I wanted to be able to print both programs and word processing work with the same quick program on an Apple][or Apple /// with an Epson MX-80 or MX-100. Program capabilities were to be "user-apparent" with the implementation being "user-transparent" to avoid the necessity to remember control codes or commands. The resulting program which implements these requirements is listed accompanying the article. The program makes liberal use of procedures to emphasize the value of structured programming. As the desired program features are presented, information will be provided on the method of implementation. The program is shown using features of the MX-80. The features of the GRAFTRAX PLUS or MX-100 could easily be added.

When the program starts, the printer output file is opened and the INITIALIZE procedure is called. This initializes boolean variables, sends a message to turn on the printer if it is off, and clears previous control code settings on the printer.

After initializing, the program enters a REPEAT loop which allows the user to print multiple files without running the program multiple times. Most of the remainder of the program is in this loop, starting with getting a fresh display on the monitor with the CLRSCREEN procedure. There are some differences between Apple][and Apple /// Pascal, one of which is that the PAGE command does not clear the screen on the Apple ///. The CLRSCREEN procedure was written to work on either system.

The user is prompted to identify the file to be printed. It is highly desirable to minimize operator requirements and chances to make fatal mistakes; therefore the following features were implemented. If the workfile is to be printed, only WRK needs to be entered. For other TEXT files, the .TEXT in the name can be eliminated and procedure FIXNAME appends ".TEXT".

To eliminate fatal errors due to user mistakes (such as entering an incorrect file name or not have the correct disk in the drive), I/O error checking is temporarily disabled. If the file is not found, a message is displayed, the program continues to run, and the user is given the opportunity to correct the name or insert the proper disk. If the proper file is found, the program continues by calling procedure SELECT, a menu routine to select the desired options. This may be the most important procedure in the program, as it provides a framework of a menu selection routine which can be used in many of your own programs. Using the editor, you can set markers at the beginning and end of the procedure, then save the file. While editing the program you are developing, use the option to copy from between markers in a file. Modify the choices and actions in the menu to fit your program.

The menu procedure SELECT also shows the value of the UCSD p-system editor. The unfortunate souls who program in BASIC may consider that the amount of writing in PASCAL is excessive. But as with this procedure, the programmer can enter the shell of similar statements once, copy it the number of times it is needed, then insert the text that is different. This was done for most of the statements in this procedure.

As shown in the accompanying program, SELECT is written for 80-column mode using the GOTOXY built-in procedure and the SHOW procedure. This makes for an easier to read menu than just listing the choices, and shows another virtue of working with PASCAL. To make it work in 40-column mode, eliminate the line which changes the value of X to 37. The SHOW procedure is very simple, but it does eliminate some unnecessary typing and provides the easy flexibility of changing between 40 and 80-column mode.

To eliminate the need for pressing the RETURN after entering a choice, a READ rather than READLN is used. Since the user may have been entering text in lowercase, the menu should accept responses in either case. While this could be handled in the CASE statement by looking for either case, I felt it would be simpler to convert all input to upper case as shown. For beginning PASCALers, the CASE statement has nothing to do with upper or lower-case and should have been called the CHOICE statement.

The special print features desired were the capability to print emphasized print, double strike print, double width print, or some combination of these. These features are not normally desired in drafts, where double spacing is usually nice to have. Also, I absolutely did not want to waste time with remembering and inserting control codes in the text and having to change between draft and final copies. Additional options provided are to change the number of lines on a page and to print page numbers with or without the file name.

When the option to print the file is selected, procedure PRINTOUT is called. PRINTOUT checks boolean variables to determine what options have been set from the menu in SELECT. Control characters are sent to the printer and page headings are printed as necessary. The input file is read a line at a time and

contd.

printed. Blank lines are printed between lines of text when double spacing has been activated. Lines are counted and new pages are started by procedure PAGECHECK.

After using other print programs and word processors it was clear that a capability to stop printing once it had started without doing a RESET was essential. It is implemented in PRINTOUT using the KEYPRESS function that the APPLESTUFF unit provides in the Pascal SYSTEM.LIBRARY. A check is made after printing each line to determine if a key has been pressed. If the ESC key was pressed, printing will stop after the contents of the printer buffer are printed.

After printing the file, or if the ESC key is pressed during printing, the program will prompt for another file name. If the user presses RETURN, the program stops running.

After compiling the program, save the code file on your boot disk so it will always be readily available. One of the best features of this program is that if you don't like the options, or want more, it is easily modified by adding the appropriate sections to the menu selection and activating control codes. For those who want the capability but do not have the time to enter the code, send me $5 (Jerry Crawford, P.O. Box 3298, Ft. Stewart, GA 31314) and I will provide both source and code file, or wait for it to appear on a PIG library disk.

Happy printing.

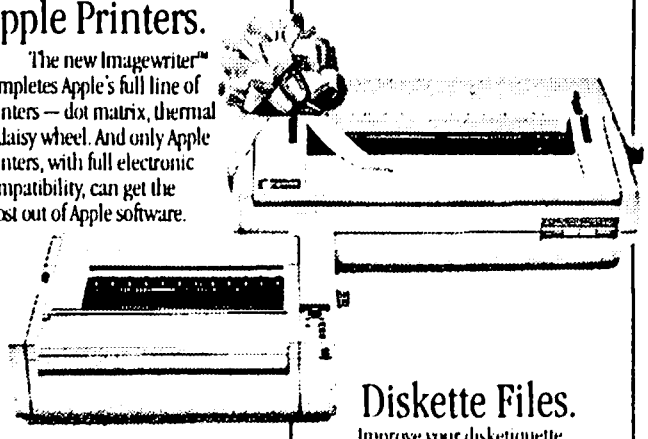
```
PROGRAM PRINT;
(* Printing program with options for MX-80/100.  Jerry Crawford 15  Aug 83    *)

USES APPLESTUFF;

VAR
   FILENAME: STRING; { Name of file to be printed }
   PRINTER, INFILE: TEXT;
   BOLD, DOUBLESIZE, DOUBLESTRIKE,
    PRINTNUMBER, PRINTNAME, DOUBLESPACE : BOOLEAN;
   ESC, ANS : CHAR;
   I, LASTLINE : INTEGER;

PROCEDURE SELECT; FORWARD;

PROCEDURE INITIALIZE;
{ Set variables to initial value }
BEGIN
  ESC := CHR(27);
  BOLD := FALSE;
  DOUBLESIZE := FALSE;
  DOUBLESTRIKE  := FALSE;
  PRINTNUMBER := FALSE;
  PRINTNAME := FALSE;
  DOUBLESPACE := FALSE;
  LASTLINE := 55;
  { Make sure printer is on to receive control characters }
  WRITELN('PRINT PROGRAM-');
  WRITELN('TURN ON PRINTER TO CONTINUE');
  WRITE( PRINTER, ESC,'F');
  WRITE( PRINTER, ESC, CHR(72) );
  WRITE( PRINTER, CHR(20));
END;

PROCEDURE CLRSCREEN;
{ This procedure required to clear the screen in Apple III Pascal.
  It can be replaced with a simple PAGE(OUTPUT) or left intact in
  Apple II Pascal. }
VAR CODE : INTEGER;
BEGIN
   CODE := 28;
  UNITWRITE( 1,CODE,2);
  PAGE( OUTPUT );
END;

PROCEDURE FIXNAME;
{ Checks for .TEXT on file name and adds it if required. }
VAR CHECK1, CHECK2 : INTEGER;
```

contd.

THE COMM CENTER

Apple Printers.

The new Imagewriter™ completes Apple's full line of printers — dot matrix, thermal & daisy wheel. And only Apple printers, with full electronic compatibility, can get the most out of Apple software.

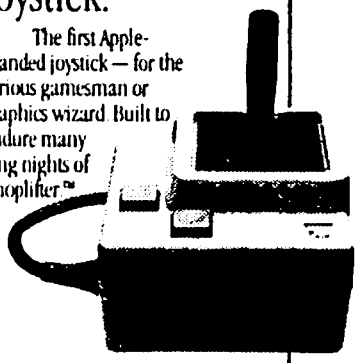


Disk II Drives.

Everybody needs more storage space, especially people who've been struggling along with one drive or (perish the thought) a cassette recorder.

The Apple Joystick.

The first Apple-branded joystick — for the serious gamesman or graphics wizard. Built to endure many long nights of Choplifter.™

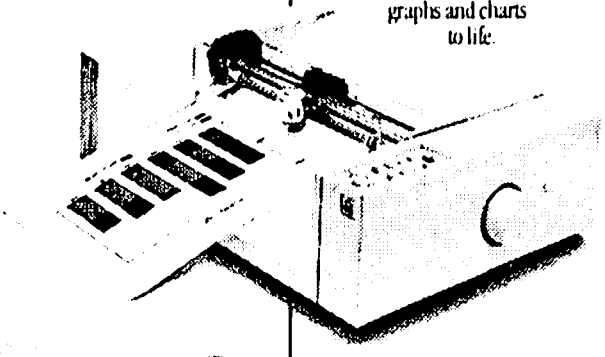


Diskette Files.

Improve your disketiquette with our smoked plexifile or economical book-sized binders.

The Apple Color Plotter.

Plot a course to successful presentations. Apple's new Color Plotter automatically changes up to four brilliant colors on paper or transparencies as large as 11" x 17" to bring graphs and charts to life.

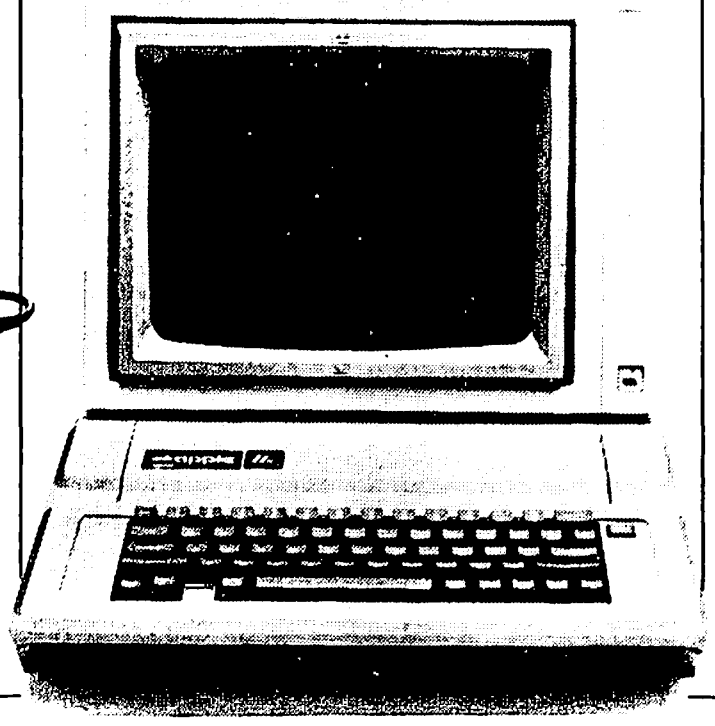


Numeric Key Pad.

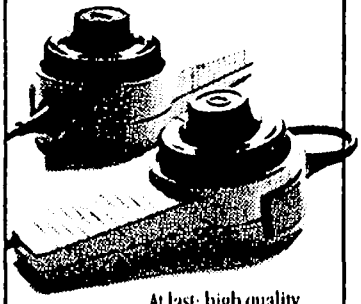
Let your fingers do the thinking with a calculator-style keypad for the Apple IIe. Includes cursor control keys. Great for VisiCalc.® Easy to install.

The Apple Monitor II.

A brand-new monitor that makes programs worth watching. Text is clearer with a high contrast, anti-reflective tilt screen that's a feast for the eyes.



Game Controllers.



At last: high quality, well-engineered controllers that can stand up to all-night sessions of Pin Ball Construction Set.™ For those serious about playing around.

apple® Authorized Dealer

Apple and the Apple logo are registered trademarks of Apple Computer Inc.
© 1983 Apple Computer Inc.

THE COMM CENTER

LAUREL PLAZA
Route 198, Laurel, MD
792-0600 953-9535

SEVERNA PLAZA
Ritchie Highway
Severna Park, MD
544-5252

Both locations open
10 a.m. to 8 p.m. weekdays
10 a.m. to 5 p.m. Saturday
Closed Sunday

```
BEGIN
   CHECK1 := POS ( '.TEXT',FILENAME);
   CHECK2 := POS ( '.text',FILENAME);
   IF ( CHECK1 = 0) AND ( CHECK2 = 0) THEN
     FILENAME := CONCAT (FILENAME, '.TEXT' );
END;

PROCEDURE SKIP(N: INTEGER);
BEGIN
   FOR I := 1 TO N DO
      WRITELN(PRINTER, ' ')
END;
PROCEDURE PRINTOUT;
CONST
   TOPMARGIN = 2;
   BOTMARGIN = 2;
   PAGELEN = 66;

VAR
   PAGENUM, LINENUM: INTEGER;
   LINE: STRING;

  PROCEDURE PAGECHECK;
   { Check if last line has been printed and go to next page if
     required }
  BEGIN
    IF LINENUM >= LASTLINE  THEN
    BEGIN
      PAGE ( PRINTER );
      LINENUM := 0
    END;
  END; { PAGECHECK }

BEGIN { PRINTOUT}
   CLRSCREEN;
   WRITELN(' PRINTING ', FILENAME );
   WRITELN;
   WRITELN(' Press ESC to stop printing');
   PAGENUM := 0;
   LINENUM := 0;
   WHILE NOT EOF(INFILE) DO
   BEGIN
      IF LINENUM = 0 THEN
      BEGIN { Establish top and bottom margins and print headings as
              appropriate }
         SKIP(TOPMARGIN);
         PAGENUM := PAGENUM + 1;
         IF PRINTNAME THEN WRITELN(PRINTER,FILENAME: 22, ' ':  48, 'PAGE ',
           PAGENUM)
         ELSE IF PRINTNUMBER THEN WRITELN( PRINTER,' ':70,'PAGE ', PAGENUM);
         SKIP(BOTMARGIN);
         LINENUM := TOPMARGIN + BOTMARGIN + 1
      END;
      READLN(INFILE, LINE);
      IF DOUBLESIZE THEN WRITE(PRINTER, CHR(14) );
      WRITELN(PRINTER, ' ', LINE);
      LINENUM := LINENUM + 1;
      PAGECHECK;
      IF DOUBLESPACE THEN
            BEGIN
               WRITELN(PRINTER,' ');
               LINENUM := LINENUM + 1;
               PAGECHECK;
            END;
```

contd.

```
      { Stop printing if ESC pressed }
      IF KEYPRESS THEN
      BEGIN
        READ( KEYBOARD, ANS );
        IF ANS = ESC THEN EXIT (PROGRAM)
      END;
    END;
    IF LINENUM > 0 THEN PAGE (PRINTER)
END;

PROCEDURE CHANGELINES;
{ Change number of lines per page }
BEGIN
  WRITELN;
  WRITE( 'ENTER NUMBER OF LINES PER PAGE: ');
  READLN( LASTLINE);
END;

PROCEDURE SELECT;
{ Select options of how to print }

VAR OPTION : CHAR;
    X,Y    : INTEGER;

   PROCEDURE SHOW ( LINE : STRING );
   BEGIN
     GOTOXY( X,Y); Y:=Y+1;
     WRITE( LINE );
   END;

 BEGIN
  REPEAT
    CLRSCREEN; Y := 3; X:=0;
    WRITELN(  ' PRINTING OPTIONS FOR FILE  ', FILENAME);
    WRITELN( '     MULTIPLE OPTIONS PERMITTED');
    SHOW('A  PRINT THE FILE');
    SHOW('B  DOUBLE SPACE ');
    SHOW('C  PRINT FILENAME AND PAGE NUMBER ');
    SHOW('D  PRINT PAGE NUMBER ');
    SHOW('E  EMPHASIZED  PRINT ');
    { Remove this line for 40 column display}X := 37; Y:= 3;
    SHOW ('F  DOUBLE STRIKE  PRINT ');
    SHOW ('G  DOUBLE SIZE PRINT ');
    SHOW ('H  CHANGE LINES PER PAGE (NOW '); WRITE(   LASTLINE,')');
    SHOW ('I  STANDARD PRINT, ELIMINATE OPTIONS');
    SHOW ('Q  DO NOT PRINT, QUIT                ');
    GOTOXY( 0, Y+1);
    WRITELN( 'OPTIONS IN EFFECT: ');
    IF DOUBLESPACE THEN WRITELN( 'DOUBLE SPACE BETWEEN LINES');
    IF PRINTNAME THEN WRITELN( 'PRINT NAME OF FILE AND PAGE NUMBER');
    IF PRINTNUMBER THEN WRITELN( ' PRINT PAGE NUMBER');
    IF BOLD THEN WRITELN(  'EMPHASIZED  PRINT');
    IF DOUBLESIZE THEN WRITELN( 'DOUBLE SIZED PRINT');
    IF DOUBLESTRIKE THEN WRITELN( 'DOUBLE STRIKE  PRINT');
    GOTOXY( 0,21);
    WRITE( ' SELECT OPTION, PRINT, OR QUIT: ');
    READ (  OPTION );
    {Convert input to upper case if required}
    IF OPTION IN ['a'..'z'] THEN OPTION := CHR(ORD (OPTION) - 32);
    CASE OPTION OF
    'A' : PRINTOUT;
    'B' : DOUBLESPACE := TRUE;                                    contd.
```

```
    'C' : PRINTNAME := TRUE;
    'D' : PRINTNUMBER := TRUE;
    'E' : BEGIN
            BOLD := TRUE;
            WRITE( PRINTER, ESC,'E');
          END;
    'F' : BEGIN
            DOUBLESTRIKE := TRUE;
            WRITE( PRINTER, ESC,CHR(71));
          END;
    'G' : DOUBLESIZE := TRUE;
    'H' : CHANGELINES;
    'I' : INITIALIZE;
    END; { CASE }
  UNTIL OPTION IN ['A','Q'];

END;

BEGIN { Main program }
  REWRITE( PRINTER, 'PRINTER:');
  INITIALIZE;
  REPEAT
    CLRSCREEN;
    WRITELN;
    WRITELN( 'ENTER NAME OF FILE TO PRINT ');
    WRITELN( ' ( ".TEXT" MAY BE OMITTED, ENTER "WRK" FOR SYSTEM.WRK.TEXT)');
    WRITE( 'PRESS  RETURN TO QUIT : ');
    READLN(FILENAME);
    IF FILENAME<> '' THEN
    BEGIN
       IF ( (FILENAME ='WRK') OR (FILENAME = 'wrk') ) THEN FILENAME :=
       'SYSTEM.WRK.TEXT' ;
       (* Ensure FILENAME has .TEXT appended *)
       FIXNAME;
       (*$I- *) { Disable I/O error checking to prevent fatal error
                  if file not found. }
       RESET(INFILE,FILENAME);
       IF IORESULT <> 0 THEN
       (*$I+ *)
         BEGIN
           WRITELN;
           WRITELN( 'UNABLE TO FIND REQUESTED FILE');
           WRITELN(' PRESS RETURN TO CONTINUE');
           READLN;
         END
         ELSE
         BEGIN
           SELECT;
           CLOSE(INFILE)
        END;
    END; {FILENAME <> '' }
  UNTIL FILENAME = '';

  CLRSCREEN;
  CLOSE( PRINTER );
END.
```

1001 BINARY TALES SIX ASSEMBLERS REVIEWED

by Raymond Hobbs

I'm not wild about reviewing products. You can make enemies fast in this game, if you say something bad. And if you say something good, the authors figure it was just their due. Also, users' tastes differ to a considerable extent. Some features are really important to me, but perhaps not to you (and some features that you may not be able to live without, I don't ever use). In the ASMSIG, we have not centered around any particular assembler - we have users of 5 different packages.

I will review 6 assemblers here, but before I begin, you should know that my own prejudices are undoubtedly running rampant through the reviews. So here are my biases and my programming style:

1. Documentation - I'm a timid computer user - definitely not a hacker - so I read everything before I do anything. I don't do well with "hands on" manuals. I like a short, concise tutorial, a thick, detailed reference with a good index, and a good quick-reference card.

2. Editor - I'm a fairly fast touch-typist, so I prefer rapid entry (in 80 columns) and good facilities for cleaning up later.

3. Assembler - The more information generated, the better. Macros a must.

4. Miscellaneous - a) I believe in data interchange, so I like all produced files to be standard text or binary. b) It is handy to keep a copy of the assembler on the program development disk, so I dislike having to deal with copy-protected packages. c) "User-Friendly" can easily become "User-Insulting", if it is necessary to wade through tons of menus, warnings, "suggested entry" prompts and whatnot. After a short while with such a package, I just wish it would leave me alone and let me get on with my work.

Now that my own likes and dislikes are on record, let's get on with reviews of 6 assemblers. Prices listed are what I found, rounded off. You can probably find a range of prices for most of these products. The 6 assemblers are:

A. MASM (WAP Disk Volume 41 - $5)

If there are Pintos and Porsches among assemblers, then MASM is a '49 DeSoto. It will get you there, but not with speed and style. But, hey. It's a $5 assembler, which is quite a deal. Here's what it's like:

1. Documentation - Sparse is the word which comes most readily to mind. The documentation is contained on 9 screens of data, one of which is devoted to credits. In real terms, that means that MASM's documentation is about 2 typewritten pages. It is not generated as hard copy, but you can get it on the printer (see this column for March, 1984) if you make a few changes to the code. There is no real tutorial, but the reference section does include terse but complete information on file access, assembler commands, psuedo-opcodes, source format and how to live with several of MASM's eccentricities (like the fact that you have to enter periods (.) in code).

2. Editor - Entering a source file is like assembly language programming of the early 60's. Everything must be in specific columns (you may tab with <Ctrl-I), line numbers must be entered manually, and comment line delimiters must be in column 7 (an asterisk is used for this purpose). There are no extended mnemonics of the 6502 instruction set, and psuedo-ops are limited to 6 memory and data definition commands. The editor commands allow source listings, disassembly, line deletion, line copying and line renumbering. Although MASM supports Sweet-16, the 3-digit opcode field may not allow entry of the POPD Rx operation. MASM does not support conditional assembly.

3. Assembler - I was pleasantly surprised with MASM's assembler. I expected very little information coupled with sluggish assembling, but what I found was a quick assembly with error messages and a symbol table generated. The performance in that respect was right up there with the more expensive packages. However, there is no provision for saving object code until you exit MASM, and Macros are not supported. The editor and assembler are co-resident.

4. Other - MASM is not copy-protected, and files are standard text and binary.

5. Conclusion - If the editor didn't fight you every step of the way, MASM could operate on a near-equal footing with Apple's Tool Kit (frills aside). However, the serious A/L programmer probably won't use MASM unless money is the prime consideration, and the novice will probably find the lack of detailed documentation a serious obstacle to constructing programs on MASM. On the whole, if money is a big factor, buy MASM and call somebody in ASMSIG to help you learn how to use it.

B. DOS TOOL KIT (Apple Computer, Inc. - $75)

Tool Kit is one of those mixed bags which are difficult to evaluate properly. Along with the Assembler/Editor, the price tag includes three other packages: the Applesoft Programmer's Assistant, the Hi-Res Character Generator and the Reloading Loader. Although I don't do much BASIC programming anymore (and therefore have little use for the first two of these packages), it looks to me like another case of Apple making sure that the customer gets good value for the money - if you work in BASIC as well as A/L. But on to the assembler itself:

1. Documentation - This is one of the few manuals put out by Apple which takes a strictly no-nonsense approach. There are no puns - and also no tutorial. The manual is all reference, and as such is done well, with a good index and quick-reference card. The explanation of the source code format is not for novices - a few sample lines of code would clear it up considerably - but the appendices, chock-full of useful information, are a real treat. The Tool Kit reference manual was the best one I looked at.

2. Editor - Like MASM, Tool Kit uses a line-oriented editor. Line numbering is automatically generated, and the space bar tabs to the correct column for labels, opcodes, operands and comments. Tab settings can be changed if desired. Comment lines are delimited by a semicolon in the label field. Output can be sent to any sensible slot, such as a printer or an 80-column card. If an 80-column file is to be listed on a 40-column screen, wraparound can be turned off by truncating the excess over 40 columns. Tool Kit allows

contd.

twice the psuedo-ops that MASM does, and supports extended mnemonics for the 6502 instruction set. Standard editing features (line addition, deletion, insertion, copying and editing) as well as string searching and replacing are supported. There is provision for linked module usage, but the assembler has no linking loader. Source file chaining is supported. There are also provisions for formatting listings ("prettylisting"). All applicable DOS file commands can be invoked from the editor.

3. Assembler - The good news is that the assembler produces error messages (in code) and a symbol table during assembly. The better news is that Tool Kit produces relocatable code with the help of the Relocating Loader. The bad news is that the assembler is not co-resident with the editor. Source files are assembled from disk. Now, if you think that this isn't such a bad piece of news, consider the following scenario, in which d# stands for "disk access number": d1- load the editor, write the source file. d2- save the source file. d3- enter the assembler and load source file. 3 errors found in source code. d4- enter editor. d5- load source file, make changes. d6- save source file. d7- enter assembler and load source file. Assuming a successful assembly after the first changes, that's 7 disk accesses for the program, each one of which had to be keyed in. The way around this is to write error-free code. As far as the rest of the bad news, Tool Kit's assembler does not support macros, local labels or Sweet-16.

4. Other - Tool Kit has an online help facility in the editor, which is handy if you get lost (Tool Kit was my first Apple assembler, so I used the help facility a lot). It also allows temporary exits to the monitor (helpful to A/L hackers), and the disk isn't copy-protected. Files produced are standard text and binary. And there are the other goodies included in the package...

5. Conclusion - As a complete package, Tool Kit (with all the goodies thrown in) represents good value for the money to the once-every-so-often A/L programmer. The serious user, however, will be frustrated by the disk-based assembler and lack of macro facility. Novice users should beware of the lack of a tutorial. If any novices get this one, the ASMSIG hotline should be a busy place.

C. BIG MAC (Apple Pugetsound Program Library Exchange - $30)

NOTE: This assembler is available to members of A.P.P.L.E. only. The commercially available version of Big Mac, called MERLIN, is available from Southwestern Data Systems, $80. At either price, Big Mac (or Merlin) is a bargain. It takes you into the big league of micro-assemblers and lets you do many things that the boys on the mainframes do. Here's a taste of the big league:

1. Documentation - Big Mac is fully documented with a short tutorial, quick reference card and a lengthy reference section. The documentation is a little choppy, since Big Mac itself is really a collection of utilities (assembler, editor, disassembler, and add-ons). The documentation, which is an edited collection of articles and utility guides, reflects this. NOTE: The documentation for Merlin may be completely different, as I have never read it.

2. Editor - Big Mac's co-resident system has a monitor (menu) controller, called "Exec Mode". That is where you start when you run Big Mac, or when you leave the editor or assembler. Exec mode allows a full range of disk operations (Load, Save, Append, etc.) and entry into the Editor. The editor proper accepts standard source code entry format, with automatic line numbering and space bar tabbing (which may be reconfigured by the user for altered column width, or even the tab key itself). Big Mac comes ready to roll in 40 columns, but can be reconfigured to run in 80 columns with upper/lower case text entry. There are several "prettylisting" commands provided. A minor irritation to me is the use of the slash (/) character as a comment line delimiter, while the semicolon is used to delimit comments within lines. I would prefer to have the same character for both. Editing itself is made as easy as a line-oriented editor can get, and functions provided include adding, replacing, inserting, finding, changing, deleting, copying and moving. With those functions there isn't much you can't do. The use of Sweet-16 code is supported, as well as local labeling.

3. Assembler - Big Mac provides enough assembler directives and psuedo-opcodes to generate pretty flexible program modules and listings. Macro assembly is supported, as is conditional assembly. Error messages are provided during assembly, and a symbol table is produced after assembly. The value of co-residency becomes apparent in the debugging process, by the way. After you get all the error messages (you did jot them down, didn't you?), you just slip back into the editor and make the appropriate changes, then reassemble - your source code file remains in memory all the while. You can also duck out of Big Mac temporarily to test run your program (Big Mac provides a re-entry vector on page three for this purpose), but you should be careful of two things if you do this. First, be sure that your program, when run, will not clobber Big Mac itself. Second, if your program uses DOS, be aware that Big Mac runs under a modified DOS.

4. Other - An included utility, called "The Sourceror" provides a disassembly function which improves upon that normally available in the Apple monitor. A small macro library is also included, principally as a guide to writing macros. One interesting inclusion is ar explanation of Sweet-16 in an article by Steve Wozniak. I don't use the code myself, but the article is interesting. Several other utilities are also included, such as the mini-assembler, floating point routines, multiply and divide routines and other goodies. Big Mac supports the language card, and with it you get several more facilities available, such as nested macro capability and keyboard entry of labels during assembly. Although Big Mac does not generate a cross-reference during assembly, there are instructions in the documentation showing you how you can generate your own, with Big Mac's help. There is a symbolic debugger available as an extension, but I will talk about debugging in a future article.

5. Conclusion - Whether you are a novice or a professional, Big Mac is a good buy. There are few frills in the package - mainly it's just a darn good assembler. Its main drawbacks are lack of a linking loader and the ability to pass string parameters to its macros.

D. S-C Macro Assembler (S-C Software Corporation - $60)

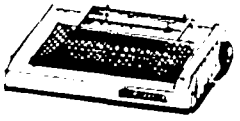
The S-C Assembler is one of the two entrants into the "get the novice online" category. My question to such packages is "How long before the novice outgrows you?". Happily, the S-C Assembler will stay with most A/L programmers for a long time, providing them with many big-league features. On the other hand, there are a few snakes-in-the-grass. Here's the rundown:

1. Documentation - S-C starts off with a nice tutorial, which puts the user online fast. It is only 4 pages, and therefore leaves you without much sophistication, but you are off and running, and ready for the extensive (48-page) reference section. Next comes a

contd.

SPECIAL!
Limited Time Only
Gemini-10X

Incredible print quality, 120 cps, friction and tractor, dot graphics.



$289.00

THE MICRO CONNECTION

LOWEST PRICES AROUND! HERE'S WHY:

...We Don't Play Games with Your Money!

1. **3 STORE LOCATIONS**
2. **LARGE VOLUME BUYING**
3. **LOW OVERHEAD**
4. **SUPPORT & SERVICE**

SOFTWARE SPECIALS
Prices Good thru April 15, 1984

Tax Advantage — Apple	$60	Tax Wizard — Apple	$49
Tax Preparer — Apple	$192	Tax Manager — Apple	$153
Home Accountant — Apple	$59	The Handler	$110

COMPUTER HARDWARE

• DISK DRIVES

Disk Drive — Rana	$279
Dana Disk Drive — Apple	$239
10 MB Hard Disk — Corvus	$2,295

• MODEMS

H. Micromodem IIe, II+	$269
Anchor — MK XII	$399
Hayes S/M — 300	$225
Apple Cat II	$269
Smart Model 1200 — Hayes	$499

• SOFTWARE

Zaxon	$32
Master Type	$32
Multiplan	$189
One-On-One	$34
Sensible Speller	$99
Ascii Pro	$109
Koala Pad	$99
Flight Sim II	$43
Flip n' File — 5¼"	$19

• COMPUTER SYSTEMS

Franklin Ace 1200 Sys.	$1,899
Corona PC-2	$2,695
Franklin Fam. Pac	$1,099

• PRINTERS

Gemini Delta	Call
Epson FX80 (160 cps)	Call
Epson 12x80	Call
Gemini 15	Call
Okidata 92P	$449
Epson FX100 (160 cps)	Call

• ACCESSORIES

System Saver	$69
Applicard + Wordstar	$399
16K RAM Card (M/Soft)	$78
Computer Desk	$125
80 col. crd. (Videx)	$250
Micro-Buffer II — 16K	$179
Comp. Paper (9½ x 11)	$19
Kraft Joystick	$49

• DISKETTES

Wabash (SS/SD)	$20
Verbatim (DS/DD) (10)	$40

• PRINTERS

Gemini 15X — 120 cps	Call
Grappler + (No Buffer)	$130
Par. Interface	$79
Grappler + 16K Buffer	$199
Okidata 93P	$729

• PRINTERS (Ltr. Qual.)

Gemini Protype	Call
Silver Reed — Exp 550	$599
F-10 (35 cps)	$1,195

• MONITORS

Gorilla GRN — 12"	$99
Gorilla — Amber 12"	$125
AMDEK 300G — GRN	$159
AMDEK 300A — Amber	$165
Color 1 13" (AMDEK)	$299

All orders subject to product availability. Merchandise cash prices listed — credit cards 3% extra.

3 FRIENDLY LOCATIONS TO SERVE YOU

Store Hours: 10 AM to 6 PM Monday thru Saturday

DON'T OVERPAY — CALL THE DISCOUNTERS AT:

THE MICRO CONNECTION

320-A MAPLE AVENUE, EAST
VIENNA, VA 22180
281-1866

6192 FRANCONIA RD.
ALEXANDRIA, VA 22310
971-5800

8228 FENTON STREET
SILVER SPRING, MD 20910
495-5960

quick tutorial on 6502 programming itself, then another tutorial, this time on Sweet-16. The 6502 and Sweet-16 tutorials are a nice touch, but I think that the size of the 6502 tutorial should be tripled, at least (it is 14 pages). The quick-reference card is handy and quite complete. Overall, good marks for documentation.

2. Editor - the style of the line-oriented editor is that of BASIC. Line numbers are entered either semi-automatically by tabbing (<CTRL>-I) or manually. Autoincrement defaults to 10, but this can be changed. Notice how these features take care of text insertion in the editor. If you need to insert more code, just manually key in line numbers to fit the code where you want it. This requires some pretty decent coding on paper, however, since the defaults allow for insertion of only 9 lines of code without renumbering previously entered lines. Field tabbing is done with <CTRL>-I, which I find annoying (I like to use the space bar). If you grow up with it though, I guess it's O.K. (You may change the tab character by inserting the ASCII code for it at locations $100F-$1014, but this may result in poorly-formatted screens.) Comments within a line have no delimiters other than field assignment, but comment lines must be delimited by <ESC> L. This is another thing that you can probably learn to live with if you grow up with it. There are provisions for normal LOADing and SAVEing of source and object files (standard format), as well as APPENDing source files. This last operation, however, plays with the editor's pointers and makes it possible for the user to get himself/herself into trouble unless he/she thoroughly understands S-C's way of appending files and resetting pointers. Editing functions include the standard text insertion and deletion, plus copying, searching and replacing. Printer interfacing and prettylisting are supported, but 80-column format is not. S-C will handle Sweet-16.

3. Assembler - S-C is a coresident assembler. It supports macro assembly and local as well as private macro labeling. The macro facility is limited in the same way that Big Mac's is, namely that you cannot pass string parameters to a macro (in other words, a macro called "HEADER", for example, would have to have the text embedded in the macro to output it - you could not pass it the header to be printed. If errors are encountered during an assembly, error codes (with locations) are printed, but no symbol table will be generated. I would like to have error messages instead of codes, or have the codes on the quick-reference card, but if you learn on this assembler, I'm sure that the meanings of all the error codes will be firmly imprinted on your brain before long. A nice feature of S-C is the "MGO" command, which will test run your program after it has been assembled. S-C protects its own memory and has a standard DOS, so you should not run into trouble using this facility, and it is a help in debugging. Conditional assembly directives are available, along with a somewhat reduced set of psuedo-ops for memory and data definition.

4. Other - S-C allows you to pop in and out of DOS and the Apple monitor at will. When getting listings, macros can be listed as called, or supressed (this helps to keep listings manageable). An INCLUDE facility is provided for calling in external source files during assembly. S-C has included a small macro library (probably also for instructional purposes).

5. Conclusion - S-C is an assembler that a novice can purchase and be comfortable with from day one to a long way down the pike. Serious A/L programmers will eventually want to have a more powerful assembler, and if you are not a novice, the considerable tutorial benefits of S-C will be largely wasted. It looks like a good buy for the beginner who wants an assembler he can use for a long time.

E. LISA 2.5 (On-line Systems - $80)

LISA is the other entrant in the tutorial world, and operates with much the same BASIC-oriented philosophy that S-C does. LISA boasts some powerful features in its assembler, but must also confess to some serious shortcomings, some of which are excusable, some not. Here's the scoop:

1. Documentation - This is one of the inexcusable shortcomings. LISA's tutorial is broken into parts - chapters 2, 3 and 8, with a short tutorial on Sweet-16 in Appendix I. The tutorials are pretty good. The reference section (chapters 4-6) is also pretty good. What's the problem, then? The Table of Contents is quite terse (16 total words), and there is no index whatsoever! There is also no quick-reference card. That means that whatever you want to check up on, you must hunt for it throughout the manual. I was able to find my way around (though not without difficulty), but I knew what I was looking for before I started. I also rearranged some of the material in the loose-leaf manual so that it made some sense. It is also worth noting that there were 2 Appendix D's (different topics) and quite a lot of material for which there was either no reference or no referrant. This was balanced by the fact that there were disk files for which there was no mention in the documentation. Suffice it to say that the documentation should prove to be confusing, particularly to the targeted customer - the novice.

2. Editor - LISA is another coresident assembler. Upon entering, you are in "Command Level". From Command Level, you can perform all DOS commands, plus activate any input or output device or EXEC a file. Due to LISA's eccentric way of file handling, you will find yourself EXECing frequently if you wish your source files to interface with anything outside of LISA. This is because LISA's files are nonstandard, but can be modified into text files which can be read by other programs, but not by LISA until they are changed back. Confusing? You bet. From Command Level you also enter the line-oriented editor proper. Editing commands include INSERT, DELETE and MODIFY. It's not as sparse as it sounds, because these commands can contain arguments to accomplish the usual range of editing chores. However, you are particularly limited when it comes to character or word editing, and cursor movement is extremely limited. With editing features this primitive, the first inclination is to use some other (any other) text editor to enter the code, then load it into LISA and assemble it. But remember, LISA cannot read standard text files, and we must EXEC the files into LISA-compatible files. When this is done, however, another feature of LISA's editor is encountered - LISA checks syntax upon entry. This means that unless your files are letter perfect with respect to LISA syntax, an error will be flagged at each offending line, and entry is halted while the error is corrected. The bottom line is, if you plan to use any other text editor besides LISA's, you had better get it right the first time. To say the least, LISA's editor is disappointing, even if it does support Sweet-16 (in a nonstandard format), local labels and extended 6502 mnemonics.

3. Assembler - The assembler is where LISA really shines. Since all syntax checking has been done during editing (where a compressed code was generated, forming LISA's nonstandard source file), assembly takes place in a heartbeat. I didn't have time to light my pipe during assembly of my test program (I hardly had time to pick it up). Another crowd-pleaser is the number of assembler directives and psuedo-ops recognized by LISA - 14 for memory and data definition alone, 34 in all, counting program location, prettylisting, source code chaining, conditional assembly

contd.

and DOS commands within (!) the program listing. Add to this an included symbol table generator, cross-reference listing, disassembler and tracer/debugger (supported by the language card), and you have a pretty good assembler, even if it doesn't handle macros.

4. Other - There are 10 files mentioned somewhere within the maze of LISA's documentation as being included in the package. Some are disavowed, some on the disk but not in the manual, some referenced in the manual but no referrant found, etc. I have no space here to list all of this, but I have a list of all files and references at my office. If you have (or get) LISA and you want to know about these files, call me and I'll give you the info.

5. Conclusion - Where LISA is good, it's very good, and where it's bad, it's very bad. I think that there are tradeoffs all along the line - except in the manual. The material is there, if you can dig it out, but it is not well-organized, and there is no index to help you along. The lack of a quick-reference card is another demerit. I cannot recommend this package.

F. ORCA/M (Hayden Software - $150)

At almost twice the price of the next most expensive package, ORCA/M had better be good - and it is. No preamble here, just the review:

1. Documentation - The tutorial section (5 chapters, 100 pages) explains the basic features of ORCA, teaches you how to use them and gives a short summary reference to those features. This tutorial would provide a complete reference section in itself, were it not for the advanced features of ORCA. A novice will tend to bog down a bit in the tutorial - the assembler is not really intended for greenhorns. The next 70 pages, plus a couple of the 7 appendices form the detailed reference sections on using all the features of ORCA, with emphasis on programming style, use of macros and data structures. Given the target user profile, the documentation (including a detailed quick-reference card, sourcecode listings of the assembler itself and the macro and subroutine library listings) is very good. The Table of Contents would provide an excellent index for most assemblers, and ORCA's index is almost as long as Tool Kit's entire reference section. The whole manual runs about 230 pages of no-nonsense information.

2. Editor - Like most coresident assemblers, ORCA starts off in the system monitor program. From there, you can enter the editor or the assembler, or choose between the 18 disk access commands. There are other miscellaneous options, also, such as printing files, checking memory and so forth. In edit mode, text may be entered, deleted, inserted, copied, string searched, string replaced, all in character or line specific commands operating in full-screen mode. A VIDEX 80-column card is supported, as is upper/lower case. If you have another 80-column card, you should reconfigure ORCA to accept it. The system should be configured, anyway, to recognize your system environment. The way you do this is to load ORCA's source code and assemble it into an executable object image. In this manner, ORCA acts somewhat like a minicomputer assembler (must be layered onto the system), which is assembled, linked and loaded into an executable image at installation. As to the editor itself, if you are used to line-oriented editors it takes a little getting used to, but the convenience of full-screen editing makes it worthwhile. A separate tutorial is provided for ORCA's editor. Field formatting is easy, with automatic line numbering and column alignment. Comment lines must be delimited with a semicolon, but comments within a line may follow the operand freely without a delimiter. I generally tab over and use a semicolon, anyway, for consistency.

3. Assembler - ORCA's assembler supports full-capability nested macros, local labels and extended 6502 mnemonics. It also has 19 psuedo-ops for data and memory definition, as well as directives for conditional assembly, prettylisting, subroutine formatting, program and file management and chaining. A macro library of 149 utilities is provided. Assembly will generate error messages, global and local symbol tables, subroutine tables and data area tables. These may be suppressed if desired. All object modules are produced in relocatable form if desired, so that they may be linked by the linking loader into an executable object image. The commands controlling this process allow for assembly alone, assemble and link, link and run or all three together. ORCA looks itself like (and forces you to begin to program in the style of) the mainframe and minicomputer assemblers. Thus, you can assemble and link together programs of enormous size (ORCA itself consists of more than 38,000 lines of commented code).

4. Other - Since linking occurs after assembly, ORCA doesn't care where the object code came from. Thus, it can link A/L object modules with compiled modules from high-level languages, including FORTRAN, COBOL, etc. There is no debugging facility available, nor is there a disassembler. This is a little surprising to me, considering ORCA's strength in all other areas.

5. Conclusion - ORCA/M is not for the novice. Not only is the documentation pitched at the experienced A/L programmer, but there are a lot of places in ORCA's assembly process where you can bomb your program if you aren't careful. ORCA is not the most forgiving assembler around. However, for the experienced user, ORCA is the most powerful package I have seen. This is the kind of assembler you use to write program generators, compilers and operating systems on. Recommended for the guy who wants the best, can afford it and is experienced enough to use it.

That completes the reviews. A quick-comparison chart follows:

	S-C MACRO	LISA 2.5	MASM	TOOL KIT	BIG MAC	ORCA/M
DOCUMENTATN.	good	fair	poor	fair	good	excl
Quick Ref.	excl	none	none	good	good	excl
Tutorial	good	good	none	none	fair	good
Reference	good	fair	fair	good	good	excl
EDITOR	good	poor	poor	good	good	excl
Line/Screen	line	line	line	line	line	screen
80-Col	no	no	no	yes	yes	yes
Std. Files	yes	no	yes	yes	yes	yes
DOS Commands	all	all	3	3	7	all+
Sweet-16	yes	(yes)	yes	no	yes	no
Prettylist	fair	fair	no	good	good	excl
Auto-Number	semi	yes	no	yes	yes	yes
ASSEMBLER	good	good	fair	fair	good	excl
Co-Resident	yes	yes	yes	no	yes	yes
Extnd. 6502	no	yes	no	yes	yes	yes
Memory/Data Psuedo-Ops	6	14	6	10	10	19
Cond. Asm.	yes	yes	no	yes	yes	yes
Macros	good	none	none	none	good	excl
Macro Lib.	fair	n/a	n/a	n/a	fair	excl
Local Label	yes	yes	no	no	yes	yes
Reloc. Code	no	no	no	yes	no	yes
Chain Srce.	yes	yes	no	yes	yes	yes
Link-Loader	no	no	no	no	no	yes
Run (Exec.)	yes	(no)	no	no	no	yes
Symbol Tbl.	yes	yes	yes	yes	yes	yes
X-Reference	no	yes	no	no	(yes)	yes
Error Code/ Message	code	msg	msg	code	msg	msg
OTHER	good	good	poor	excl	good	poor
16-K Card	yes	yes	no	yes	yes	yes
Help Fcilty	no	no	no	yes	no	no
Copy-Protct	no	no	no	no	no	no
Disassmblr.	(yes)	yes	(yes)	no	yes	no
Step/Trace	no	yes	no	no	no	no
Goodies	none	none	none	excl	good	none
OVERALL	GOOD	FAIR	FAIR	GOOD	GOOD	EXCL
RECOMMENDED FOR:	NOVICE	- - -	POORBOY	INTMDT	INTMDT	VET

( ) indicates a qualified yes or no.

OH . . . BY THE WAY

by John A. Love III

This short blurb is for you loyal fans of BEAGLE BROS. and, in particular, of their great product - the Global Program Line Editor (G.P.L.E.) by Neil Konzen (1982 version). The purpose of this small article is simply to correct an error in their documentation that addresses the movement of DOS to your Language Card.

Their documentation stipulates that two statements must be executed to move DOS after booting G.P.L.E. -

(1) BRUN DOS MOVER and, then
(2) BRUN PLE.DM

First, Statement (1) should read "BRUN PLE DOS MOVER" because only the latter exists on the disk. Second, Statement (2) is redundant once Statement (1) is executed because just BRUNning PLE DOS MOVER eventually BRUNs PLE.DM. No point in doing something twice!

The program statements to follow represent just my changes to or additions to the G.P.L.E. "HELLO" program (that is, there is other code not listed below that should remain the same). These changes/additions provide the appropriate screen prompts to effect the DOS move if you wish. It's not much, but every bit helps.

Oh ..... by the way, the lower case "g" stands for that opera star, the Ctrl-G, and the lower case "b" stands for a deliberately-placed blank for formatting the screen text.

```
120 PRINT CHR$ (4) "BRUN PLE.LC" : GOTO 150
140 PRINT CHR$ (4) "BRUN PLE.DM" : GOTO 200
150 PRINT "": PRINT "": PRINT "": INVERSE : PRINT
    "MOVE DOS TO LANGUAGE CARD (Y/NN)??";: NORMAL :
    INPUT "bbggggg";ANS$
160 IF ANS$ = "Y" THEN 190
170 IF ANS$ = "N" THEN END
180 TEXT : HOME : VTAB 12 : GOTO 150
190 TEXT : HOME : PRINT CHR$ (4) "BRUN PLE DOS
    MOVER": REM MOVES DOS & RUNS "HELLO" PROGRAM.
200 VTAB 5: PRINT SPC(15);: INVERSE : PRINT
    "DOS MOVED!": NORMAL
210 PRINT "ggggg": PRINT "ggggg" : PRINT SPC(6);
    ". . . . . WARNING . . . . .": PRINT ""
220 PRINT "<1> MAXFILES PERMITTED < 6."
230 PRINT "<2> INITIALIZED DISKS WILL NOT HAVE
    DOSbbbbbIMAGE ON THEM."
240 PRINT "<3> MUST EXEC FIX (FID, MUFFIN, RENUMBER)
    bbbbbTO RUN THESE PROGRAMS."
250 PRINT "<4> INTEGER BASIC HAS BEEN REMOVED."
260 PRINT "": PRINT "": PRINT SPC(7);: INVERSE :
    PRINT "TO UNDO MOVE, TYPE 'PR#6'." : NORMAL
270 PRINT "" : PRINT "": PRINT "": PRINT "": PRINT ""
280 END
```

Speaking of end, ...

ROBiNS Inc.

THE SMALL COMPUTER SUPPLIES STORE

SHOP BY PHONE

WE SHIP BY UPS

PRICES SLASHED ON RIBBONS!

[B=brand C=compatible]

Epson FX/MX/RX 80 [C]	3.95
Epson MX/FX 100 [C]	9.95
Prowriter/NEC 8023 [C]	3.95
Diablo Hytype 2 Film [C]	3.50
Diablo Hytype 2 Film [B]	4.25
QUME Film [C]	1.90
QUME Film [B]	2.80
QUME IV Film [C]	3.45
NEC 5500/7700 Film [C]	3.30
NEC 3500/2000 Film [B]	11.90

RELOAD YOUR OWN!

Diablo, QUME, NEC 7700 Film	1.50
Epson 80, NEC 8023, Itoh	1.95
Epson 100	3.95

PAPER

Clean Edge 18 & 20	$26.95
Labels 3-1/2x15/16 5k	16.00

6 Outlet Surge and Spike Suppressor 54.95

PRINT WHEELS

Diablo Plastic	$6.40
Diablo Metal	$41.50/49.95
Diablo 620	$11.40
QUME	$6.40/7.90
Smith-Corona TP-1	$4.90
Olivetti	$15.50
Olympia EC	$26.50
Brother	$24.95
Daisywheel II	$27.50
Head Cleaning Kit	$15.00

FLOPPY DISKS

5-1/4 ss/dd	
Sentinel	$22.50
Kybe, 3M, Verbatim	$26.50
Brown ds/dd	$29.95
Brown ds/(96 tpi)	$39.95

560-5900
8304 Hilltop Road
Fairfax, Virginia 22031
(Merrifield Area)

Hours: Monday thru Friday 9-5, Saturday 10-2

Let EFHutton talk to your computer.

- Huttonline Investment Briefs
- Hutton Research Information
- Electronic Mail

A new low-cost service will turn your personal computer into a powerful investment tool, using the same data communications facilities that E.F. Hutton uses in its worldwide network.

Contact **George V. Hart,** E.F. Hutton & Company
1825 Eye Street, N.W., Suite 1000
Washington, D.C. 20006
(202) 331-2587 or (800) 368-5811

EFHutton

68000 ASSEMBLY LANGUAGE PROGRAMMING: A Book Review

by Robert C. Platt

Apple's new Macintosh uses a different microprocessor than the 6502 used in the Apple][and ///. The Motorola 68000 used in the Mac has a different design ("architecture") than its predecessor, the 6502 chip. As a result, good books on 68000 programming are suddenly in demand. Unfortunately, such books are also in very short supply and can't be bought at general books stores such as Crown, Walden, or Dalton.

After reading three books on the 68000, my clear favorite is "68000 Assembly Language Programming" by Kane, Hawkins and Leventhal. (1981 Osborne/McGraw Hill, 400 pp. $18.95). It stands way ahead of "The 68000: Principles & Programming" by Leo Scanlon (1981 Howard Sams 237 pp. $15.95) and "68000 Microprocessor Handbook" by Gerry Kane (1981 Osborne/McGraw Hill, 116 pp. $9.95).

The "Assembly Language" book offers far more examples and far more detailed explanations than the other two books. It covers the microprocessor's architecture, addressing modes, arithmetic instructions, subroutines, tables, lists and input/output. Its coverage of input/output is far more detailed than the Scanlon book as it includes examples for both the 6820 PIA and the 6850 ACIA chips. (Note that if you are new to assembly language programming or plan to use the I/O routines built into the Mac's ROMs, this material may not be of immediate interest.) Both the Assembly Language book and the Scanlon book offer helpful introductory-level presentations of "exception processing," a feature that the Mac's ROMs use to communicate with user programs.

The Kane book is the least useful to a programmer. It appears to be written for circuit designers. All three books duplicate standard Motorola specification charts of the 68000's instruction set. However, the Scanlon book has an easy to use table for computing execution times for each instruction type. Yet, the Scanlon book omits any table which gives the machine language (hexadecimal) operation codes for the instructions in question. (Such tables are included in the other books.)

The last five chapters of the Assembly Language book are devoted to software development, a discussion of how to design and debug assembly language programs.

I found the Assembly Language book to be well written. The programming examples were carefully explained and adequately illustrate all major tasks. The book is also well-illustrated with helpful diagrams showing the effect of individual instructions.

A copy of "68000 Assembly Language Programming" is available for browsing at the WAP Office.

Paragon Technologies, Inc.

Paragon Technologies, Inc., offers classes in our laboratory in McLean:

Introduction to the Information Age (lecture)
Getting Started with the Personal Computer
Programming in the BASIC language
VISICALC
dBaseII
WordStar
Computer Fundamentals for Students I, II, III

All classes except where noted offer ample hands-on practice on Apple IIe's.

Call **556-9659** for a schedule or write to us at:

1350 Beverly Rd., Suite 220
McLean, VA 22101

VISICOLUMN: WAP Spreadsheet Templates

by Walton Francis

The WAP software library now has six disks containing spreadsheet templates. Each of these disks contains a number of programs which you can use PROVIDED that you already have one of the four commercial spreadsheet programs that read VisiCalc files, i.e. DOS text files in VisiCalc format. These programs are VisiCalc itself, THE Spreadsheet version 2.0, MagiCalc, and Multiplan (the latter only after you convert the files to VisiCalc format using the special utility included in Multiplan).

These disks offer two major benefits to users. First, if you need one of these programs it is a major convenience to get it from a disk rather than having to type it in yourself. Second, in some cases these programs will solve a spreadsheet construction problem which might otherwise have cost you many hours of your time. This is true even if you plan to tailor the program to your particular needs, since the canned template gives you a good start.

The first two disks have already been reviewed, but I describe them here to give you a full documentation in one place. The four new disks are particularly well documented (most templates are accompanied by a separate text file description on the disk) and for these we owe thanks to The Comm Center, which held a special exchange seminar in the fall of 1983. Nonetheless, the templates are of varying quality, and improvements are welcomed.

In addition to these disks, the club library contains a number of books chockfull of spreadsheet templates; but of course those must be typed in from scratch.

DISK 137: SPREADSHEET A--UTILITY

This disk was described fully in the June 1983 "A Page from the Stack" by Bob Platt.

It includes BASICALC, a rudimentary spreadsheet which will give you a rough idea of how a spreadsheet works and what it will do (this is the only program in the spreadsheet series which you can run without commercial software). Other highlights include an instructional program on BOOLEAN LOGIC, CHECKBOOK, COMMISSION SALES, EXPENSE REPORT, and REGRESSION templates, and several utilities which will print out VisiCalc formulas (rather than values) stored in each cell.

DISK 151: SPREADSHEET B--TAX

This disk, described by Roy Rosfeld in the February, 1984 WAP Journal, will handle most of your tax calculations for 1983. The templates are so large that a 64K Apple is necessary and a 128K machine desirable to take full advantage of the templates.

DISK 90: SPREADSHEET C--GENERAL BUSINESS

FEE ANALYSIS is a short template which a professional can use in calculating hourly and daily billing rates to cover overhead and downtime.

JOB PLAN is a series of templates for costing and tracking labor and materials. It is particularly appropriate for government contractors, since it conforms to federal accounting procedures. NIH GRANT FORM does a similar job for pricing grant proposals.

AMWAY is an order form useful to Amway salesmen.

SHIPPING calculates shipping rates and costs for containers of various sizes.

EDUCATIONAL TEMPLATES include the old horse and pasture trick, Boolean truth tables, Fibonacci's rabbits, and a word problem.

VIZBIZ is a check entry system which categorizes your expenses.

ATLURB is an urban growth and ills simulation model, accompanied by an Applesoft simulation of the same variables. It is poorly labeled and the only way to figure it out is to run both versions.

DISK 91: SPREADSHEET D--INVESTMENT

MONEY MARKET FUND enables you to set up separate budget accounts, and track interest accumulating to each, within one money market fund.

MONTHLY EXPENSE ACCOUNT tracks expenses by various categories (that disk 137 includes similar but more complex templates).

NET PRESENT VALUE and AMORTIZATION handle cash flow and mortgage calculations.

STOCK, BOND/CORP, and BOND/MUNI calculate before and after tax rates of return, basis, yield, and other pertinent statistics on your investments. Data from each of these can be included in SUM to summarize all of the data.

PORTVAL and MARKETDATA use the techniques of technical analysis to evaluate buy and sell decisions for stocks and bonds.

BUDGET is a budget planning and contingency analysis template for a complex scientific project. Unfortunately, it is not documented and difficult to figure out.

DISK 92: SPREADSHEET E--BUSINESS RECORDS

BUDGET is a quarterly tracking system, by category of expense, for actual vs. budgeted expenditures for a large organization.

ATTENDANCE is to keep track of employee hours, by month.

FORECASTING COMPARISON compares forecast to actual sales, by product.

PRODUCTION/INVENTORY is used to plan, and compare plan to actual, production and inventory.

SALES LEAD tracks the results of various advertising campaigns and shows which are most effective.

SHIPPING CLERKS LOG tracks daily output of shipping clerks and calculates productivity of each employee over time.

MAINTENANCE COST ACCOUNTING compares revenues, costs, and contribution to profits for each of several repair or service contracts.

GRADEBOOK is a simple template for keeping track of student scores and calculating final grades.

contd.

DISK 93: SPREADSHEET F--ACCOUNTING

This disk contains a series of templates, all by A. Schneider, which play "what if" scenarios and record actual results for a business. All of these templates appear professionally done and report statistics typically used in business profit and loss and annual statements, such as gross and net profit, cash flow, equity, and current income. Numerous ratios are calculated, such as year-to-year comparisons, return on equity, and liquidity.

THE BOTTOM LINE

These models are of varying quality, but we have included them all because even a simple model can be most helpful to a novice and even an expert spreadsheeter can learn from the efforts of others. We would especially like to get improved versions of these templates and others to fill obvious gaps. For example, we have almost no scientific models, and I am sure that the accountants and stock and bond investors among us have some very useful templates to share. Another obvious gap in the collection is a truly sophisticated and integrated checkbook/budget/tax records model.

SAVE YOUR APPLE II/II+
with a MACRO FUNCTION CARD
ADDS CAPABILITIES, KEEPS COMPATABILITY

GIVES STANDARD APPLE COMPUTERS 3 KEYBOARDS!
1. Standard keyboard
2. 70 FIXED MACRO function keys
3. 120+ USER DEFINABLE function keys

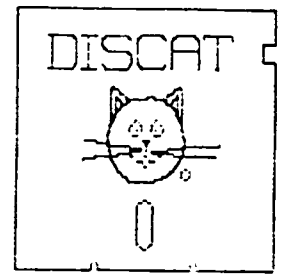
USER DEFINED KEYS MAY BE STORED AS DISK FILES
OVER 700 CHARACTERS MAY BE USER DEFINED
APPLESOFT AND CP/M FIXED MACRO KEYS PROVIDED
PROVIDES YOU WITH A 128 KEY TYPE-AHEAD BUFFER
GREAT FOR CUSTOMIZING KEYBOARDS TO SOFTWARE
COMES WITH MACRO CARD, SOFTWARE AND MANUAL
MACRO KEYS ARE TRANSPARENT TO SOFTWARE
EASY TO INSTALL. EASY TO USE. POWERFUL!

Best of all - the price: ONLY $75!*
Complete with 90 day warranty.

SYSTEMS SERVICES CO.
1125 SHANNON PLACE
HERNDON VA 22070
(703) 435-3896

DEALERS WANTED
* $60 to qualified handicapped persons.
Virginia residents add 4% sales tax.
Add $1.50 for shipping and handling.

GREAT PRICES
GREAT SELECTION
GREAT APPLE® SOFTWARE



© 1983

DISCAT . . .
the only well-organized computer diskette which is a *catalog* of software!

This unique menu-driven software catalog on a diskette is exceptionally user-friendly. Put it in your Apple® computer and up comes an extensive selection of software on your computer monitor screen, organized by publisher, category or name. You'll love the prices for software from **COMPUTER WARE UNLIMITED.** You can even erase the diskette and use it for your own work. It's a bargain that every Apple® user ought to have!

To order **DISCAT,** enclose $3 + .15 sales tax (if you are a Maryland resident) and send to:

COMPUTER WARE UNLIMITED
Dept. W2
P.O. Box 1247
Columbia, MD 21044

Name _____

Address _____

City _____ State____ Zip_____

No COD's or Charges Accepted

Apple® is a Registered Trademark of Apple Computer Inc

THE BOTTOM LINE

by Leon H. Raesly

I have been told many times that "time is money" (usually by a salesman trying to get me to buy a $2000 machine to do a job that takes me 30 seconds by hand!), AND I don't know if that statement is true or not. But from my profession, I do know that delays are frustrating, and small delays over time lead to big frustrations!

So today I am going to write a different kind of article in "THE BOTTOM LINE" - an article about a new HELLO program that will, perhaps, save some frustration for you. I know it has for me. So here is the article!

LEE'S FANCY BOOT PROGRAM

Tired of waiting for Integer to load, when all you want to do is have DOS in memory so you can COPYA a disk, FID a file, or INIT a disk? What, you say, you don't use INTEGER Basic anyway? Help is here!

Use Lee's Fancy Boot Program, and all is solved. Load DOS and in three seconds have a menu to CATALOG either disk drive, and print it to the screen, or send it to your printer. Or INITialize a disk, or BRUN FID or RUN COPYA; all by just pressing one key. And if you have a Mountain Hardware clock, it will also give you the Day, Date and Time!

Let's look at the program. It contains some very good programming techniques, as well as some poor ones (it is my view that if it runs, it can't be bad, but possibly could be better!)

Error trapping in the program is extensive, but simple. I have trapped all errors but two. I did not trap a CONTROL RESET, simply to allow a way out if all else fails. You can ESCape from any place by depressing ESCape, which will always take you back to the main menu.

The other error that is not trapped is your making a wrong choice! You have to type the number you wish, not the one next to it! Other than that, the program will only accept an input within the specified range.

So let's look at the program. Lines 100 to 400 simply clean up the screen, in case you had been using the Apple for some other Basic program. This way there can be no surprises! Line 500 is the famous Execute command, but preceding the CHR$(4) with a Carriage Return - CHR$(13).

Line 600 sets the ONERR GOTO statement, and is the first of many in the program. Here, ONERR simply goes to the beginning of the menu layout. Lines 800 to 1400 place a header at the top of the screen, and protect it from erasure with the POKE 34,3, thus reserving the top three lines of the screen for the header.

Line 1500 goes to the clock sub-routine. If you do not have a Mountain Hardware Clock card, remove this line, as well as lines 16200 to 17800. Within the clock routine, it first "GETS" the Day, Date and Time from the clock (16200-16400), then turns off access to the slot (hopefully, your clock card was also in slot "7") and then prints it to the screen (lines 16700-17100). Next it has an approximately three second delay for you to read it (line 17200) and then clears the screen - below the header - and lines 17400 to 17800 place the Day, Date and Time within the header, then return you from whence you came!

Now back to the first part of the program! Line 1600 is the ONERR GOTO line, and it resets the screen bottom to 24 lines. Lines 1800-3700 display a menu of choices on the screen, and line 3800 "GETS" the choice. I use "GETs" whenever possible throughout the program, and "GET" the answer as a string. Thus you can type almost anything, without an error message.

Lines 3900-4900 screens CHOICE$ for an appropriate response, sending you to the appropriate section of the program. Line 5000s send you back to "GET" another answer, if your choice was not a number between 1 and 9! Very simple error trapping, but effective!

The part of the program between lines 5100 and 8100 is used jointly by the first four options, CATALOG of drive #1 or #2 to screen, as well as CATALOG of drive #1 or #2 to the printer. You just enter the section at different points for either Screen or Printer! During this section the ONERR GOTO changes as appropriate for the different message. It traps an open drive door, as well as an uninitialized disk.

Lines 9500-9800 are typical of the routine that I use to get a keyboard response. First, I use a GET to get it. This allows an "anything" type of input, and as long as the expected input is only one character, the GET works fine by itself. If I were expecting more than one character, I would still use GET, but would concatenate them into whatever string I was using.

First, in line 9500, it GETs ANSWER$. Then it checks to see if it is carriage return, and if so, continues to where it belongs in the program. Then it checks for an ESCape. The bottom of the screen displays the footer legend "DEPRESS ESCAPE TO RETURN TO MAIN MENU". Thus, at any point in the program where an input is expected, the user can return to the MAIN MENU with an ESCape. If the character in ANSWER$ is neither a carriage return nor an ESCape, the program returns the cursor to the same location. Thus, until the operator types an expected response, the cursor just sits patiently waiting!

The ONERR in line 6100 returns the program to line 6200; thus if no disk in the appropriate drive, the screen is again cleared, and the operator is prompted to place a disk in the appropirate drive, as specified by the variable DRIVE%.

The COPYA section, lines 8200-8700, first verifies that COPYA is on the disk in drive #1, then "UNDOES" the header poke, and then "RUNs COPYA".

Lines 8800-10600 caution the operator that INIT will erase a disk ("INSERT DISK TO BE ERASED IN DRIVE #2") and then INITs a disk.

Lines 10700-11700 are rather strightforward. They request the new program disk in drive #1, "UNDO" the header, and then execute a PR#6.

Lines 11800-14200 ask for a SYSTEM MASTER, VERIFY FID on the disk, then BRUN FID.

The last section returns the operator to Applesoft, first "UNDOING" the header poke, clearing the screen,

contd.

We dare you

To Find More
Advanced, More Sophisticated Apple® Software For Less!

We've taken a "byte" out of the competition with advanced, easy-to-use programs for your Apple® Computer at "pared-down" prices.

FORTH WRITE

One of the first programs to conform to the Fig. Forth 1983 Standard. Includes hi-res color graphics, string functions, RWTS Interface, assembler and versatile screen editor. Available by Dec. 115.95

TEST MASTER

Developed by an educator using the Forth Write System, this program emphasizes the skills necessary for successful test-taking. Through testing and analyses, you will develop better skills in reading, studying and decision making. It also allows the user to enter his own questions. 44.95

6502 MASTER KIT

All the tools needed for an assembly language program. This disk now gives Apple® users the benefit of Automatic Flowcharting, as well as an assembler, editor and debugger 124.95

CATALOG MASTER

A catalog maintenance and organization system for disks. Depending on catalog size, it can hold 64 catalogs on file. 24.95

NOTICE

We welcome Dealer and Private Author inquiries. We pay competitive royalties. Authors using our Forth Write™ System will receive better royalties from us. We are a consumer based company. We strive to keep our products affordable and we welcome your suggestions.

SPECIAL 10% DISCOUNT when you use this order form

Please send check or money order with this order form.

□ Forth Write □ 6502 Master Kit □ Test Master □ Catalog Master

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

VISA & MASTERCARD ACCEPTED

Va residents add 4% sales tax Please add 1 25 Postage and handling fee Allow 3 to 5 weeks for delivery

COMPUTER CHALLENGES INC.

11110 Gainsborough Ct. Suite 11, Fairfax, Va. 20030 (703) 591-3326

and exiting the program.

So there you have it! Lee's Fancy Boot Program! I hope it is as convenient for you as it has been for my staff. Thanks for listening.

VARIABLES:

CHOICE$ = MENU CHOICE
ANSWER$ = TEMPORARY WORKING ANSWER
DRIVE% = DRIVE NUMBER TO BE ACCESSED

PROGRAM LISTING

```
 10  REM  LEE'S FANCY BOOT PROGRAM
 20  REM  VERSION 6.3
 30  REM  COPYRIGHT 1984
100  POKE 35,24
200  POKE 33,40
300  POKE 34,0
400  POKE 35,24
500  D$ = CHR$ (13) + CHR$ (4)
600  ONERR GOTO 1600
700  HOME
800  POKE 34,3
900  VTAB 1: HTAB 9
1000  INVERSE
1100  PRINT "LEE'S FANCY BOOT PROGRAM"
1200  VTAB 2: HTAB 5
1300  PRINT "COPYRIGHT 1984 BY: LEON H. RAESLY"
1400  NORMAL
1500  GOSUB 16200
1600  POKE 35,24
1700  HOME
1800  VTAB 12: HTAB 5
1900  PRINT "1 = CATALOG OF DRIVE #1 TO SCREEN"
2000  VTAB 13: HTAB 5
2100  PRINT "2 = CATALOG OF DRIVE #2 TO SCREEN"
2200  VTAB 14: HTAB 5
2300  PRINT "3 = CATALOG OF DRIVE #1 TO PRINTER"
2400  VTAB 15: HTAB 5
2500  PRINT "4 = CATALOG OF DRIVE #2 TO PRINTER"
2600  VTAB 16: HTAB 5
2700  PRINT "5 = COPY A DISK FROM #1 TO #2"
2800  VTAB 17: HTAB 5
2900  PRINT "6 = INIT A NEW DISK IN DRIVE #2"
3000  VTAB 18: HTAB 5
3100  PRINT "7 = RUN A PROGRAM IN DRIVE #1"
3200  VTAB 19: HTAB 5
3300  PRINT "8 = COPY A FILE FROM #1 TO #2"
3400  VTAB 20: HTAB 5
3500  PRINT "9 = RUN APPLESOFT"
3600  VTAB 22: HTAB 9
3700  PRINT "PLEASE TYPE YOUR SELECTION";
3800  GET CHOICE$
3900  IF CHOICE$ = "1" THEN DRIVE% = 1: GOTO 6100
4000  IF CHOICE$ = "2" THEN DRIVE% = 2: GOTO 6100
4100  IF CHOICE$ = "3" THEN DRIVE% = 1: GOTO 5100
4200  IF CHOICE$ = "4" THEN DRIVE% = 2: GOTO 5100
4300  IF CHOICE$ = "5" THEN DRIVE% = 1:SYSTEM = 1:
      GOTO 8200
4400  IF CHOICE$ = "6" THEN 8800
4500  IF CHOICE$ = "8" THEN 11800
4600  IF CHOICE$ = "7" THEN DRIVE% = 1: GOTO 10700
4700  IF CHOICE$ = "8" THEN 11800
4800  IF CHOICE$ = "9" THEN 14300
4900  IF CHOICE$ =  CHR$ (27) THEN 1600
5000  GOTO 3800
5100  ONERR  GOTO 5300
5200  GOSUB 17900
5300  VTAB 12: HTAB 14
5400  PRINT "TURN PRINTER ON";
5500  VTAB 13: HTAB 10
5600  PRINT "DEPRESS RETURN WHEN READY";
5700  GET ANSWER$
5800  IF ANSWER$ =  CHR$ (13) THEN 6100
5900  IF ANSWER$ =  CHR$ (27) THEN 1600
6000  GOTO 5700
6100  ONERR  GOTO 6200
6200  GOSUB 17900
6300  VTAB 12: HTAB 8
6400  PRINT "PLEASE INSERT DISK IN DRIVE #";DRIVE%;
6500  VTAB 13: HTAB 10
6600  PRINT "DEPRESS RETURN WHEN READY";
6700  GET ANSWER$
6800  IF ANSWER$ =  CHR$ (13) THEN 7100
6900  IF ANSWER$ =  CHR$ (27) THEN 1600
7000  GOTO 6700
7100  HOME
7200  VTAB 23: HTAB 2
7300  PRINT "DEPRESS ANY KEY FOR BALANCE OF CATALOG"
7400  VTAB 4: HTAB 1
7500  HOME
7600  NUMBER = VAL(CHOICE$)
7700  IF NUMBER < 3 THEN 7900
7800  INVERSE
7900  PRINT D$;"PR#1"
8000  PRINT D$;"CATALOG,D";DRIVE%
8100  GOTO 14900
8200  ONERR  GOTO 18800
8300  GOTO 18800
8400  PRINT D$;"VERIFY COPYA,D1"
8500  POKE 34,0
8600  HOME
8700  PRINT D$;"RUN COPYA,D1"
8800  ONERR  GOTO 8900
8900  HOME
9000  GOSUB 17900
9100  VTAB 12: HTAB 4
9200  PRINT "INSERT DISK TO BE ERASED IN DRIVE #2"
9300  VTAB 13: HTAB 10
9400  PRINT "DEPRESS RETURN WHEN READY";
9500  GET ANSWER$
9600  IF ANSWER$ =  CHR$ (13) THEN 9900
9700  IF ANSWER$ =  CHR$ (27) THEN 1600
9800  GOTO 9500
9900  HOME
10000  VTAB 12: HTAB 16
10100  FLASH
10200  PRINT "WORKING";
10300  NORMAL
10400  PRINT D$;"INIT HELLO,D2"
10500  HOME
10600  GOTO 14900
10700  ONERR  GOTO 10800
10800  HOME
10900  VTAB 12: HTAB 6
11000  PRINT "INSERT PROGRAM DISK IN DRIVE #";DRIVE%;
11100  GET ANSWER$
11200  IF ANSWER$ =  CHR$ (13) THEN 11500
11300  IF ANSWER$ =  CHR$ (27) THEN 1600
11400  GOTO 11100
11500  POKE 34,0
11600  HOME
11700  PRINT D$;"PR#6"
11800  ONERR  GOTO 13400
11900  HOME
12000  VTAB 12: HTAB 6
12100  PRINT "INSERT SYSTEMS MASTER IN DRIVE #1"
12200  VTAB 13: HTAB 8
12300  PRINT "DEPRESS RETURN WHEN READY";
12400  GET ANSWER$
12500  IF ANSWER$ =  CHR$ (13) THEN 12800
12600  IF ANSWER$ =  CHR$ (27) THEN 1600
12700  GOTO 12400
12800  HOME
12900  VTAB 12: HTAB 15
13000  PRINT "WORKING"
13100  PRINT D$;"VERIFY FID,D1"
13200  POKE 34,0
13300  PRINT D$;"BRUN FID"
13400  HOME
13500  VTAB 12: HTAB 8
13600  PRINT "INSERT SYSTEMS MASTER IN DRIVE #1"
13700  VTAB 13: HTAB 10
13800  PRINT "DEPRESS RETURN WHEN READY";
13900  GET ANSWER$
14000  IF ANSWER$ =  CHR$ (13) THEN 12800
```

contd.

```
14100  IF ANSWER$ =  CHR$ (27) THEN 1600
14200  GOTO 13900
14300  POKE 34,0
14400  HOME
14500  VTAB 12: HTAB 8
14600  PRINT "APPLESOFT, YOU'VE GOT IT!"
 4700  VTAB 24
14800  END
14900  PRINT D$;"PR#0"
15000  VTAB 24: HTAB 1
15100  PRINT "                                        ";
15200  VTAB 23: HTAB 1
15300  PRINT "                                        ";
15400  INVERSE
15500  VTAB 24: HTAB 5
15600  PRINT "DEPRESS RETURN TO RETURN TO MENU";
15700  NORMAL
15800  GET ANSWER$
15900  IF ANSWER$ =  CHR$ (13) THEN 1600
16000  IF ANSWER$ =  CHR$ (27) THEN 1600
16100  GOTO 15800
16200  PRINT D$;"PR#7"
16300  PRINT D$;"IN#7"
16400  INPUT "%";T$
16500  PRINT D$;"PR#0"
16600  PRINT D$;"IN#0"
16700  HOME
16800  VTAB 14: HTAB 14
16900  PRINT  LEFT$ (T$,10)
17000  VTAB 16: HTAB 20
17100  PRINT  RIGHT$ (T$,11)
17200  FOR I = 1 TO 2000: NEXT I
17300  HOME
17400  VTAB 3: HTAB 5
17500  PRINT  LEFT$ (T$,10)
17600  VTAB 3: HTAB 27
17700  PRINT  RIGHT$ (T$,11)
17800  RETURN
17900  POKE 35,24
18000  PRINT D$;"PR#0"
18100  HOME
18200  VTAB 24: HTAB 2
18300  INVERSE
18400  PRINT "DEPRESS ESCAPE TO RETURN TO MAIN MENU";
18500  NORMAL
18600  POKE 35,22
18700  RETURN
18800  POKE 35,24: PRINT D$;"PR#0": HOME
18900  VTAB 12: HTAB 2
19000  PRINT "INSERT YOUR SYSTEMS MASTER IN DRIVE
       #";DRIVE%;
19100  VTAB 13: HTAB 10
19200  PRINT "DEPRESS RETURN WHEN READY";
19300  GET ANSWER$
19400  IF ANSWER$ =  CHR$ (27) THEN 1600
19500  IF ANSWER$ =  CHR$ (13) THEN 8400
19600  GOTO 19300
```


APPLE ACCESSORIES

Monitors, 12" hi-res, green $98, amber $104, cable $3

Modems, 300 baud $109, with software $152, 1200 baud $279

RF Modulators, with own power supply and all connectors, $39

EPS expansion keyboard w. 2 modules, keypad, function keys, $290

Data Plotter, "Sweet P", $495, support pak $89

EXPANSION CARDS: 16 K RAM $49, 64K & 80-column $145, 128K & 80-column $195, 80-column with softswitch $139, Z-80 Plus (CPM) $115, fast Z-80 (6 MHZ) $245, serial interface $117, 16-voice music card $138, clock/calendar $109

GAME I/O: Joysticks -- Sampson 4-button $29, Hayes Mach II $37, Mach III $45. Paddles -- Adam & Eve $29, TG $31. Twin-port expander $29.

VF ASSOCIATES

6327 Western Ave, NW, Wash, DC 20015

(202) 363-1313

DISABLEDSIG and EDSIG proudly announce:

A joint meeting of exceptional interest

TUESDAY, APRIL 3, 1984, 7:30 P.M.
Uniformed Services University of the Health Sciences

D r. L a u r a M e y e r s

Dr. Meyers is a specialist in child language development and has been doing significant research in the use of computers to assist children without language or speech. Some of her work has recently been described in the February 1984 issue of the SMITHSONIAN.

Dr. Meyers has achieved some amazing results at Los Angeles' Exceptional Children's Foundation helping severely handicapped children expand their potentials. This includes the expansion of vocabulary, acquisition of language, and further control of their physical beings. Successes have been achieved with children having Downs Syndrome, cerebral palsy, etc.

A MUST for those interested in SPECIAL EDUCATION!

CP/M TEXT PROCESSING FOR LESS THAN $100

by George V. Kinal

A PATCH TO 60K CP/M TO OBTAIN UPPER/LOWER CASE USING INEXPENSIVE 80 COLUMN BOARDS AND THE FAMOUS "GAME PORT WIRE"

As the Apple //e has come into widespread use, the prices of 80-column boards for the Apple][/][+ have been dropping drastically. A number of mail order establishments, as well as several advertisers in the WAP, have been offering 80-column boards for as little as $60! These made-in-Taiwan (?) boards appear to be imitations of the first 80-column boards made for the Apple. They do not have the software controlled switching of the video output, and, at these incredible prices obviously do not come with any software. Their use with VisiCalc, for example, is a bit of a problem. But Microsoft CP/M has always been configured to recognize an 80-column board in slot 3, and invoke it. So, if you are using a Z-80 CP/M card and any 80-column board, the system automatically boots up in 80 columns.

Some of the newer 80-column boards, including the various Videx products and a relatively inexpensive board named the Viewmax do now support the so-called "game port" shift key modification, whereby the Pushbutton #3 input of the game port is used to sense when a shift to upper case is desired. The very low cost boards do not have this function. They switch (toggle) between upper and lower case using the CTRL-A command.

This may be adequate for some data entry applications. And the board will of course allow you to see lower case received in a telecommunications situation. But for text entry situations, it's a real "bummer" to have to use the CTRL-A toggle. Text entry isn't the same as true word processing, but it will suffice in a pinch. Moreover, a decent text processor (better than ED) is critical for initial keyboard entry of source programs under CP/M. Some, though not all, languages not only allow but make use of a distinction between upper and lower case. In particular, if you are trying to use JRT PASCAL, for example, much neater code results if lower case is available for variable names (e.g., EndOfRace).

Another use for a text editor with CP/M is if you want to prepare text on your Apple for transmission by modem to an office computer which employs Word Star or some other CP/M or MS-DOS/PC-DOS word processor. This way, you don't have to invest in Wordstar for your Apple just to do a rough first draft; the office machine and software can be used later to efficiently edit the material. Likewise, since CP/M files are compatible in format with PC-DOS files, you can use the Apple to key in a program to be run on the office's IBM PC, or to edit files from it. (For communications, the public domain MODEM7/XMODEM programs (e.g., on WAP disk 403) will "talk with" the PC-Talk software on the IBM, although these programs do not have an unattended remote answer capability).

The CP/M manual describes a patch to the I/O Configuration Block which uses the right arrow key as a shift key. This is some improvement over the CTRL-A toggle method, I suppose. But there are enough typos in the code given that I doubt anyone has ever used it for the purpose. The patch code given here uses the game port (PB#3) to shift key approach to obtain real upper/lower case capability. The right arrow (->) is used as a shift lock toggle switch. The patch also solves another sticky problem with the Apple][keyboard. When the shift key is depressed along with the letters N, M, or P, instead of the upper case letters being sent to the processor, the caret (^), the left bracket ([), and the "at" symbol (@) are sent. This program allows these letters to function correctly for text applications. If you need the special symbols instead, you may use the shift lock mode, then unlock again. But better still, a CTRL-W prefix allows the next character to be the special one instead. Thus, a SHIFT-N will normally give the letter N. But a CTRL-W followed by a SHIFT-N will give you the CARET symbol (an up-arrow on some displays and printers).

IMPORTANT NOTE: The modified system "comes up" (boots) with the upper case locked, thereby behaving like the usual mode. But CTRL-A will NOT shift the display into lower case. Instead, hit the right arrow to switch to upper/lower case mode. It is easy to forget that this new code has been installed, and to conclude that the lower case capability has gone away somehow. You could easily modify the code to come up (initial default) with the caps not locked; this is perhaps preferable on a disk used for text processing.

The source and assembled code are given in the listing below. I suggest you enter the source code using a text editor, then assemble it with ASM. Compare the assembled code with that shown below. Then use LOAD to prepare a .COM file (mine is called NEWLOW.COM). Next, RUN the CONFIGIO program on the CP/M 2.23 Master under MBASIC, bring in the IOCB patch using menu selection 3, and write it back out to disk with selection 4. That should do it. The patched operating system can be transferred to any 60K CP/M disk using the /S option of the COPY program.

A few closing comments. The game port to shift key mod has been written up many times in many places. But I find that some people are troubled by the need to have a wire in their game port along with a paddle, joystick, or tablet plug. There is no need to insert the wire from the keyboard into the game port socket. Instead, pin #1 of IC H14 (the 74LS251 right in front of the game port) is actually connected to PB#3. Carefully lift this IC out, insert the wire into socket hole 1 (lower right corner), and plug the IC back in together with the wire.

The text processor I use is called Micro-WYL. It is line oriented, with good TAB features and editing capabilities (search, replace, insert, etc.). I found it quite easy to learn and begin using. Although it is not a wordprocessor, it can do a creditable job in preparing short documents. When coupled with 80 columns and real upper/lower case capability, it makes for a pretty nice text editing package at low cost. Micro-WYL sells for the unbelievable price of $31.95 delivered, from OVERBEEK, PO Box 7260, Elgin, IL, 60120. I purchased my 80-column board for $75 from TIMETRONIC, 9330 Amberton, Dallas TX, 75243. If you check recent issues of the COMPUTER SHOPPER, you should find other ads for 80-column boards for as little as $60; I believe these are all similar or identical to mine.

contd.

```
        FILE:   NEWLOW.PRN
        ----------------------------------------------------

F3B9 =                  SLTTYP  EQU     0F3B9H  ; SLOT TYPES TABLE
E000 =                  KEYBD   EQU     0E000H  ; KEYBOARD
E063 =                  SHIFT   EQU     KEYBD+63H ; PUSHBUTTON 3
0100                            ORG     0100H   ; TO LOAD AT 100H
7300 =          ORIGIN:         EQU     0F300H  ; REAL ORIGIN
                        OFFSET  SET     ORIGIN-LWRCASE
0015 =                  SHFLOCK EQU     21      ; FORWARD ARROW IS SHIFT LOCK
                                ; TO PROPERLY INSTALL PATCH TO IOCB
0100 01                         DB      1       ; MAKE ONE PATCH
0101 00F3                       DW      ORIGIN  ; DESTINATION ADDRESS OF PROGRAM
0103 7300                       DW      PRGEND-LWRCASE ; LENGTH OF PROGRAM
0105 02                         DB      2       ; PATCH TYPE 2
0106 02                         DB      2       ; PATCH CONSOLE INPUT VECTOR #1
0107 01F3                       DW      OLDINP+OFFSET
0109 00F3                       DW      LWRCASE+OFFSET ; NEW CONTENTS OF VECTOR
                                ;
                                ; BEGINNING OF ACTUAL PATCH
010B CA0000     LWRCASE:        JZ      0000    ; DUMMY ADDRESS
010C =                  OLDINP  EQU     $-2     ; PLACE FOR NORMAL ADDRESS
                                ;
                                ; GET CHAR. FROM KEYBOARD
010E 3A00E0     KBLOOP:         LDA     KEYBD
0111 B7                         ORA     A
0112 F203F3                     JP      KBLOOP+OFFSET
0115 3210E0                     STA     KEYBD+10H ; CLEAR STROBE
0118 E67F                       ANI     7FH     ; MASK HI BIT
011A 4F                         MOV     C,A     ; SAVE CHAR IN C
011B 0615                       MVI     B,SHFLOCK ; SHIFT CHAR. INTO B
011D B8                         CMP     B
011E C220F3                     JNZ     CONTINU+OFFSET   ;NO SHIFT LOCK DPRSD
0121 2172F3                     LXI     H,STATE+OFFSET ; POINT TO SHIFT STATE
0124 7E                         MOV     A,M
0125 EE01                       XRI     00000001B ; CHANGE STATE
0127 77                         MOV     M,A     ; STORE NEW STATE
0128 C303F3                     JMP     KBLOOP+OFFSET ; GET A REAL CHAR. NOW
012B 2172F3     CONTINU:        LXI     H,STATE+OFFSET
012E 7E                         MOV     A,M
012F FE01                       CPI     1       ; SHIFT LOCKED?
0131 CA41F3                     JZ      NOCONV+OFFSET    ; LOCKED - ALL UPPER CASE
0134 3A63E0                     LDA     SHIFT
0137 FE80                       CPI     128     ;  SHIFT?
0139 F234F3                     JP      CONVERT+OFFSET ; LOWER CASE!
013C C341F3                     JMP     NOCONV+OFFSET  ; GET ANOTHER CHAR.
013F 79         CONVERT:        MOV     A,C     ; TYPED CHAR IN C
0140 FE17                       CPI     23
0142 CA63F3                     JZ      LITERAL+OFFSET    ; CTRL-W IS NOT LOWER CASE!
0145 79                         MOV     A,C
0146 FE40                       CPI     64
0148 D8                         RC
0149 EE20                       XRI     00100000B
014B C9                         RET             ;  ALL DONE
014C 2172F3     NOCONV:         LXI     H,STATE+OFFSET
014F 7E                         MOV     A,M
0150 FE01                       CPI     1       ; SHIFT LOCK?
0152 CA70F3                     JZ      SENDFMC+OFFSET ; SHIFT IS LOCKED
0155 79         SPECONV:        MOV     A,C
0156 FE5E                       CPI     94      ; CARET
0158 C253F3                     JNZ     NEXTA+OFFSET     ; NOT A CARET
015B 3E4E                       MVI     A,4EH   ; LETTER N
015D C9                         RET
015E FE5D       NEXTA:          CPI     93      ; BRACKET ]
0160 C25BF3                     JNZ     NEXTB+OFFSET     ; NOT A BRACKET
0163 3E4D                       MVI     A,4DH   ; LETTER M
0165 C9                         RET
0166 FE40       NEXTB:          CPI     64      ; AT SIGN  @
0168 C270F3                     JNZ     SENDFMC+OFFSET
016B 3E50                       MVI     A,50H   ; LETTER P
016D C9                         RET
016E 3A00E0     LITERAL:        LDA     KEYBD   ; GET ANOTHER CHAR
0171 B7                         ORA     A
0172 F263F3                     JP      LITERAL+OFFSET
0175 3210E0                     STA     KEYBD+10H
0178 E67F                       ANI     7FH
017A C9                         RET
017B 79         SENDFMC:        MOV     A,C
017C C9         SENDIT:         RET
                                ;
017D 01         STATE:          DB      1       ; SHIFT LOCK INITIALLY
                                ;
017E            PRGEND:         END
```

TELECOMM SIG NEWS

by Dave Harvey

The Telecomm SIG met after the WAP meeting on February 25. The main topic of this meeting was CP/M communications or the transferring of CP/M files via a modem. George Kinal announced that the CP/M SIG meeting for March might be held at the WAP office on a Wednesday evening in order to demonstrate CP/M communications. One advantage of using CP/M communications is that you are able to access the large number of RCPM bulletin boards in the area, all of which have many programs available for downloading. The Christensen protocol is used for these boards, and this gives you very reliable file transfers. One terminal program available for downloading of CP/M files is on WAP Disk 403 and is called APMODEM. Files so transferred are most times compacted. WAP Disk 402 has a program to unpack these files.

There followed a discussion on problems or situations experienced with the Anchor Mark XII MODEM. One problem is that the modem does not support BREAK capability. It looks like there is no way around this. Another problem seems to be the random garbling of data when using the WAP ABBS. This is due in part to the ABBS using the Micromodem II and also due to the telephone exchange that is used by the ABBS. This problem should go away when the ABBS switches over to the Mark XII. There was mention that everyone should have the current version (221) of the ROM in the Mark XII. You can determine whether or not you have this version by typing "ATI", and the modem will send back "221" if you have the current version.

George mentioned that he has been getting a lot of calls concerning interface problems between serial cards and modems. Most serial cards have to be modified to provide permanent carrier. For example, on the Apple Super Serial Card this is accomplished by moving switch 1-7. He also mentioned that there is an error in the AE Pro manual where it describes switching to enable interrupts on the Super Serial Card. It refers to Switch 1 on the card. It should be Switch 2 instead.

There followed a general question and answer session. One question concerned 1200 baud operation using 80 columns on the //e. One person mentioned that he had talked to Apple and was told that 1200 baud operation was not possible on the //e using the 80-column card - 40 columns should be used for that operation. This answer is not entirely true if you are willing to buy a commercial terminal program. In that case, 1200 baud operation is possible with 80 columns, but a current terminal program written for the //e must be used, such as version 4.2 of ASCII Express Professional. That program can go up to 4800 baud in 80 column mode on the //e.

The last topic discussed was where to find a reasonably priced serial card to go with an external modem. One suggestion was the Timetronic Corporation. Their communications card CN-50 sells for $59.40. However, modifications are required for 1200 baud operation. Their address is 9330 Amberton Parkway, Suite 216, Dallas, TX 75243.

FURTHER NOTES ON SERIAL COMM CARDS

by George V. Kinal

I have been getting so many telephone calls on the hotline from members asking how to make their new Anchor Mark 12 modems work with one or another kind of serial card that I thought a few additional notes would be in order. (If this keeps up, I may have to start a regular column on the subject!).

The basic problem is buried in a sneaky little sentence in the Mark 12 manual: "Minimum to operate are pins 2,3 and 7." The point is, with a "smart" modem, all the other handshaking leads in the RS-232 interface are unnecessary from the modem's point of view. Things are not so simple from the computer interface's point of view. The most common problem is that most interfaces will refuse to accept (receive) data when there is no "carrier detect." In addition, some interfaces and software packages will not even transmit in the absence of carrier detect. The first situation (no receiving) leads to users asking, "Why don't I see the "OK" that the modem is supposed to return to me when I type the AT command?" In fact, although the modem is probably accepting the commands from the interface, you will see none of its responses until a connection is made to another modem. In the second situation, nothing at all happens. This is typically the case when the Mark 12 is connected to an interface card that has built-in terminal firmware. The firmware refuses to send out data until the carrier detect is present. So there is no way to command the modem on.

The solution varies from card to card. The Apple Comm. card and its clones always have the carrier detect high, so the problem does not occur (but, this card has no firmware so you must have a terminal software program such as AE-Pro). The SSM cards default their carrier detects high (true) if nothing is connected to pin 8, so by just following the "minimum" wiring requirements of pins 2,3, and 7 only, the problem is solved. The CCS 7710 cards unfortunately default the carrier detect function low, so cross-strapping MUST be done (as recommended in last month's article, wire pins 4, 6, 8, and 20 all together on the CCS side ONLY; wire pin 7 to pin 7; cross-over pins 2 and 3 both ways between interface and modem sides). The most infuriating case occurs with the Apple Super Serial card. Some people have discovered that "cutting the black wire" makes the interface work with the Mark 12. That's true, but a less drastic solution is to set SW1-7 to OFF (also, don't forget to set SW2-6 to ON, to get the interrupt capability with AE-Pro). SW1-7 disconnects the carrier detect from the interface connector, and it then is high (true). (The only problem is that for unattended answer operation, the carrier detect function is required with AE-Pro to get the password protection).

GEOPOLITIQUE 1990 AND DATA CAPTURE 4.0: Two Reviews

by Bob Oringel

GEOPOLITIQUE 1990

The Washington metro area, being the world political center that it is, has many followers in depth of the continuing geopolitical controversy between the U.S. and our country's major antagonist, the Soviet Union. When this antagonism is expressed as a computer simulation, then I as a retired USIA person get my interest peaked. When, therefore, Strategic Simulations Inc. of Mountain View, CA produced Geopolitique 1990, I had to give it a try.

The game is played between the computer, representing members of the Soviet politbureau, and the human player acting as the President of the U.S., a job that I think I would forego, save for this game.

The President is asked to make decisions, regarding economic, diplomatic and military affairs, balanced against similar decisions made for the USSR by the computer. These momentous decisions are made within the framework of a world, described on a strange, computer-constructed map, where in addition to the major protagonists, there are 16 additional minor countries. These minor players each have characteristics such as natural resources, industrial and military strength, individual government stability and resolve, and individual political orientations which determine whether they will aid the U.S. or the USSR. Further, there are two separate simulations, one in which the protagonists struggle on the peaceful level, and then one in which there is a non-atomic simulation of WW II.

Strategic Simulations, Inc. provides a two-sided, copy-protected game disk, a well-written but oftimes hard to understand manual, complete with explanations of play, figures describing the status charts, symbols and map descriptions, and several very useful appendices.

The game is fun, for the politically curious, despite the minor inconvenience of very small map symbols, but would, I believe, be more applicable to adults than kids.

DATA CAPTURE 4.0

Having previously examined in these pages a couple of pretty powerful terminal programs, I thought that it might be a good idea to look carefully at one which is not so complex. I therefore tried Data Capture 4.0.

It is supplied by Southeastern Software of New Orleans, LA in a plain plastic zip-lock bag. The disk supplied is an unprotected System Master. The purchaser is urged to make two backups, one of which will be configured to your system. The configuration is straightforward and is carefully explained in the 24-page offset printed documentation. This reviewer carefully followed the supplied instructions.

What is not explained in the documentation, is why the program only works occasionally. When in the ENTER/RECEIVE operational mode, I dialed up several BBS's as a basic testing procedure, and was only occasionally able to capture one and interact with it, or receive data, with the BBS feeding me carrier tone. Is it because, as one explanation has it, that Data Capture 4.0 is too slow to keep up at 300 baud?

Data Capture sells for about a third of the price of the more complex programs, and that is praiseworthy. One would therefore hope for a terminal program without the frills of emulating a mainframe terminal, but one with just the simplicity needed to access a BBS. I just couldn't always acquire our ABBS with it, no matter how I pounded on the <return> key. Regretfully then, I must suggest that you seek elsewhere.

Highest Quality, **Lifetime Guarantee!**

DISKETTES

$1.65 5¼" soft-sectored, hub ring, envelopes, double density, double-sided on APPLE drives -- 100 for $155, 100 single-sided for $149.

Hard plastic stand-up 10-diskette carrying cases $2.75 each, 4 for $10 (beige, black, blue, green, grey, red, yellow). Smoked-plastic flip-top 75 diskette file cases, $19.50. Heavy-duty nibbling tool, $22.

Disk Drives

$199 100% APPLE-compatible, 40-track, full-size, Siemens type quality drives, with manufacturer's 1-year warrantee. Controller card, $65.

COD & VISA/Master Card orders welcome. Add $4 for shipping & handling (only $2 for orders under $50) plus 6% sales tax for DC residents. Send for our catalog.

VF ASSOCIATES

Western Ave., N.W., Wash., D.C. 20015

(202) 363-1313

CATALOGING THE CHAOS

by C. Swift, Prop.

After some sixteen months of progressive learning experiences on my modest (but treasured) Apple][+, I found that I had collected some sixty odd disks (odd? - some of them VERY odd). They hold programs from my first efforts ("Wow, I just wrote a program that takes 13 lines!") to some that are actually decent and useful on the job. (I'm proudest of the one that takes 1,212 lines - did it all myself, and it works!)

Unfortunately, the 300+ programs were randomly scattered throughout the sixty disks. With my usual lack of concern for tidiness, I had just grabbed the nearest disk and saved the latest program. Later (did this ever happen to you?) when I needed a particular program, the problem of finding it was almost as difficult as re-writing the program itself. This was not a neat state of affairs, and I vowed to do something about it one of these days.

The solution ...? AHA! Why not list the disk catalogs, then do a bit of paper shuffling, maybe transfer programs of a similar nature to the same disk or set of disks? Why not, indeed? Because the physical labor (nasty term, that) of pulling all those disks and hand cataloging and printing out and keeping records and ... well, that's the sort of laziness that got me in the mess in the first place!

Better solution: let the computer do the work. Print a directory to be consulted whenever I want a particular program. Keep it handy (maybe I should buy a notebook or file folder or something) and just look up what I want when I want it. No sweat ... that's for me.

(Best solution: let the computer do EVERYTHING, but I haven't figured out how to do that yet.)

The program below minimizes the disk handling problem, and the printouts are so neatly formatted that even I can use them.

```
 100  REM ==> CATALOG PRINTOUTS
 110  REM ==> C. SWIFT, PROP.
 120  HOME
 130  D$ = CHR$ (4)
 140  PRINT SPC(11)"CATALOG PRINTOUTS"
 150  PRINT SPC(11)"------- ---------"
 160  PRINT : PRINT : PRINT
 170  PRINT SPC(10);: INVERSE : PRINT " PRINTER MUST
      BE ";: FLASH: PRINT "ON";: INVERSE : PRINT " ":
      NORMAL : PRINT : PRINT : PRINT
 180  PRINT "INSERT DISK TO BE CATALOGED...": PRINT :
      PRINT "PRESS <RETURN> WHEN READY:   ";
 190  GOSUB 370
 200  PRINT : PRINT : PRINT
 210  INPUT "NAME (OR NUMBER) OF DISK:   ";N$
 220  PR#1
 230  PRINT CHR$ (27)"L020"
 240  PRINT CHR$ (27) CHR$ (88)" "N$" " CHR$ (27)
      CHR$ (89)
 250  PR#0
 260  PRINT D$ "CATALOG"
 270  PRINT : PRINT : PRINT "PRESS <RETURN> TO
      PRINT...  ";
 280  GOSUB 370
 290  PRINT D$ "IN#6"
 300  PRINT D$ "PR#1" : PRINT D$ "CATALOG"
 310  FOR I = 1 TO 8 : PRINT : NEXT
 320  PRINT D$ "PR#0"
 330  PRINT : PRINT : PRINT "PRINTOUT COMPLETED..." :
      PRINT
 340  PRINT "PRESS <RETURN> FOR ANOTHER:  ";
 350  GET Z$: IF Z$ = CHR$ (13) THEN 120
 360  END
 370  GET Z$: IF Z$ = CHR$(13) THEN RETURN
 380  GOTO 370
```

Most of the program is self-explanatory. The codes in Lines 230 and 240 are commands to my Prowriter, and may need to be changed for a dissimilar printer. Line 230 sets the left margin wide enough to allow punching holes for a notebook. Line 240 sets the "underline" for the name (or number) of the disk, then takes it out. (The two extra " "'s are just for show, and may be ignored without fear of bombing anything.)

This program works fine on the couple of disks I've used, and one of these days I'm going to do the other fifty-eight...

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

JOINT MEETING WITH EDSIG

Noted elsewhere in this issue, the DISABLEDSIG and the EDSIG will have a joint meeting at USUHS, at 7:30 P.M., on April 3, 1984. The speaker will be DR. LAURA MEYERS of Los Angeles' Exceptional Children's Foundation. She will discuss her important work in helping exceptional children acquire language and speech. There will be a demonstration of her software, a videotape, and a slide presentation. If you are unacquanted with DR. MEYERS' work you may wish to read the February 1984 issue of the SMITHSONIAN Magazine.

IF YOU KNOW ANYONE INTERESTED IN THE FIELD OF SPECIAL EDUCATION -- let them know of this meeting.

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

ULTIMA III TIPS

by David Wehr

ULTIMA III, like ULTIMA II, is a fun filled, action-packed adventure. It is however, very frustrating to spend a lot of time nurturing one's characters until they are minimally powerful just to have them be killed off by starvation or combat. Not wanting to shell out $12.95 for 'The Secrets of Sosaria' (or for any other commercial hint book), I decided to figure out a way to change my characters myself. What follows is a brief summary of what I found. To change your own characters, you will need a sector editor (I used Inspector), and your Player Master. I suggest that you read this article through before attempting to change your own people.

To start out, create your characters, form a party, journey to Sosaria and Q)uit. Boot up your disk zap utility and take a look at Track $03(3), Sector $07(7). This is where the current group saved is stored. The permanent record is on Track $03(3), Sectors $07(8) through $0C(12). Bytes $00(0) to $00(13) contain your first character's name in ASCII Code. Bytes $12(18) to $15(21) are his Strength, Dexterity, Intelligence and Wisdom scores (in that order). Byte $11(17) contains the character's condition, where good= $C7, poisoned= $D0, dead= $C4 and Ashes= $C1. Byte $16(22) has the character's race, where Human= $C8, Elf= $C5, Dwarf= $C4, Bobbit= $C2 and Fuzzy= $C6. Change byte $18(24) to change the character's sex, male being $CD and female being $C6. The character's class resides in byte $17(23) and can be changed to: Barbarian: $C2, Fighter: $C6, Cleric: $C3, Wizard: $D7, Thief: $D4, Illusionist: $C9, Paladin: $D0, Lark: $CC, Alchemist: $C1, Druid: $C4 and Ranger: $D2.

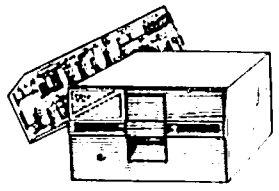
The number of magic points the character has are in byte $19(25). Bytes $1A-1B contain his actual hit points and bytes $1C-1D have his maximum hit point number. His experience points are located in bytes $1E-1F, his food points are in $20-21 and his gold points reside in bytes $23-24. The amount of gems he has is in $25 while the number of keys and powders he has are contained in bytes $26 and $27, respectively. The number of torches he is carrying is in byte $0E. The types of 'marks' and 'cards' he has are stored in byte $0E(14). I will leave it up to the curious adventurer to discover what the codes for these are.

His readied weapon is stored in byte $30(48) and his readied armor is in byte $28(40). The amount of specific armor types are in bytes $29(41), for cloth, to $2E(47) for +2 plate mail. The amount of 'Exotic armor' is in byte $27(39). The amount of specific weapon types are in bytes $31(49), daggers, to $3F, 'Exotic weapons'.

Some Suggestions:

- Be frugal. A superman will make the game boring and uninteresting to play.
- Make a back-up of your Player Master. You may make mistakes...
- Change numeric values by adding a '$' prefix to your desired score. For example, let's say you want 45 Strength. The value you would insert would be $45.
- Unlimited magic points are sometimes useful. Putting $FF in place of the actual number will do the job.
- When changing 'readied' items, be sure to put in the letter of the next item, with values ranging from $01(1) for 'A' to $0F for 'P'.
- Have fun !

MICRO SCI
APPLE //e UPGRADE



A2 disk drive +
64K + 80 column card
$395

MICRO SCI APPLE disk drive $239

MICRO SCI 64K + 80 column card $170

Disk Connection Ltd.

6641 Backlick Rd.
Suite 206
Springfield, VA 22150
(703) 451-4100

Disk Connection, Ltd's
User Group Special

THE SOURCE℠
AMERICA'S INFORMATION UTILITY

SPECIAL $60
Virginia Residents 4% sales tax
VISA & MASTER CARD accepted
Add $2.50 shipping • C.O.D.'s add $1.65

LIST $100
40% Discount $40
Club Price $60

NAME _____

ADDRESS _____

CITY _____

STATE _____ ZIP _____

6641 Backlick Rd.
Suite 206
Springfield, VA 22150
(703) 451-4100

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 February 1984 WAP Journal.

( ) April 3 - INTRODUCTION TO APPLE COMPUTER HARDWARE	( ) May 1
( ) April 10 - HOW TO USE YOUR APPLE SOFTWARE	( ) May 8
( ) April 17 - BEGINNING BASIC	( ) May 15
( ) April 24 - BITS, BYTES, NIBBLES	( ) May 22

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

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

The following "non-regular" tutorials are being offered at the office on Saturday mornings, 9:30 AM to 12:00 Noon. Please register in advance.

CP/M - Bob Fretwell, April 14

( ) $10 with Apple, member ( ) $15 with, non-member
( ) $15 w/o Apple, member ( ) $20 w/o, non-member

Apple Writer II - Lee Raesly, April 21

( ) $10 with Apple, member ( ) $15 with, non-member
( ) $15 w/o Apple, member ( ) $20 w/o, non-member

dBase II - Lee Raesly, May 5

( ) $10 with Apple, member ( ) $15 with, non-member
( ) $15 w/o Apple, member ( ) $20 w/o, non-member

PASCAL - Robert Platt (4 sessions) Jun 2, 16, 30, Jul 7

( ) $40 with Apple, member ( ) $60 with, non-member
( ) $60 w/o Apple, member ( ) $80 w/o, non-member

INTRO. TO SPREADSHEETS - Lee Raesly, July 14

( ) $10 with Apple, member ( ) $15 with, non-member
( ) $15 w/o Apple, member ( ) $20 w/o, non-member

VISIPLOT & APPLE PLOT - Lee Raesly, Aug. 11

( ) $10 with Apple, member ( ) $15 with, non-member
( ) $15 w/o Apple, member ( ) $20 w/o, non-member

The following tutorials are planned but no exact date yet:

Word Star - Bernie Benson, Sept.; VisiCalc - Roy Rosfeld, Nov.

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

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

Name _____

Daytime Phone _____ Evening Phone _____ Total Enclosed $ _____

WASHINGTON APPLE PI DISK LIBRARY MAIL ORDER FORM

Washington Apple Pi's library disks are available for purchase. This form is only for ordering disks that you want mailed to you. Disks purchased at the office or monthly meetings are $5.00 each.

PROGRAM DISKETTES:

iled to you (1st 5) - Members $ 6.00 ea.; Non-members $ 9.00 ea.
" (remainder) - Members $ 5.00 ea.; Non-members $ 8.00 ea.

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

DOS 3.3
( ) Volume 41 IAC 25 Mach. Lang. Util.
( ) Volume 42 One Key DOS ***
( ) Volume 43 IAC 29 Utilities H
( ) Volume 44 Utilities I
( ) Volume 90 Spreadsheet C Genl. Bus.
( ) Volume 91 Spreadsheet D Investment
( ) Volume 92 Spreadsheet E Bus. Recd.
( ) Volume 93 Spreadsheet F Accounting
( ) Volume 100 Utilities A
( ) Volume 101 Utilities B
( ) Volume 102 Games A
( ) Volume 103 Merry Christmas
( ) Volume 104 Business A

DOS 3.3 contd.
( ) Volume 105 FIG-FORTH/Utilities
( ) 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 - Hybrid (Pascal & DOS 3.3)
( ) Volume 134 New Members Disk
( ) 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 Apple Logo Sample Prog.
( ) Volume 147 Logo Documentation
( ) Volume 148 Adventure - Disk 1} Both
( ) Volume 149 Adventure - Disk 2} Req.
( ) Volume 150 EDSIG1 (Elem. Math)
( ) Volume 151 1983 Tax Template
( ) Volume 152 IAC Miscellaneous

Eamon Series
( ) Volume 180 Dungeon Designer
( ) Volume 181 Beginners Cave
( )*Volume 182 Lair of Minotaur
( )*Volume 183 Cave of the Mind

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

Pascal
( ) Volume 300 PIG0: ATTACH/BIOS
( ) Volume 301 PIG1:
( ) Volume 302 PIG2:
( ) Volume 303 PIG3:
( ) Volume 304 PIG4:
( ) Volume 305 PIG5:
( ) Volume 306 PIG6:
( ) Volume 307 PIG7:
( ) Volume 308 PIG8:
( ) Volume 309 PIG9:
( ) Volume 310 PIG10:
( ) Volume 311 PIG11:
( ) Volume 312 PIG12:
See also Volume 133

CP/M
( ) Volume 401
( ) Volume 402
( ) Volume 403
( ) Volume 404
( ) Volume 405
( ) Volume 406 ZCPR2 Install
( ) Volume 407 ZCPR2 Documentation
( ) Volume 408 ZCPR2 Utilities

Forth
( ) Volume 700 Assembler/ Disassembler
( ) Volume 701 Full Screen Editor
( ) Volume 702 GoForth
See also Volume 105

* Volume 181 required with these disks. ** Vols. 121, 135, 136 must be purchased together.
*** Use of this disk requires sending money to the author ($30 for Diversi-Dos and $9 for One Key Dos.)

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

Total Order = ___ disks. $_____

NAME _____

ADDRESS _____

CITY, STATE ZIP _____

TELEPHONE _____ WAP MEMBERSHIP NO._____

Make check payable and send to:

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

DATE _____

WASHINGTON APPLE PI MAGAZINE MAIL ORDER FORM

If you would like to order back issues of the Washington Apple Pi newsletter, "Inside Apple Pi" (a compendium of our 1979 and 1980 articles), or the New Member Reference Book and/or disk, please check the appropriate box(es) below. If you order 5 or more back issues we will pay the postage (U.S. only); for 1 to 4 issues add $.50 postage each. The price for "Inside Apple Pi" and the "New Member Reference Packet" (or book alone) includes U.S. Postage.

( ) $0.50 October 1980 Volume 2, No. 10
( ) $0.50 June 1981 Volume 3, No. 6
( ) $0.50 Sept. 1981 Volume 3, No. 8
( ) $0.50 October 1981 Volume 3, No. 9
( ) $0.50 Nov. 1981 Volume 3, No. 10
( ) $0.50 Dec. 1981 Volume 3, No. 11

( ) $2.00 January 1983 Volume 5, No. 1
( ) $2.00 Feb. 1983 Volume 5, No. 2
( ) $2.00 Mar. 1983 Volume 5, No. 3
( ) $2.00 May 1983 Volume 5, No. 5
( ) $2.00 June 1983 Volume 5, No. 6
( ) $2.00 July 1983 Volume 5, No. 7
( ) $2.00 August 1983 Volume 5, No. 8
( ) $2.00 Sept. 1983 Volume 5, No. 9
( ) $2.00 Oct. 1983 Volume 5, No. 10
( ) $2.00 Nov. 1983 Volume 5, No. 11
( ) $2.00 Dec. 1983 Volume 5, No. 12

( ) $1.00 January 1982 Volume 4, No. 1
( ) $1.00 Feb. 1982 Volume 4, No. 2
( ) $1.00 April 1982 Volume 4, No. 4
( ) $1.00 May 1982 Volume 4, No. 5
( ) $1.00 June 1982 Volume 4, No. 6
( ) $1.00 July 1982 Volume 4, No. 7
( ) $1.00 August 1982 Volume 4, No. 8
( ) $1.00 Sept. 1982 Volume 4, No. 9
( ) $1.00 October 1982 Volume 4, No. 10
( ) $1.00 Nov. 1982 Volume 4, No. 11
( ) $1.00 Dec. 1982 Volume 4, No. 12

( ) $2.00 Jan. 1984 Volume 6, No. 1
( ) $2.00 Feb. 1984 Volume 6, No. 2
( ) $2.00 Mar. 1984 Volume 6, No. 3
( ) $4.50 Inside Apple Pi *
( ) $8.50 New Member Reference Book & Disk *
( ) $4.00 New Member Reference Book *
* Includes postage.

Total No. of issues ___ at $0.50 = $_____
Total No. of issues ___ at $1.00 = $_____
Total No. of issues ___ at $2.00 = $_____
Inside Apple Pi at $4.50 = $_____
New Member Ref. Book & Disk at $8.50 = $_____
New Member Ref. Book at $4.00 = $_____
Postage, if any: = $_____
U.S. 1 to 4 back issues add $.50 each
Foreign add $1.50 for each back issue
add $2.50 for Inside Apple Pi

TOTAL AMOUNT ENCLOSED $_____

NAME _____

ADDRESS _____

CITY, STATE, ZIP _____

Make check payable and send to:

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

INDEX TO ADVERTISERS

Anderson Jacobson . . . . . Back Cover
Bridget Software Co 25
CC & Associates 27
Clinton Computer . . . . . Inside Back
Columbia Computer Systems 32, 33
Comm Center 39
Computer Challenges, Inc 53
Computer Day, Inc. 21
Computer Den Ltd. 21
Computer Ware Unlimited 51
Disk Connection 61
EF Hutton & Company 48
Frederick Computer Products . . Inside Front
HLA Computers 19
Hytek Ltd 23
LRO Inc 17
Mailmart 13
Micro Connection 45
Micro Power Ltd 2
Micro Star Co 29
MinuteWare 31
Operant Systems 11
Option Analytics Inc 9
Paragon Technologies Inc 49
Ramada Computer Products 17
Robins Inc. 48
Software City 1
Sunstar 13
Systems Services Co 51
Tri-State Systems 7
Tysons Corner Center 9
VF Associates 55, 59

GET YOUR HANDS-ON A COMPUTER!

at the
CLINTON COMPUTER LEARNING CENTER

Classes scheduled for January thru March

NEW APPLE OWNERS COURSE. 4 1/2 hours. $100. Alternate Saturdays. 9am-1:30pm. Learn the basic operating procedures of the world's most popular small computer! Course includes five program disks.

NEW CP/M OWNERS COURSE. 4 hours. $100. Alternate Saturdays. 9am-1pm. Hands-on instruction in this standard operating system. A must for new owners of CP/M-based computers.

LOGO I FOR TEACHERS. 14 hours. $125. Jan.11, 18, 25, Feb. 1, 8, 15, & 22. 6:30-8:30pm. Gain experience using LOGO Graphics. Learn how to apply the microcomputer in the classroom and to incorporate its use into an existing curriculum. (The cost of this course is $100 if you sign up for both LOGO courses.)

LOGO II FOR TEACHERS. 14 hours. $125. Feb. 29, Mar.7, 14, 21, 28, April 4, 11. 6:30-8:30pm. Learn to use LOGO for activities with numbers, words, and lists. This class is a follow-up to "LOGO I for Teachers." (The cost of this course is $100 if you sign up for both LOGO courses.)

APPLEWRITER IIe. 2 1/2 hours. $46. Jan.17, Feb. 21, & Mar. 20. 6:00-8:30pm. Understand what a word processing system is and how it works. Learn how to create/revise letters and documents quickly and easily.

APPLESOFT BASIC PROGRAMMING I. 6 hours. $65. Call for details. Hands-on instruction for computer novices in this simple programming language. Classroom exercises and optional homework assignments.

APPLESOFT BASIC PROGRAMMING II. 6 hours. $65. Call for details. Learn new Basic commands and additional programming techniques. Classroom exercises and homeword assignments. Prerequisite: Basic Programming I or equivalent.

INTRODUCTION TO WORDSTAR. 2 hours. $40. Jan. 24, Feb. 7, March 6. 6:30-8:30pm. Learn how to create documents quickly and easily by using this popular word processing system.

ADVANCED WORDSTAR. 2 hours. $40. Jan. 31, Feb. 14, March 13. 6:30-8:30pm. Experiment with more advanced Wordstar commands, and learn file merging techniques. Prerequisite: Wordstar I or equivalent.

MICROSOFT BASIC PROGRAMMING I. 6 hours. $65. Call for details. Hands-on instruction on the features of Microsoft Basic for the computer novice. Classroom exercises and optional homework assignments.

MICROSOFT BASIC PROGRAMMING II. 6 hours. $65. Call for details. Learn additional programming techniques in Microsoft Basic. Classroom exercises and homework assignments. Prerequisite: Microsoft Basic Programming I or equivalent.

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

CHOOSING APPLE EDUCATIONAL SOFTWARE. 2 hours. $20. Jan 16. 6:30-8:30pm. Discussion and demoı strations of educational software. (Price of class may be credited toward purchase of educational software in our retail store)

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

Clinton Computer

apple computer
®Authorized Dealer & Service Center

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

(301) 856-2500

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

ADDRESS CORRECTION REQUESTED

BULK RATE
U. S. POSTAGE
PAID
PERMIT #101
Glen Echo, MD
20812

A REFURBISHED DAISY WHEEL TERMINAL
FOR PERSONAL COMPUTER USERS AND SMALL BUSINESSES.

Now you can have letter-quality printing and professional features for just ~~$995.*~~ $712.00

AJ daisy wheel printer terminals are renowned for exceptional performance, high reliability, and applications versatility. Now you can have all this for only $995* in our special limited offer.

- 30 cps *letter-quality* printing
- Changeable type faces
- Full ASCII keyboard with numeric pad
- High resolution X-Y plotting
- Complete electronic forms control
- 128-character buffer
- Asynchronous RS-232 interface
- Printwheel, ribbon cartridge, and cable included
- 30-day parts/labor warranty

And you can choose from a list of options including forms tractor, pin-feed platen, paper trays, side shelves, extra printwheels, APL keyboard and 2K buffer.

Call your nearest AJ regional office for details: San Jose, CA (408) 946-2900; Rosemont, IL (312) 671-7155; Hackensack, NJ (201) 488-2525. Or check the phone book for the number of your local AJ sales/service office.

*Price excludes options and is subject to change without notice. Model shown includes certain options. Offer available only in the contiguous U.S.

ANDERSON JACOBSON

FOR WAP MEMBERS ONLY. You can now buy an AJ 831 for **$712.** This includes a 90-day full warranty with any repairs being done at your home or office. Please call Sean Belanger at 840-5700 for details.