

Washington Apple Pi ^{\$2}



Volume 6

March 1984

Number 3

Highlights

LOGO RANDAREAPLOT
MACHINE LANGUAGE PROGRAM EDITOR
(I Am What I Am...)
MODULA 2 - Part 3
SERIAL INTERFACE CARDS FOR THE
ANCHOR MARK 12 MODEM

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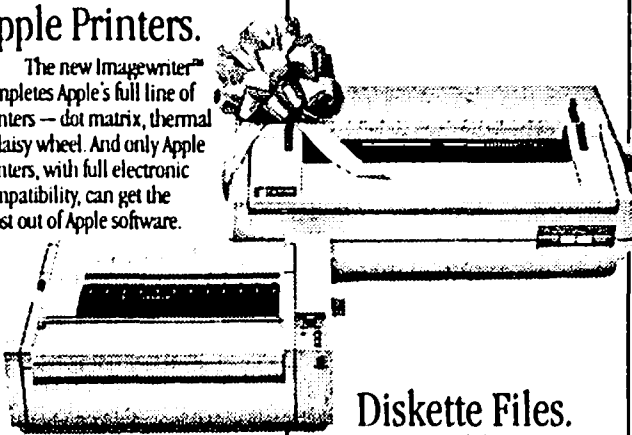
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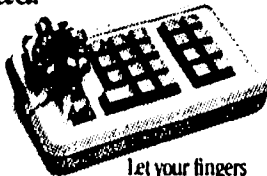
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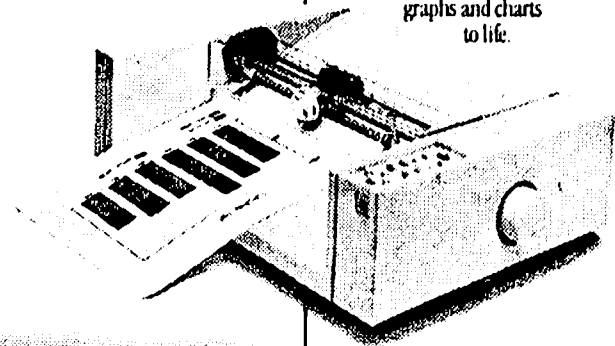
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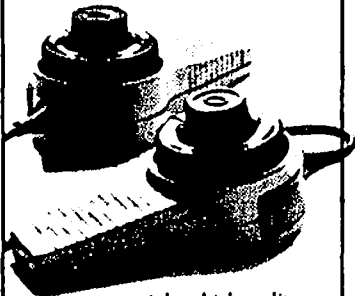
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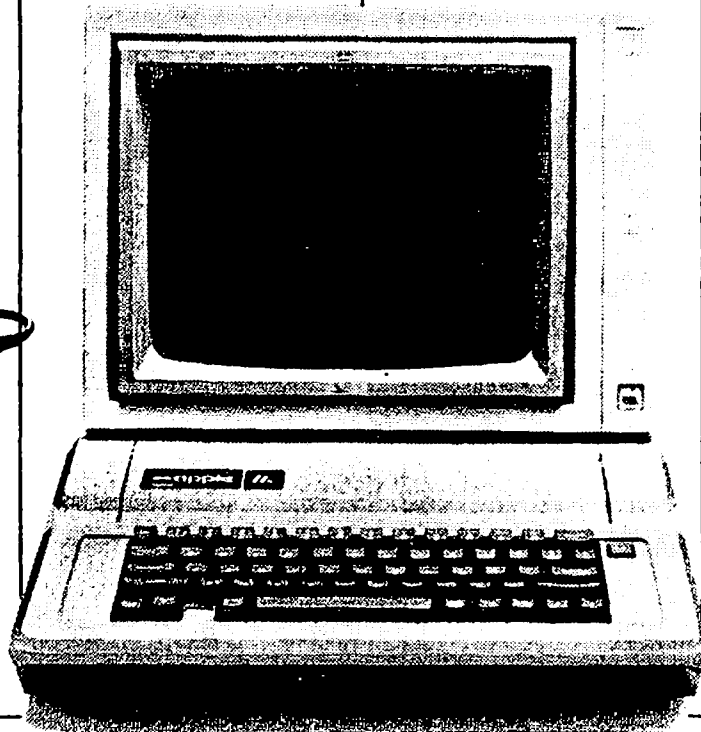
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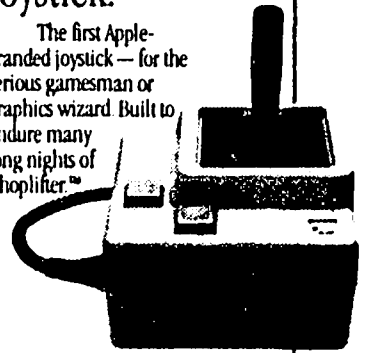


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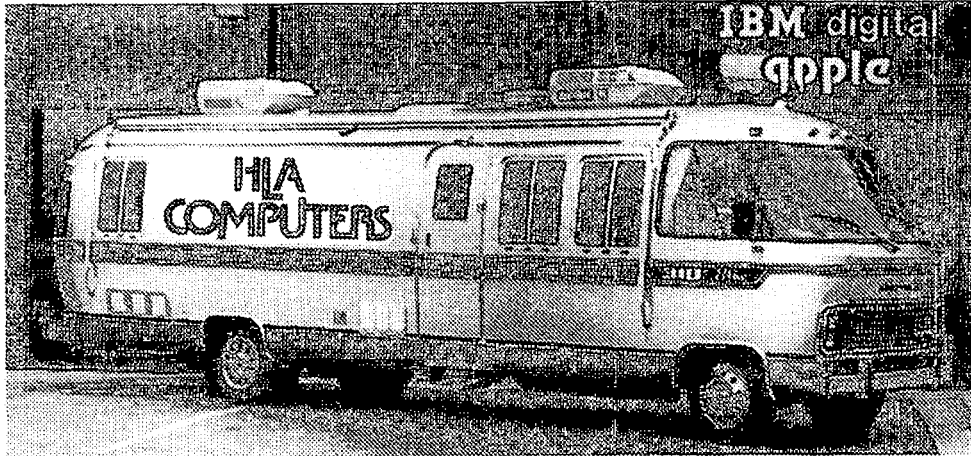
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Washington Apple Pi, Ltd.
8227 Woodmont Avenue, Suite 201
Bethesda, MD 20814
Office (301) 654-8060

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EDITORIAL

Just what is service? I have learned it means many different things to many people. But surely there must be a core definition upon which most of us can agree. I would like to start a dialogue on this so that we can improve our "service" to our readers and fellow members.

Let me begin by listing some things which I think our "service" is not:

- We do not provide advice or parameters for use with the various copy programs, e.g. Locksmith, Nibbles Away, etc.

- We do not provide documentation of copyrighted, protected software.

But let me dwell on more positive elements:

- We attempt to provide timely information and advice which is of interest and of potential immediate use to a broad range of PI members - children, neophyte com-

puterists, business men, hobbyists, educators, computer professionals, and others.

- We provide a communications medium for each of our Special Interest Groups.

- We provide a free communications medium to our computer hardware and software dealers and developers (The Dealer's Corner).

- During our 5+ years of publications we have published all but a handful (less than 5) of contributions from our members and others. Nothing has been rejected for being too elementary or too poorly written. Something which may seem elementary to one individual may be just the ticket for another. Poorly written contributions are reworked to the best of our abilities and are published with a minimum of change to the intended message.

More on this subject if I get some reactions from you out there. ☺

PRESIDENT'S CORNER

by David Morganstein

WAP HOSTS WOZ & FRIENDS. According to the Washington Post, there were almost 2500 of us crowded into the Departmental auditorium. To the 1500 of us who didn't make it, you missed quite a show! Woz wanted to play a minor role in the event, expressing the sentiment that the moment belonged to the younger wizards of the Mac (Burrell Smith, Andy Hertzfeld, Bill Atkinson and Randy Wigginton) who came with him from Cupertino. The developers covered the Mac story from its beginning to the final product we watched put through its paces. Their enthusiasm was effervescent and as the meeting moved into the demo, you could feel the excitement of our membership for this new entrant into the microcomputer race. The meeting had all the electronic sights and sounds of an "US" festival. Two enormous GE Electric Light Valve projectors filled a twenty foot screen with video-taped Mac ads and a crisp display of the Mac's extremely high resolution screen. The attendees hung on every word. It was well after two in the afternoon when the members, satiated, begin to slip away (some I suspect slipped off to their nearest Apple dealer to buy a Mac!). I think we all left with the thought that IBM will be (finally) getting a challenge to its leadership in the personal business computer market.

The incredibly successful meeting was due to the hard work of several of our members. We had our usual cadre of volunteers giving away newsletters and taking new memberships. John Malcolm and Dave Weikert's software library crew, although given the day off, showed up to help in all the other activities needed. Jim Taylor had the front rows cordoned off for the exhausted volunteers and Cara Cira had put together colorful arm bands to help the organizers find each other in the crowd. Davis Lee made and posted most of the signs which guided the way. We were able to get the meeting on video tape thanks to the help of Jim O'Brien and his crew of workers from American Video Resources. This tape has been edited by Mark Daniels of N.U.S. and then reproduced for loan to other groups. To all of you who helped, many thanks for a job well done!

There is one fellow who needs special mention because without him the meeting would not have happened. He spilled his blood, sweat and tears to put it together. As the meeting date drew nearer, he faced mounting crises. He arranged for the room and the equipment (which was no mean feat. We were told only days before the meeting that special projectors, not available in D.C., were needed!). He even took time to tape torn seats in the auditorium so it wouldn't look too shabby. He shuttled some of our visitors back and forth between airport, auditorium and hotel at all hours. The success of the day belongs to you, Bernie Urban...

VIDEO TAPE OF MEETING. We have several half-inch, VHS format video tapes of the meeting which can be borrowed at no cost for a two week period. If it must be mailed to you, we will ask you to provide a stamped mailer or contribute the cost of the postage. We are requesting that borrowers leave a deposit with us until the tape is returned. Contact the office.

VIDEO PROJECTOR. We would like to review the features and costs of current video projection equipment for possible use at our monthly meeting. Perhaps we can arrange for the loan of several models to try them out on your eyesight so that we can make an informed

decision about buying or trying to lease purchase.

SECRETARY/RECEPTIONIST. Our office activity has reached a point where we need another staffer just to answer seemingly unending phone calls. This individual would learn about our programs and projects and be required to help callers with their information requests. The position would include responsibility to mail out membership application forms to those requesting it, typing (word processing), and other general office duties. If you are interested in a part time position (20 hours per week) please send us a brief description of yourself. The salary for this position would be \$5.50 minimum and negotiable commensurate with experience.

SOFTWARE LIBRARY. A couple of items. First, John Malcolm has correctly suggested that a better name could be given our public domain software. It is not a library in the sense of a lending library. John suggests a title such as Disk Service would better explain the purpose to new members (see the details of a contest for the naming of this service, elsewhere in this use). Fred Edwards has been helping Bob Platt by converting the first forty disks, developed under DOS 3.2 (what's that you ask?) to a DOS 3.3 format. This will probably result in elimination of some duplication and a reduction in the number of disks in our "disk service" system. (Who is ready to convert them to PRODOS?)

Special Note: If you have not done your taxes yet, check out recently released disk no. 151. It contains spreadsheet templates for some of the more common tax forms!

POLICY ON COPYRIGHTED SOFTWARE. Every now and again you hear a comment about microcomputer user groups and the distribution of copyrighted software. I have no idea how prevalent this is nationwide. What is more, I have no reason to think that people who are in user groups exchange commercial software any more than those who are not members of user groups. The point I want to make is that the Washington Apple Pi has a clear policy against the distribution of copyrighted software at any activity sponsored by WAP. WAP has never had a program discussing ways to make archival copies or to "unprotect" software even though these topics are not in and of themselves "verboten". The owner of commercial software which is protected has every right to "back-it-up" or to unprotect it so that he can make improvements if he so desires.

To potential members, we do not allow the reproduction and distribution of copyrighted material at our functions. You will find no WAP activities which will help you to make copies of commercial programs so that you can distribute them. I sincerely doubt that our members are any more knowledgeable about these matters than anybody else, and that includes software dealers, distributors or their employees.

SATURDAY HOURS. At the well-attended January meeting, we discussed our office hours. There was a clearly expressed interest in Saturday hours. Before making a permanent decision on such an extension, we would like to test the waters for a month or so. We will have one staff member available, 10 AM - 1 PM, on Saturdays (except meeting Saturday, which remains 12 - 4) during March and April. If the turn-out is sufficient, we would continue after April and provide extra staff, if

contd.

necessary. We are looking for a couple of volunteers who would be willing to help the office staffperson during this trial period. If you would be willing to give up a couple of Saturday mornings, from 10 till 1, please contact me or the office.

MACSIG (SIG MAC?). Interest in this new SIG is overwhelming. The first gathering will be held at our February meeting. It may be desirable to have a couple of special meetings to get things going. Bob Platt, SIG co-ordinator, will assist in the organization. Tom Warrick and Jim Harvison have expressed interest in providing leadership.

With yet another disk format, our public domain software service will be taxed further! We want to get a Mac collection of public domain software underway. At the beginning we can offer little software in return for contributions. However, we can provide you a rain-check for a subsequent volume or a free Sony diskette for your contribution. Contact Bob Platt with your contribution.

WHAT WE ARE. I recently read an editorial written by a respected sociologist, Amatai Etzioni, professor at George Washington University. In the review he discussed his attitude about our nation's future. He described how his attitude had changed from the sixties to the eighties. He observed that two decades ago a "me first" mentality left him quite pessimistic about the years ahead. There seemed to have been an overwhelmingly strong focus on individualism and "looking out for number one".

However, he went on to observe that things were changing, that there appeared to be an increasing willingness to go out of one's way to help others. He noted the increasing growth of self-help organizations in the United States and suggested that this was an optimistic sign. I hope he will forgive me for the absurd thought that he was thinking about the WAP. After all, that is one of the things that has caused our growth and gives us our strength. When any need arises, there is a volunteer. Kind of a nice thought...

JOB MART

HELP WANTED

Computer Programmer. We are looking for a student to work as a Programmer in our Education Office. Students interested in this position should be free to work 10 to 20 hours per week. Skills and Communications include familiarity with Apple Computer Systems, skills in Applesoft Basic for Apple][, experience with Micro systems, familiarity with Atari Basic helpful. Salary \$6 to \$10 per hour. Contact Jane Meyer at 872-4469, American Chemical Society, a non-profit and educational association.

Authors/CoAuthors - MinuteWare, publisher of Minute Manuals, is looking for a few good men or women. No experience necessary. All that is required is time and effort (emphasis on effort). If you have an expertise in a topic area on Apple or IBM software or hardware and would like a chance at fame and fortune, please call Jim at (301) 995-1166 for an appointment. Projects that need immediate attention include dot matrix printers, computer literacy and communications.

POSITION WANTED

I am available to teach hearing impaired the use of the Apple and some software, e.g. Word Star, etc. Leave message for Curt Robbins on ABBS, WAP 428.

GROUP PURCHASE POWER by Rich Wasserman

MacBuy

The good news is that we will have a group buy on Macintoshes. The bad news is that you have to be patient because Macs will not be in plentiful supply for several months. But that will give you time to save those pennies and give up nonessential spending on food, clothing and shelter. It will also give Apple time to introduce the inevitable Rev. B board...

If you want to participate in the MacPurchase (I couldn't resist!), send your check for \$5.00 along with a note stating your name, address, home and work phone numbers to the club office. Please write "Mac Group Purchase" on the outside of the envelope. This \$5.00 deposit will hold your place on the group purchase list and allow me to get a reasonably firm idea of how many Macs we will need. The deposit is refundable, but please don't sign up unless you are serious, since I will use the number of deposits as the basis of my negotiations with our supplier. I intend, incidentally, to arrange this group purchase with a local Apple dealer, if possible, so service and support will be readily available.

Once the group purchase has been arranged and further details are available (like, price!), I will ask each person on the list for a substantial non-refundable deposit which we will need to actually order the computer. You may at this time opt out of the group purchase and your five dollar deposit will be refunded, but I hope our group purchase power gets us a price so attractive that you will elect to stay with the program.

Again, this purchase will take several months to organize and the supply of Macs will have to catch up with demand before you can expect to crank 32 bits for less than list price. If you are not prepared to wait, please do not sign up for the MacBuy.

Ordinary Stuff

Just a reminder about our regular group purchase program. We have available at the club office Verbatim and Wabash diskettes, Micro-sci disk drives and controller cards, TG joysticks and paddles, Happ gameport extenders, 16K cards, 80 column cards for the][or][+ and extended 80 column cards for the //e (with 64K), plastic and oak flip files, Anchor Mark XII modems, some Call A.P.P.L.E. software (available to Call A.P.P.L.E. members only), and Mini Kas-ette disk library boxes.

We will also order a variety of printers (both letter quality and dot matrix), monitors (color and monochrome), modems, interface cards, memory cards, CP/M cards, and software from virtually any publisher. Call Kevin at the club office during regular office hours (except Tuesdays) for further details. Please remember that Kevin is there to handle a variety of office jobs, so please direct your lengthy technical questions to the Hotline volunteers listed elsewhere in this issue.

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:

March	24	- Information Services - George Kinal and Bill Wood
April	28	- Memory Boards
May	26	-
June	23	- Garage Sale

In addition to the regular monthly meetings we are planning two special meetings on the 3rd Saturdays of March and April, as follows:

March	17	- Videotapes of the "Woz" meeting
April	21	- Future of the Pi

These meetings are planned for USUHS, but have not been confirmed. Check the office answering machine during the week of the meeting.

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. ☞

NOTES FROM THE OFFICE

BULK MAILING OF WAP JOURNAL

Please be reminded that the monthly Journals that are not picked up at the meeting are bulk mailed to you (unless you have paid additional postage). This means that the labels have to be attached, the Journals have to be grouped and rubber-banded in bundles by zipcode, and they have to be sacked and taken to the post office. This usually takes four or five working days in the office. Beginning this month we plan to contract this service out, but it will still take at least three days for the processing. From the time the Journals reach the post office it may take anywhere from 3 days to ? depending on where you live. Zipcodes beginning with 206-209 seem to be delivered rather promptly. The Northern Virginia Service Facility seems to be incredibly slow. D.C. is not much better. And, of course, out-of-the-area mailings are delivered according to the distance they travel. With this in mind, you can better judge when to let us know that your Journal has not arrived.

CHANGE OF ADDRESS

Please send us your change of address as soon as you know it. We need at least two weeks notice to ensure that the Journal labels reflect the change. Many of you send us no notice at all that you have moved. In this event the Postal Service provides us with a "forwarding address" if they have one, for which they charge us 25 cents. They DO NOT FORWARD your Journal. If you write or call about back issues that you did

not receive because you did not notify us of a change of address, please include \$1 per issue for the postage to send it separately from the bulk mail. We also may occasionally "goof up" - in that case, please let us know.

PART-TIME SECRETARY/RECEPTIONIST FOR THE OFFICE

Please see the notice in "President's Corner" regarding the position of part-time secretary/receptionist for the office.

OFFICE HOURS

Office hours change from time to time. Current hours are listed in "General Information" in each issue of the Journal. Also, please note that the office is closed on all U.S. Government holidays. ☞

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 4 PM (meeting Sat only) ☞

DEALER'S CORNER

CLINTON COMPUTER'S COMPUTER FEST FOR WASHINGTON APPLE PI MEMBERS

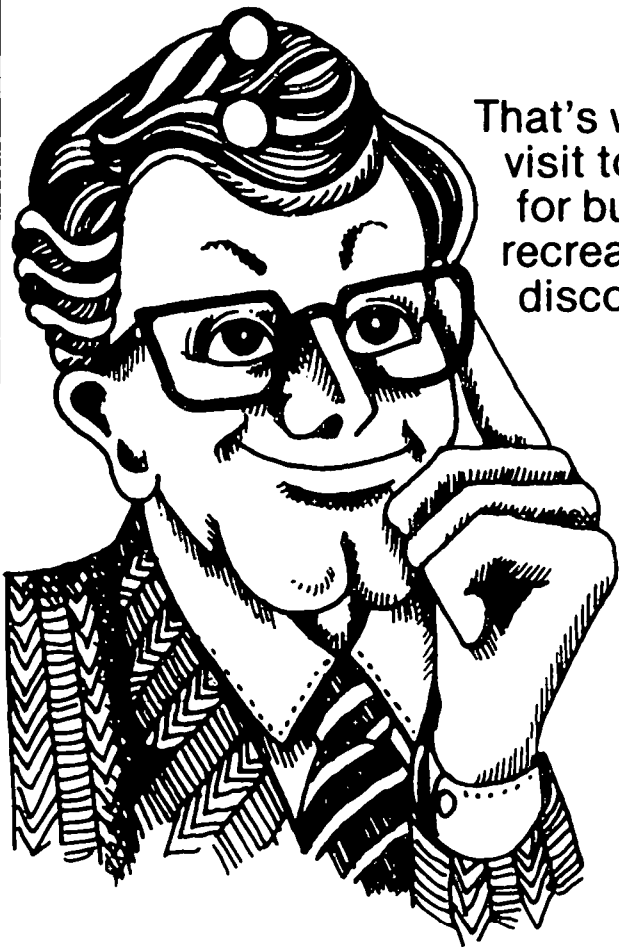
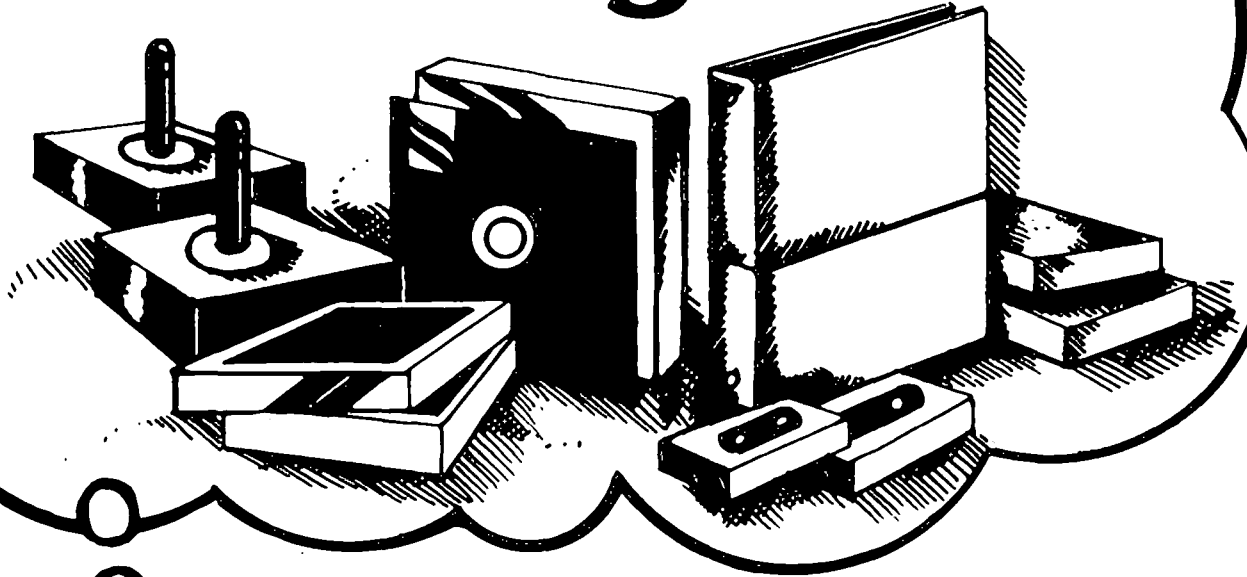
On Sunday, March 25, Clinton Computer will hold a Computer Fest for Washington Apple Pi Members, at the Clinton Computer Service Facility, 7726 Old Alex Ferry Road, Clinton, MD 20735 (just down the road from their store), 11:00 AM - 5:00 PM.

WAP members will be able to hold their "white elephant" sale, swap and buy. Clinton Computer will set up 40 booths, 5' x 5', which will be available on a first come, first serve basis. The first forty people to call will get the booths. The contact for this is Cheryl Visnick, 838-9726, 9-5 M-F.

Clinton Computer will also have a setup for their own "white elephant" sale. In addition there will be a special private sale in their retail store for Pi members only (Pi identification required).

The activities are for Washington Apple Pi members only. Software authors and hardware developers are invited, but no commercial dealers. Booth setup time will be 10:00 AM and the various activities will start at 11:00 and continue until 5:00 PM. Come and take advantage of the bargains. ☞

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MINUTES

JANUARY GENERAL MEETING

Washington Apple Pi, Ltd. met at the Departmental Auditorium on January 28, 1984 at 10:00 AM for the special meeting featuring Steve Wozniak and the Mac. President David Morganstein presided. The officers and volunteer staff of the Washington Apple Pi were recognized. Bernie Urban was recognized for his dedicated service to our group and his untiring work in completing the arrangements for this meeting.

Jim O'Brien videotaped the program. This tape will be edited and made available to schools and other Apple user groups.

Announcements of the future tutorials were made. At the February meeting, Tom Riley will present how the Apple can be used to control and measure the physical world. To the amusement of the audience, it was stated that the office would be closed this Saturday afternoon! For some strange reason no one will be there. However, longer office hours were announced, with the overwhelming choice of Saturday morning. Tom DeMay is instituting the Apple repair hotline. He has a crew of consultants who will be able to offer advice and possible aid to sick Apples.

Steve Wozniak was introduced and presented with a "Genuine Washington Apple Pi/e". Then the "Woz" introduced Mac and the design crew. The fun began!

PS. Did the meeting ever end?

Sarah Lavilla, Secretary

CLASSIFIEDS

FOR SALE: Apple][+, alone or with peripherals. Call 983-0563, weekdays after 3:00 PM, ask for Bev.

FOR SALE: Apple][+ with lower case chip, language card (64K system), disk card, CP/M card, Videx 80-column card, game I/O extender, numeric keypad, game paddles and joystick (both not in good condition), 1 Apple][disk drive and 1 MicroSci disk drive. Software includes ScreenWriter II, the Dictionary, DB Master, Creative Financing (HowardSoft), PFS Graph, File and Report, DOS 3.3 & Basics Disk. Additional hardware includes (would prefer to keep but with right price for total system would be willing to sell): Apple Dumpling][32K Buffer & Graphics Board with NEC Prowriter (both purchased within the last year). Call Jim Burger at 822-1093.

FOR SALE: D.C. Hayes Micromodem, \$150; Electronic Systems Ser. Card, \$25; Desktop Plan II, \$100; Executive Briefing System, \$80; Grappler for IDS 440G, \$75; IDS 440G Printer, \$200. Will consider best offer for any item listed. All items in perfect condition. Call Hersch Pilloff, -292-3100, evenings.

COMMERCIAL CLASSIFIEDS

FOR SALE: Apple //e system, including 2 disk drives, 80-column card w/ext. mem., CP/M, Grappler+, CCS serial interface, Hayes Micromodem, Epson MX-100 printer, Microsoft Fortran, Apple Pascal, more software, all documentation. Will consider selling components. Call Elgin Perry, (days) 301-274-3134, (evenings) 301-535-2949.

SIGNEWS

APPLE /// SIG meets on the second Thursday of the month at 7:30 PM. The next meeting will be on March 8 at Walter Reed Institute of Research. From 16th Street entrance go 3/4 around circle. Go in North entrance of the 4 story brick building on your right and ask the guard for Room 3092.

APPLESEEDS is the special interest group for our younger members. They meet during the regular WAP meeting. See Appleseds News elsewhere in this issue.

ASMSIG meets immediately after the regular Washington Apple Pi meeting.

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

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

FORTHSIG is in the process of reorganizing. If you are interested in using Forth (either the WAP library version or commercial versions), please call Kevin Nealon at the WAP office.

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. See Brief from the Lawsig, elsewhere in this issue.

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

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

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

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

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

STOCKSIG meetings are on the second Thursday at 8:00 PM 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 an organizational meeting for our Macintosh Special Interest Group. SIG MAC will meet immediately after the February and March monthly meetings. A permanent meeting time will be chosen at these meetings. For further information, contact Bob Platt, our SIG Coordinator.

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 sessions 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 with him/her. Each host will limit the size according to his/her wishes and will let you know if there is room

left 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) Name	Area	Phone	Date / Time	Topic
Barbara Larson	Springfield	451-9373	Mar 6/7:30-9:30	
Gary Hayman	Greenbelt	345-3230	Mar 9/7:30-9:30	Music, Voice Syn., Graphics
Greg Steinke	NW Washington	642-1189	Mar 12/7:30-9:30	General
Steve Wawrzaszek	Annandale	256-4889	Mar 12/7:30-9:30	Special Hardware
Ruth Heidelbach	Laurel/College Park	490-6735	Mar 14/7:30-9:30	
Carroll Washington	NE Washington	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	593-8420	May 24/8:00-10:00	DB Master
Joe McAllister	Fredericksburg, Va.	(703) 786-6577	Arrange with host	
Sharon Eagle	Oxon Hill	839-3316	Arrange with hostess	
Randy Zittel	Woodbridge, Va.	(703) 491-5493	Arrange with host	

⊗



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

1350 Beverly Rd., Suite 220
McLean, VA 22101

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	Languages, contd. P-Lisp	Fred Naef (703) 471-1479
Accountant(Dec.Sup.)	Mark Pankin (703) 524-0937	Math and OR Applns.	Mark Pankin (703) 524-0937
APPLE SSC	Bernie Benson (202) 546-0076	Multiplan	Terry Prudden (301) 933-3065
Apple TechNotes	Ed Schenker (301) 977-7349 Lance Bell (703) 550-9064	Operating Systems Apple DOS	Richard Langston (301) 258-9865 Richard Untied (703) 241-8678 Robert Fretwell (703) 971-2621
Basis 108	Loftus Becker (202) 338-5217	CP/M	
Communications Packages and Modems-Telecom.		Paddles	Tom Riley (eve.) (301) 340-9432
Anchor Mark 12	George Kinal (202) 546-7270	Pers. Filing Sys.	Bill Etue (703) 620-2103 Ben Ryan (301) 469-6457 Jenny Spevak (202) 362-3887
Anchor Sig. & BIZCOMP Modem	Jeremy Parker (301) 229-2578	Printers	
Apple CAT II	Ben Acton (301) 428-3605	General	Walt Francis (202) 966-5742 Bill Etue (703) 620-2103 Leon Raesly * (301) 460-0754 Joan B. Dunham * (301) 585-0989 Henry Greene (202) 363-1797 Jeff Stetekluh (703) 521-4882 Jeff Dillon (301) 422-6458 Scott Rullman (301) 779-5714 Bruce Field (301) 340-7038
ASCII Express	Dave Harvey (703) 527-2704	Anderson Jacobson	
CompuServe	Jerry Michalski (703) 442-8835	Apple Dot Matrix	
General	Tom Nebiker (216) 867-7463	Daisywriter 2000	
Hayes Smartmodem	Tom Warrick (301) 656-4389	IDS 460	
Micromodem	Bernie Benson (202) 546-0076	MX-80	
Omninet	Tom Warrick (301) 656-4389	Okidata	
Source & Transcend	Tom Vier (1-6 PM) (703) 860-0083	Silentype	
VISITERM	Jerry Michalski (703) 442-8835		
XTALK CP/M Comm.	Steve Wildstrom (301) 564-0039 Bernie Benson (202) 546-0076	Spreadsheet 2.0	Leon Raesly * (301) 460-0754
Corvus Hard Disk	Tom Vier (1-6 PM) (703) 860-0083	Statistical Packages	Jim Carpenter (301) 371-5263 Mark Pankin (703) 524-0937
Expediter Compiler	Peter Rosden (301) 229-2288	Stock Market	Robert Wood (703) 893-9591
Data Bases		Tax Preparer-H.Soft	Leon Raesly * (301) 460-0754
dBase II	Loftus Becker (202) 338-5217 Paul Bublitz (301) 261-4124 John Staples (703) 759-3461	Time-Sharing	Dave Harvey (703) 527-2704
DB Master	Doug Daje (301) 868-5487 Dave Einhorn (301) 593-8420	VisiCalc	Walt Francis (202) 966-5742 Leon Raesly * (301) 460-0754
Data Perfect	Leon Raesly * (301) 460-0754	Word Processors	
Data Factory	Bob Schmidt (301) 736-4698	Apple Writer II	Walt Francis (202) 966-5742 Doug Daje (301) 868-5487 Dianne Lorenz (301) 530-7881 Leon Raesly * (301) 460-0754 Tom Warrick (301) 656-4389 Neil Muncy (301) 251-9330 Cara Cira (301) 468-6118 Leon Raesly (301) 460-0754 Joyce C. Little (301) 321-2989 Carl Eisen (703) 354-4837 Jim Graham (703) 643-1848 Peter Combes (301) 871-1455 Doug Daje (301) 868-5487 Peter Rosden (301) 229-2288 Jon Vaupel (301) 977-3054
General Manager	Loftus Becker (202) 338-5217 Leon Raesly * (301) 460-0754	Gutenberg	
InfoMaster	Doug Daje (301) 868-5487	Letter Perfect	
List Handler	Jon Vaupel (301) 977-3054	Magic Window and II	
Graphics	Bill Schultheis (703) 538-4575	Peach Text	
Home Accountant	Leon Raesly * (301) 460-0754	PIE Writer/Apple PIE	
Languages (A=Applesoft, I=Integer, P=Pascal, M=Machine		ScreenWriter II	
A	Peter Combes (301) 871-1455	Supertext II	
A,I	Jeff Dillon (301) 422-6458	Word Handler	
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		

*Calls up until midnight are ok.

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A PAGE FROM THE STACK

by Robert C. Platt

I can't believe how quickly time flies. We are finishing our first year together in the WAP library stack. Your continued donations of software and time to the library make this job a pleasure. Keep those contributions coming! Remember that for every disk of software you donate, you will receive a free library disk in exchange.

MAC SOFTWARE

WAP can play an important role in distributing public domain Macintosh software. Please contribute your efforts, whether coded in MacBasic, GW Basic, or even 68000 assembly language. Whatever it is, if it runs we want it! 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.

DISK 111: ERRATA

Bill Lewers reports two fixes for Disk 111 - Games C. (We appreciate your Error Reports, but we especially value people like Bill who report a solution along with the error.)

In file SPENCERVILLE MANOR 2 you should add a missing quote mark in line 2940, so that it reads:

```
2940 IF Q$="BOOK" THEN 6550
```

Line 13125 in file EARTHQUEST.SPACE chains to a file named EARTHQUEST.CITY. To prevent a file not found error, enter the following DOS command to fix your disk:

```
RENAM CITY,EARTHQUEST.CITY
```

DISK 43: ERRATA

Pete Jones reports the following changes to improve "MASTER CATALOG":

```
670 change RV$ to A$
760 change J=128 to J=155
780 change the first PRINT A$ to CALL CA+12:
      CALL CA+15: CALL CA+12
810 change INPUT "ENTER RECORD # TO "DE$" ";A$
      to PRINT "ENTER RECORD # TO "DE$"; INPUT
      " ";A$
```

Thanks to Bill and Pete for these two modifications.

DISK 151: TAX TEMPLATES

Roy Rosfeld's description of this disk appeared in the February WAP Journal (p. 48). If you have a spreadsheet program and 64K, you can load the individual templates and fill in your taxes one schedule at a time. (Start with Schedule A, and save the 1040 and state return for last.) However, if you have more than 64K of memory, you can use the last "worksheet" template to have Roy's questions walk you through the process painlessly. (You just avoid retyping numbers; the tax is the same.)

Also note that Roy's documentation will not print out unless you have an 80-column Apple. However, you can pick up a printed copy of this at the office if you have only 40 columns.

One disk premiered at the February meeting: Disk 44 - Utilities I. (Don't overlook disks 151 and PIG12: which snuck into the library last month as well.)

DISK 44: UTILITIES I

With the exception of two communication utilities, this disk features the public domain data base, Filecabinet. Many versions of the Filecabinet program have been written for the Apple. Most WAP members use SUPER FILE CABINET from Disk 134. This disk provides two alternative versions discussed below. Each version offers different features. But select the version you use with care, because data files written with one version may not be able to be read successfully with the other.

[44.1] FILEHANDLER.2 - (by Tom DeMay) allows you to edit a data base created by the SUPER FILE CABINET program. It allows you to combine two data bases, delete header fields, delete records, and edit records. This version corrects the copy on Disk 124. (See September 1982 WAP Journal p. 16 and December 1983 WAP Journal p. 49)

[44.2] COLUMN UPDATE - (by Bob Platt) assists in the rapid editing of a data base created by SUPER FILE CABINET. Use this program if you wish to change the same header field in a number of different records. To use, RUN the program and enter the data base name. You will then select the header you wish to modify, for example, the price of an item. You can then select the records to be modified by giving the header to be searched, for example, an item name. The program will continue to prompt you for item names and new prices until you enter a "Q". To leave a value unchanged, just type return. Note that this program does not update your data base automatically. You must select the save data base option from the menu if you want to keep your changes. (See December 1983 WAP Journal p. 60 and Jan. 1984 WAP Journal p. 63.)

[44.3] FILECABINET - (revised by Dave Eldridge) is an alternative to SUPER FILE CABINET on Disk 134. This version features maximum record lengths, faster garbage collection (which can be triggered from the menu), and easy to use printer commands. Its principal advantage is that if you have a //e or a][+ with 16K card, the program will relocate DOS in memory, thus permitting larger data bases. To use, RUN HELLO. Note that the HEADERFILE format used by this program is not compatible with SUPER FILE CABINET.

[44.4] DEMO HEADERFILE, APPLESTUFF, etc. - (by Dave Eldridge) is a sample FILECABINET data base. To use, copy DEMO HEADERFILE and the two APPLESTUFF files to another disk. Then rename DEMO HEADERFILE as HEADERFILE. Finally, RUN HELLO. This demonstration file is a catalog of Apple-related books.

[44.5] RELOCATE DOS TO MEMORY CARD - (by Cornelius Bongers) will free more than 10K of RAM for use in your Applesoft programs. List file HELLO for a sample of use. Previously distributed on Disk 101.

[44.6] FILECABINET.DOC - (by Dave Eldridge) is a text file introduction to using FILECABINET. List it out with a word processor or the EXCIT program on Disk 141.

[44.7] COMM-TERM - (by George Kinal) is a public contd.

domain communications terminal program. The program will either (1) function as a "dumb terminal" which displays data from a modem onto the screen and send data from the keyboard to the modem, (2) capture a file from the modem for storage on a DOS disk, or (3) send a text file from the disk to a modem. The program assumes that the modem is in slot 2. Four different serial interface cards are supported: Electronic Systems, SSM AIO, CCS 7710 and Apple Super Serial Card. See January 1984 WAP Journal p. 28 for further details, or list file COMM-TERM DESCRIPTION with a word processor. To use, RUN INTRO COMM-TERM.

[44.8] CHANGE FILE TYPE IN CATALOG - (by George Kinal) allows you to change the type designation of a DOS file (B,I,A or T) for use with communication packages that will only transmit text files. Read George's article in August 1983 WAP Journal p. 42 or list file APP-IBM with a word processor for further details on the technical considerations in transmitting files between an IBM PC and an Apple.

[44.9] INTRO DALLAS - (by Bob Matzinger) The Dallas Fort Worth Apple Corps distributes its own version of Filecabinet entitled "File Cabinet Mach 3 Epson" or FC4CNC for short. Unlike SUPER FILE CABINET, this version will permit commas, colons and other punctuation to be stored in data fields. Valuable sample data bases have been included with this program. They are a catalog of PEEKs, POKEs and CALL addresses for the Apple][. (They pre-date the //e.) To use, RUN INTRO DALLAS. Note that if you want to copy this data base to another disk, you must copy all files that begin with the data base name, such as APPLE PEEKs, and the file BASEFILENAME as well.

APPLESEEDS NEWS

by David Stern

Appleseeds is the Special Interest Group for our younger members (Junior High and Senior High ages). Appleseeds meet at the same time as the main meeting of Washington Apple Pi, in another room at USUHS.

The meeting format is generally a one-half hour demonstration of a topic of interest, a one-half hour workshop/Q&A session, and one-half hour of new software demonstrations. Events planned for the next few months are:

- February - Games Contest
- March - Hands on Macintosh Demonstration
- April - Pascal

APPLESEEDS MAKES THE NEWS. Apple Computer Clubs, funded under a grant from Apple Computer, Inc. is promoting computer clubs in high schools throughout the U. S. Their literature prominently mentions WAP Appleseeds SIG as a good example to follow.

APPLESEEDS NEEDS YOU! If you can explain and demonstrate ProDOS and the new Apple mouse, we need you for our May and June meetings. Please contact David Stern at 881-2543, or WAP250 on the ABBS.

PROGRAM PREVIEWS

by Cara Ciria

March 24 - Information Services. George Kinal and Bill Cook have put together a program representing different services available to the computer owner. Multi-function information services, stock market information, and research information sources will be discussed using a panel format.

April 28 - Memory Boards. For all the things you've wanted to know about memory boards - this one's for you. By membership request.

May 26 -

June 23 - Garage Sale.

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Q & A

by Bruce F. Field



I have an update to an answer that appeared in the December 83 Q & A column. The questioner wanted to know what communication programs would work with his Apple Super-serial card and acoustic modem. The latest versions of ASCII Express II, ASCII Express "The Professional", and p-Term (The Professional) as well as Visiterm and Datalink all work with the Super-serial card.

In the November 83 Q & A column I replied that Apple Computer Inc. would upgrade Apple //e's with rev. A motherboards to rev. B if the user could prove that they had an Extended 80 Column Card (the one with the extra 64K of memory). (The rev. B board allows double high resolution graphics 560x192 with the Extended 80 Column Card.) At the time, I suggested that the 80 column Card might have to be Apple's and not another brand. Charlie Symmons recently received a reply from Apple which he passed along to me which states that ANY Extended 80 Column Card either made by Apple or another vendor will satisfy the above requirement.

A friend of mine ran across an interesting problem the other day that may serve as a warning to others. He was working at his computer when there was a very short power outage. Fortunately the duration was so short that his program and data in memory were still okay. After saving the program to disk he was unable to catalog the disk or perform any disk operation without the dreaded I/O ERROR. The directory on the disk was apparently scrambled. What we think happened was this. The RAM memory chips in the Apple will more or less retain their data for a little while after the power is turned off. This data retention time ranges from a few milliseconds to sometimes as much as a second and depends on the characteristics of the individual chips. Apparently the chips containing DOS were somewhat more sensitive to the power loss and scrambled DOS while the program remained intact. When the program was saved to disk it was saved improperly and the directory was destroyed. Although this sounds like a freak occurrence it actually happened to this fellow twice, and it wasn't until the second time that it occurred to him what was happening. MORAL: If you have even a brief power outage and you want to try and save your program or data to disk, use an expendable disk that has been backed up. (Of course we have backup copies of ALL our disks, don't we?)

Q. My wife is a high school math teacher (with little interest in computers. Can you believe it?) and I try to help her by using the computer. This year she is teaching Geometry and I've met the challenge and lost. I can't figure a way to print geometric figures, with labels, near the applicable question. I am fairly convinced that I need a capability that combines graphics with different text sizes and styles on the same screen. Most graphics programs that I've read about or seen have limited text positioning capability or the text alpha-numeric are too large for my purposes. Can you help? By the way, I have not bought a graphics dump program yet because I never needed this capability before. Can you tell me what is compatible with my printer or do I need something like a Grappler?

A. Probably the best programs on the market to combine a word processor with extensive graphics are the Gutenberg and Gutenberg Jr. These programs allow

you to print mathematical symbols, or other graphics that you can design, imbedded wherever you want them in your text. In addition you can define your own character fonts with addition symbols for foreign languages. These are exceptionally powerful programs for combining text and graphics. The Gutenberg supports several dot matrix printers including the NEC 8023. Gutenberg Jr. presently supports only the Apple Dot Matrix Printer and the //e, although by the time you read this others will probably be supported. A complete review of these programs by P. K. Wong, appeared in the November 1983 issue of the Washington Apple Pi Journal. If the programs cannot be found locally they can be ordered from Micromation, Ltd., 1 Yorkdale Road, Suite 406, Toronto, Ontario, Canada M6A 3A1. Gutenberg costs \$325 and the Jr. \$85.

At the risk of being labelled a heretic, isn't it also possible to use one of the graphics programs to draw your graphics on the screen (with labels), dump them to a printer, and then cut them out and paste them where they are supposed to go in the text? Seriously this is not such a bad solution. Trying to position text and graphics exactly where you want them on the paper can be a time consuming process. Of course if you want to go first class, sell your Apple][and get the new Apple Macintosh which is made for mixing text and graphics.

The Hires dump program Zoom Graphix (from Phoenix Software) can be used to dump graphics to your NEC 8023 printer using the standard interface card you already have. Zoom Graphix and like programs offer more capability for scaling, windowing, (windowing? Is that a word? Am I guilty of creating more computer jargon? Naa, Microsoft uses it.) and rotating the image than the interface cards with the built in dump programs like the Grappler. The Grappler is just more convenient.

Being in Germany, if you find it hard to keep up on new programs you might want to get a copy of one of the software books that list most of the software available for the Apple. The Blue Book, published by WIDL Video Publications, Chicago IL, is one of the most comprehensive. The Book of Apple Software 1984 by The Book Company and Addison-Wesley contains fewer entries but provides independent reviews of all the programs listed. I think the latter is one of the better software reference books.

Q. The "single wire" shift key modification, which connects bar 24 on the keyboard encoder card with one of the pins on the Apple][+ game port seems to have disabled input from PDL(1). I have confirmed continuity through all pins of the shift key modification, and I am certain that everything is seated properly. When the shift key modification is removed, the game port works as it always had. Is this the price I have to pay for achieving true shift key operation?

A. No, you apparently have a wiring error. The wire from the keyboard should go to pin 4 of the game I/O connector. The game I/O connector is at the rear of the computer near the right hand side as you face the computer (it's labelled on the motherboard). The pins are numbered starting on contd.

the right hand side at the end nearest you. Pin 4 therefore is the fourth pin back on the right hand row of pins. If you have everything connected correctly the only feature you lose is the third pushbutton input (usually called PB2, but sometimes PB3). This should in no way affect your paddle readings.

For more information see the article "Curing a Shiftless Apple" by Dan Paymar in the May 1982 issue of Call -A.P.P.L.E.

- Q. I would like to use my computer and NEC 8023 printer like a typewriter for filling out forms; this makes it very easy for determining spacing and font size for developing programs to automatically complete certain forms. Is it possible to make the printer respond immediately to the striking of a key or is the return key the only way to send info to the printer?
- A. There are two problems here that have to be fixed. First, the printer generally saves up the characters sent to it in a buffer and only prints the entire line when a carriage return character is received. This can be fixed by putting the printer in the incremental print mode by sending the "[" character CHR\$(91). The printer will print each character as it receives it. Second we need to write a short program that will send each character to the printer as soon as you type it. The following Applesoft program will do it.

```
100 PRINT CHR$(4)"PR#1" :REM TURN ON PRINTER IN
    SLOT 1
110 PRINT CHR$(91); :REM SET PRINTER TO
    INCREMENTAL MODE
120 GET A$ : PRINT A$; : GOTO 120
```

The only way to stop this program is to press RESET. This program will also work with the C. Itoh 8510 Prowriter, but NOT the Apple DMP.

- Q. In using Apple Writer II's embedded command, .tl**page #**, to number all pages except the first one, the header on each page is printed one space lower on the page than on the preceding one. After several pages, the header appears halfway down the page. What is causing this? I have used two different disks for the Apple Writer program, so the problem apparently is not there.
- A. Funny you should ask. I just ran across this problem while working on this column. The problem is that when you print the title (or header) it is printing a full 80 columns which then causes your printer (or printer interface card) to insert an extra line feed unbeknownst to Apple Writer. (In my case it was the printer.) If you cannot stop this extra line feed then use the left and right margin settings to limit the line length to less than 80 columns. Remember though that if the header is typed directly into the default print value menu, then the header is generated according to the margin settings in the default print value menu, so in this case changing the margins in your text (i.e. .lm, .rm) will not help.

Often problems with paging on Apple Writer are related to the setting of the top and bottom margins. First and foremost the page interval (PI) or number of lines per page should be set to 66 assuming you are using 11" long paper at 6 lines per inch. The top margin (TM) is the number of blank lines printed after the header (or top line, which in this case is the page number) is printed. Skip-

ping the body of text for the moment we come to the bottom of the page. The bottom margin is the number of blank lines printed between the last line of text and a footer (or bottom line) if one exists. PL or printed lines controls the total number of lines printed on the page including the header, top margin, body of text, bottom margin, and footer. Thus the body of the text is determined by PL the printed lines minus the top margin, minus the bottom margin, minus one for a header if it exists, minus one for a footer if it exists.

- Q. As a computer programming teacher, I have come across a dilemma in the Applevision program on my DOS system master. How did Bob Bishop write text on the Hi-Res screen in the program? The author's name crawls across the screen and the words "Home Sweet Home" are printed on the picture on the wall.
- A. I don't know exactly how Bob Bishop did that as there are several ways to print text on the Hi-res screen. There is no simple way such as a POKE or whatnot to allow this. One popular method is to define each character as a standard Applesoft shape (see pp. 92-100 of the old Applesoft Reference Manual to find out about shapes). These shapes can be drawn to the screen using the Applesoft DRAW or XDRAW commands. It is quite tedious to define your own set of shapes by hand, and besides there are a number of programs available with "font editors" that easily allow you to create character shapes. Two such programs are Higher Text Plus sold by A.P.P.L.E. for \$27.50, and Apple Mechanic by Beagle Bros which retails for \$29.95. Both programs contain some predefined character sets and the means to print them on the Hi-res screen. Additional character sets are sold for each although the two programs and their character sets are not compatible.

A second method is to define the characters in terms of a matrix of dots and use a special machine language routine to "print" the dots on the screen. An example of this is the HRCG (Hi-Res Character Generator) program included on the Apple DOS Toolkit disk. Using the Animatrix editor program included on the disk you can create your own special character sets as well as using the other 21 fonts available on the disk. Then, after loading HRCG into memory, simply printing to the text screen will cause the corresponding character to appear in the equivalent location on the Hi-res screen. The disadvantage of HRCG and Animatrix is that it is somewhat difficult to define characters bigger than 7 dots wide by 8 dots high, whereas using shapes the characters can be any size. The advantage of the dot matrix method is that printing to the Hi-res screen is much faster. ☞



EDSIG NEWS

by Peter Combes

EDSIG Calendar

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

"Recent Software". Demonstrations and discussions of innovative educational software which has recently been received by EDSIG.

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

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

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.

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, February 7 at 7:30 p.m.

"Has Logo Delivered?"

A group of concerned educators held a lively discussion on Logo. Logo was intended to be an "easily accessible" language that the youngest beginner would be able to use immediately. Yet it would inculcate good programming techniques and inspire mathematical thinking based on the "microworld" it developed. Logo teachers report that "engagement" certainly takes place. Children of all ages are fascinated by the ability to draw pictures on the screen with simple commands. A mechanical turtle, such as originally used by Logo developers, is even more attention getting, but these units continue to be discouragingly expensive. Seymour Papert's idea of developing "lovable objects that are good to think with" is better met by the mechanical turtle, with its immediate relation to physical moves that the child himself can make. An interesting contrast, incidentally, is the use of mechanical turtles by the severely handicapped, providing them with a control and experience of the physical world.

Logo still has a developing future. Its role in introducing children to the world of computers is well established. Logo is popular with children, and the good programming habits that are inculcated seem to stick. A number of avenues for further development are opening up. Relationships with language arts and the sciences may turn out to be possible. Even music applications are becoming available.

At the moment, one impediment is list processing, versatile and powerful, but not intuitively obvious in the way that turtle graphics are. A good teaching manual on list processing would be helpful. Logo would be helped by more improved implementations, with more user-friendly syntax and more informative error messages. "Work space" has always been limited, and it is to be hoped that new implementations to take advantage of the Macintosh's 128K memory and its high resolution graphics will soon appear. Meanwhile, an extension of current Logos to access the memory of an

extended 80-column card on the Apple //e would be useful.

The excitement and enthusiasm of Logo users continues - "If it ever gets to be a finished product, it will mean that we have missed the process." ☺

A BRIEF FROM THE LAWSIG by Robert C. Platt

On February 7, the LAWSIG toured the Justice Department's Civil Division for a demonstration of the Amicus System.

The Amicus system is most impressive. To date, CRT terminals have been installed at the desk of 500 attorneys and support staff. These terminals are tied to IBM System 38's and IBM and Amdahl mainframes to form a timesharing network. An attorney using the system can perform legal research on Juris, WESTLAW, or Lexis. The user can also use a specially-developed word-processing text editor called "Foreword." With Foreword, the attorney can type a document, include boilerplate text from a personal glossary file, and then print the document on a letter quality printer located at his/her secretary's desk. The system also includes an electronic mail facility which links the various Justice Department Offices in Washington as well as Regional Offices. Not only can text files be transported through the network, but specific messages can be delivered, conferences scheduled, and daily appointment calendars maintained. One extra feature in the ever-shifting world of government attorneys is an on-line employee directory listing office locations and phone numbers, which is subject to continuous revision.

Other components of the system include automatic generation of travel documents, litigation support (to retrieve documents and exhibits in large lawsuits), and case tracking to monitor attorney workload and assignments.

Amicus uses an Ethernet compatible local area network architecture. Although only "dumb" terminals are currently used, personal computers with an Ethernet interface card could also be attached to the Amicus network.

Least taxpayers think that this is an extravagant project, the system's designers are proud to cite management audits which show savings in word processing equipment rental and professional time that prove the system to be cost effective.

One final note to Apple-based lawyers: this system represents the first instance where Lexis and WESTLAW have shown flexibility in their communications protocols. I guess if you are a big enough customer, the database vendors will be reasonable. Perhaps this flexibility can be extended in order to make Apple-based access to Lexis and WESTLAW possible.

Many thanks to Joe Lake and his staff for hosting an informative lunch-hour tour. ☺

LOGO RANDAREAPLOT : A Random Plotting & Drawing Tool

by Ron Murray

This article will describe several Logo procedures that constitute a random plotting and drawing tool. I will also attempt to describe the train of thought, exploration and discovery that led to its development.

The Situation

After playing around with Turtlegraphics for awhile, one becomes tired of having to specify positions for the placement of figures, letters, etc., on the screen. One also wants to see some variety in the pictures being drawn, but has no enthusiasm for doing them all himself. Though this sort of stuff has always been the programmer's fate, laziness would not permit that standard solution. Since it's usually easier to think than type, the idea of a Logo procedure that does all of the dull stuff soon comes to mind.

Thinking about the Tool

It would be nice to have a Logo tool that would:

- Draw a shape of any degree of complexity
- Draw any arbitrary number of those shapes
- Distribute them randomly over an arbitrarily sized area on the screen
- Draw a single shape at a specific position on the screen
- Be easy for a lazy person to use (the original motivation)

Sources of Ideas

When faced with a problem, one is well advised to look around and see if someone has already solved it. Our brethren in the Basic camp cannot help us much without resorting to the dreaded shape tables, a condition which violates the laziness rule. Pascal even has Turtlegraphics, but Pascal, well, is Pascal.

The next move is to see if a similar problem has been solved or described ANYWHERE. This means a little "research". Though reading books about computer graphics may seem deadly to some, it is somewhat pleasant to this writer - it therefore does not violate the laziness rule.

Wading through a book that I read while waiting for the "A Team" to come on TV, I ran across a description of a proposed graphics standard for computers (Ref. 1). The author describes "graphics primitives" that are used to specify lines, areas, and surfaces on the screen. One of these primitives is called MOVE-ABS-2 :X :Y, which means move to the cartesian coordinates supplied. Another says MOVE-REL-2 :X :Y, which means move :X steps left or right and :Y steps up or down from the current position.

The lazy mind latches onto this idea. If you can go to any specific point on the screen, you can draw a shape there (using turtle moves combined into procedures). You can also move AROUND that point in a random fashion and draw a whole lot of shapes. What you need to do then is to just specify the center of a square or rectangle, then watch Logo randomly draw shapes around that point. Sounds good...

But:

- How do you jump randomly around a point?

Say you define a rectangle that is 30 steps wide by 20 steps high and you place yourself in it's center. If you take a random number of steps up that is less than 1/2 the height and a random number of steps over that is also less than 1/2 the width of the rectangle, you will still be inside of it. If you then step back these same distances, you will be back where you started (in the middle), ready to go again.

- How do you move to a specific point on the screen?

Logo has a command called SETPOS :X :Y, which will place the turtle on an X and Y coordinate of your choosing. Define a procedure called MOVEABS2 :X :Y that does this. See the procedure below.

- How do you move the turtle around a particular point on the screen?

Logo has an operation called POS which will give you a two element list that is the position of the turtle in X and Y coordinates. Then tell the turtle to SETPOS to a position equal to it's current position plus the steps added. Define a procedure called MOVEREL2 :X :Y that does this.

- What about the randomness of the positioning?

The Logo operation RANDOM :NUM returns a random number up to one less than the :NUM input to it. If you use a number thats 1/2 the length or width of your rectangle, the number you get back will be random, but still less than 1/2 rectangle's width or length. You can then move randomly around the center point...

!!!BUG TIME!!!

If you have fooled around with cartesian coordinates and the random number generator for a while, you will notice that RANDOM will only give you positive numbers. In X and Y terms, you can only go up and to the right from your initial position. What you need to do now is to define a procedure that will (yes!) randomly make the X and Y coordinates positive or negative. Here we will simply multiply the X or Y values we randomly derive by a randomly chosen 1 or -1. (See the procedure RAP).

- How do we get it to draw a shape?

The easiest part! Make a procedure that draws a shape using FORWARD, BACK, RIGHT and LEFT only, avoiding the use of HOME and X and Y screen positions. When you use the RUN command with the procedure name and any other movement command enclosed in brackets (Ref. 2), the shape is drawn and any other movement is also executed. You could put turtle moves in there and get similar results; turning them into a procedure is just as easy.

Ready to Go?

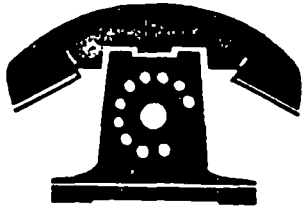
Let's think of a procedure called RANDAREAPLOT :S :H :W :N :L. It needs five inputs:

- :S - for the SHAPE to be drawn. This must be a list.
 - :H - for the HEIGHT of the rectangle within which the shapes will be drawn. This is a positive number that is greater than zero and less than 1/2 the height of the turtle field.
 - :W - for the WIDTH of the rectangle within which the
- contd.

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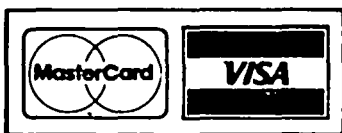
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shapes will be drawn. This is a positive number that is greater than zero and less than 1/2 the width of the turtle field.

- :N - for the NUMBER of shapes to be drawn within the defined area.
- :L - for the LOCATION, in cartesian coordinates of the center of the rectangle.

You could therefore define a box 10 turtle steps high and 90 steps wide, place it at the lower left of the screen, [-80 -90], and draw 10 TREES inside of it. It would look like this:

```
RANDAREAPLOT [TREE] 10 90 10 [-80 -90].
```

If you wanted to draw only one shape at a particular place, set :H and :W to 0, and set :N to 1. One shape will be drawn at your indicated location. It would look like this: RANDAREAPLOT [TREE] 0 0 1 [-80 -90].

The Tool in Action

Now that we can plot a shape anywhere on the screen, let's look at what can be done. The procedure TURTLESCENE uses RANDAREAPLOT (called by its shorthand version RA) to randomly draw grass, sand, and trees. The same procedure is then used to draw the sun and a turtle in specific positions.

The screen was divided into rectangles within which the grass, etc., was drawn. Space was left around the turtle so that trees and grass would not inadvertently be drawn over it. One trick of perspective is for things closer to the "horizon" to seem smaller and closer together. In this case a narrow band of SAND was placed where the horizon should be; the denser accumulation of SAND gives the impression of distance.

Most of the shapes are simple, or are built of simple parts; some allow you to specify the :SIZE of the shape in turtle steps. If some variety of shapes is desired, changing the :SIZE and using SETSCRUNCH works real well. (Try making a procedure that does this randomly.) The SUN :SIZE :RAYS procedure lets you draw a sun of any size with "any" number of rays. Figuring out how it works is left as an exercise for the reader.

Lessons Learned

- If you package your shapes separately from your drawing programs, you can erase those shapes later (add the .system command to your startup file), load in another from disk, and go on.
- The area surrounding a shape (called an extent) will sometimes overlap another shape. It looks OK for some shapes, but if you don't like it, divide the area into smaller rectangles and put the important shapes in their own area.
- To avoid a shape wrapping around the screen, use the WINDOW command.
- A rectangular plotting area is well suited to a rectangular screen, but you could also make procedures that would draw in a round one. Try it.
- Mixing turtlegraphics and cartesian coordinates can be very efficient.

Logo Features Used

LIST PROCESSING - Turtle positioning uses and outputs lists, and the RUN command requires a list of procedures or commands.

EXTENSIBILITY - The whole program is a set of stand-alone procedures.

TURTLEGRAPHICS - Drawing of the shapes without reference to an external coordinate system allows them to be done at any screen position and in any orientation.

Note the difficulty and complexity in design and programming that would occur without the above Logo features.

Alternate Uses

The MOVEREL2 and MOVEABS2 procedures could be used in data plotting procedures as well as in games. RANDAREAPLOT itself could be used in a larger game where, say, there are small graphic activities that take place randomly over the screen.

Procedure Listings

These procedures are presented in related groups. TURTLESCENE is a set of procedures that is used to draw a particular picture; it uses a set of shapes called SHAPES. INFO1 and INFO2 tell you how RANDAREAPLOT works. STARTUP is the set of procedures supplied on the Apple Logo language diskette. RAP. STUFF is the set of procedures that actually draws the shapes.

Note that the procedures that direct the drawing take up relatively little space.

References:

- (1) Foley, J. D. Principles of Interactive Computer Graphics. Addison-Wesley. NYC. 1982. 664 pages
- (2) Apple Logo Language Reference Guide.

PROCEDURE LISTINGS

STARTUP package

```
TO RW
TO READWORD
TO ARCRI :STEP :TIMES
TO CIRCLEL :RADIUS
TO ARCLI :STEP :RADIUS
TO ARCL :RADIUS :DEGREES
TO ARCLEFT :RADIUS :DEGREES
TO ARCR :RADIUS :DEGREES
TO ARCRIGHT :RADIUS :DEGREES
TO CIRCRL :RADIUS
```

SHAPES package

```
TO SAND
TO REED :SIZE
TO TREE :SIZE
TO LEG :SIZE
TO SHELL :SIZE
TO HEX :SIZE
TO GRASS :SIZE
TO SDISK :SIZE
TO RAYS :SIZE
TO SUN :SIZE
TO HEAD :SIZE
```

TURTLESCENE package

```
TO INFO1
TO INFO2
TO TURTLESCENE
```

```
PPROP "RW "PROCPKG "STARTUP
PPROP "READWORD "PROCPKG "STARTUP
PPROP "ARCRI "PROCPKG "STARTUP
PPROP "CIRCLEL "PROCPKG "STARTUP
PPROP "ARCLI "PROCPKG "STARTUP
PPROP "ARCL "PROCPKG "STARTUP
PPROP "ARCLEFT "PROCPKG "STARTUP
```

contd.

```

PPROP "ARCR "PROCPKG "STARTUP
PPROP "ARCRIGHT "PROCPKG "STARTUP
PPROP "MOVEREL2 "PROCPKG "RAP.STUFF
PPROP "PLUS.OR.MINUS "PROCPKG "RAP.STUFF
PPROP "RAP "PROCPKG "RAP.STUFF
PPROP "MOVEABS2 "PROCPKG "RAP.STUFF
PPROP "RANDAREAPLOT "PROCPKG "RAP.STUFF
PPROP "CT "PROCPKG "RAP.STUFF
PPROP "@ "PROCPKG "RAP.STUFF
PPROP "RA "PROCPKG "RAP.STUFF
PPROP "CIRCLER "PROCPKG "STARTUP
PPROP "SAND "PROCPKG "SHAPES
PPROP "REED "PROCPKG "SHAPES
PPROP "TREE "PROCPKG "SHAPES
PPROP "LEG "PROCPKG "SHAPES
PPROP "SHELL "PROCPKG "SHAPES
PPROP "HEX "PROCPKG "SHAPES
PPROP "GRASS "PROCPKG "SHAPES
PPROP "SDISK "PROCPKG "SHAPES
PPROP "RAYS "PROCPKG "SHAPES
PPROP "SUN "PROCPKG "SHAPES
PPROP "HEAD "PROCPKG "SHAPES
PPROP "INFO1 "PROCPKG "TURTLESCENE
PPROP "INFO2 "PROCPKG "TURTLESCENE
PPROP "TURTLESCENE "PROCPKG "TURTLESCENE
PPROP ".SYSTEM "BURY "TRUE
TO RW
OP READWORD
END

TO READWORD
OP FIRST READLIST
END

TO ARCR1 :STEP :TIMES
REPEAT :TIMES [RT 5 FD :STEP RT 5]
END

TO CIRCLER :RADIUS
ARCL1 .174532 :RADIUS 36
END

TO ARCL1 :STEP :TIMES
REPEAT :TIMES [LT 5 FD :STEP LT 5]
END

TO ARCL :RADIUS :DEGREES
ARCLEFT :RADIUS :DEGREES
END

TO ARCLEFT :RADIUS :DEGREES
ARCL1 .174532 :RADIUS :DEGREES / 10
IF 0 = REMAINDER :DEGREES 10 [STOP]
FD .174532 :RADIUS / 20 / REMAINDER :DEGREES 10
LT REMAINDER :DEGREES 10
END

TO ARCR :RADIUS :DEGREES
ARCRIGHT :RADIUS :DEGREES
END

TO ARCRIGHT :RADIUS :DEGREES
ARCR1 .174532 :RADIUS :DEGREES / 10
IF 0 = REMAINDER :DEGREES 10 [STOP]
FD .174532 :RADIUS / 20 / REMAINDER :DEGREES 10
RT REMAINDER :DEGREES 10
END

TO MOVEREL2 :X :Y
MAKE "X (SUM FIRST POS :X)
MAKE "Y (SUM LAST POS :Y)
SETPOS LIST :X :Y
END

TO PLUS.OR.MINUS
IF (RANDOM 2) = 1 [OP 1] [OP -1]
END

TO RAP :SHAPE :HT :WD

```

```

HT
PU
MAKE "NEWX PLUS.OR.MINUS RANDOM (:WD / 2)
MAKE "NEWY PLUS.OR.MINUS RANDOM (:HT / 2)
MOVEREL2 :NEWX :NEWY
PD
RUN :SHAPE
PU
MOVEREL2 -:NEWX -:NEWY
END

TO MOVEABS2 :X :Y
SETPOS LIST :X :Y
END

TO RANDAREAPLOT :S :H :W :N :L
MAKE "SHAPE :S
MAKE "HT :H
MAKE "WD :W
MAKE "NUMBER :N
MAKE "LOCATION :L
PU
MOVEABS2 FIRST :LOCATION LAST :LOCATION
REPEAT :NUMBER [RAP :SHAPE :HT :WD]
END

TO CT
CLEARTEXT
END

TO @
LOCAL "DUMMY
TYPE SE [\ \ \ TO CONTINUE, PRESS RETURN \ \ \ ]
MAKE "DUMMY READLIST
CT
END

TO RA :S :H :W :N :L
RANDAREAPLOT :S :H :W :N :L
END

TO CIRCLER :RADIUS
ARCR1 .174532 :RADIUS 36
END

TO SAND
DOT POS
END

TO REED :SIZE
TREE :SIZE (1 / 3)
TREE :SIZE (2 / 3)
TREE :SIZE
END

TO TREE :SIZE
HT
PD
FD :SIZE / 1.5
LT 15
FD :SIZE / 3
PU
BACK :SIZE / 3
RT 15
PD
FD :SIZE / 3
PU
BACK :SIZE / 3
RT 15
PD
FD :SIZE / 3
PU
BACK :SIZE / 3
RT 15
PD
FD :SIZE / 3
PU
BACK :SIZE / 3
RT 15
PD
FD :SIZE / 1.5
END

TO LEG :SIZE
PD

```

contd.

```

FD :SIZE / 5
LT 90
FD :SIZE / 15
RT 90
FD :SIZE / 15
RT 90
FD :SIZE (4 / 15)
RT 90
FD :SIZE / 15
RT 90
FD :SIZE / 15
LT 90
FD :SIZE / 5
LT 180
PU
END

```

```

TO SHELL :SIZE
HT
PU
SETSCRUNCH .5
PD
HEX :SIZE
RT 60
FD :SIZE
HEX :SIZE / 2
RT 60
FD :SIZE
RT 60
FD :SIZE
RT 60
HEX :SIZE / 2
RT 60
PU
FD :SIZE
RT 60
FD :SIZE
SETSCRUNCH .8
END

```

```

TO HEX :SIZE
REPEAT 6 [RT 60 FD :SIZE]
END

```

```

TO GRASS :SIZE
HT
PD
LT 45
REPEAT 2 [FD :SIZE LT 15 FD :SIZE / 2 PU BACK :SIZE /
2 RT 15 BACK :SIZE RT 20 PD]
PU
RT 5
END

```

```

TO SDISK :SIZE :RAYS
HT
PU
LT 90
FD :SIZE / 2
RT 90
PD
CIRCLER :SIZE / 2
PU
RT 90
FD :SIZE / 2
LT 90
END

```

```

TO RAYS :SIZE :RAYS
HT
SETHEADING 0
REPEAT :RAYS [PU FD :SIZE / 2 PD FD :SIZE / 6 PU BACK
(SUM (:SIZE / 2) (:SIZE / 6)) RT 360 / :RAYS]
SETHEADING 0
END

```

```

TO SUN :SIZE :RAYS
HT

```

```

SDISK :SIZE :RAYS
RAYS :SIZE :RAYS
END

```

```

TO HEAD :SIZE
HT
PU
SETSCRUNCH .6
RT 180
FD :SIZE / 2
PD
CIRCLER :SIZE / 4
RT 180
PU
SETSCRUNCH .8
END

```

```

TO INFO1
CT
PR SE [THESE PROCEDURES WILL DRAW A]
PR SE [PREDEFINED FIGURE OR TYPED SET]
PR SE [OF TURTLE GRAPHICS COMMANDS.]
PR "
PR SE [RANDAREAPLOT :S :H :W :N :L IS]
PR "
PR SE [THE DRAWING COMMAND WHERE:]
PR "
PR SE [:S IS THE SHAPE PROCEDURE NAME]
PR SE [\ \ OR TURTLE GRAPHICS COMMANDS.]
PR SE [\ \ :S MUST BE ENTERED AS A LIST.]
PR "
INFO2
END

```

```

TO INFO2
PR SE [:H IS THE HEIGHT, IN TURTLE]
PR SE [\ \ STEPS, OF THE AREA IN WHICH]
PR SE [\ \ THE SHAPES ARE TO BE DRAWN.]
PR "
PR SE [:W IS THE WIDTH OF THE AREA ...]
PR "
PR SE [:H AND :W DEFINE A DRAWING]
PR SE [\ \ WINDOW OF :H HEIGHT AND :W WIDTH.]
PR "
@
PR SE [:N IS THE NUMBER OF SHAPES, ETC.,]
PR SE [\ \ TO BE DRAWN.]
PR "
PR SE [:L IS THE LOCATION, IN TURTLE]
PR SE [\ \ COORDINATES, OF THE CENTER OF]
PR SE [\ \ THE DRAWING WINDOW ON THE SCREEN.]
PR "
PR SE [\ \ :L IS A TWO ELEMENT LIST.]
PR "
PR SE [RA :S :H :W :N :L IS A SHORTHAND]
PR SE [\ \ ENTRY FOR RANDAREAPLOT.]
PR "
PR SE [NOTICE!!!!]
PR "
PR SE [TO AVOID ACCIDENTAL WRAPAROUND,]
PR SE [USE THE 'WINDOW' MODE.]
END

```

```

TO TURTLESCENE
FULLSCREEN
CS
WINDOW
RA [SETHEADING 45 SHELL 40 HEAD 40] 0 0 1 [90 -70]
RA [SAND] 110 225 60 [-55 -55]
RA [SAND] 55 65 10 [90 -26]
RA [SAND] 5 280 70 [0 5]
RA [GRASS 10] 110 225 20 [-55 -55]
RA [GRASS 10] 55 65 5 [90 -26]
RA [SUN 30 26] 0 0 1 [-60 85]
RA [REED 50] 20 280 10 [0 0]
REPEAT 3 [PR CHAR 7]
END

```

DISABLEDSIG NEWS

by Jay Thal



DISABLEDSIG MARCH MEETING

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

and

Mr. Bud Reiser, Maryland Rehabilitation
Subject: Models of Assessment

THURSDAY, MARCH 8, 1984, 7:00 P.M.
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VIDEOTAPES

By the time you read this article the WAP DisabledSIG library will be expanded to include the first of our videotaped demonstrations of microcomputer applications for the handicapped. The intent is that these tapes will be loaned out so that individuals, therapists, and even employers will be able to readily witness the available technology.

Available on both Beta and VHS formats, the first tape will show Jerry Goldberg, an analyst with Congress' General Accounting Office, working despite his disability. Restricted by muscular dystrophy to predominantly head movements, he uses a lightpen attached to a headband to type and access information. Jerry's system, developed by the TRACE center, uses an Apple to emulate a keyboard on a terminal, and by addressing the keyboard with the light pen, typing or accessing the GAO's mainframe computer.

CALL FOR PARTICIPATION

A national conference on COMPUTER TECHNOLOGY FOR THE HANDICAPPED, will be held September 13-16, 1984, at Minneapolis, Minnesota. Papers, demonstrations, panels and workshops which address computer technology that meet the needs of the handicapped in education, vocation, rehabilitation, independent living and quality of life are being solicited. PROPOSALS are due by APRIL 1, 1984. Three copies of a 200-500 word abstract of the paper or summary of the demonstration should be submitted. The primary audience (beginner, intermediate or advanced) should be listed. A separate 100 word description, for use in the conference directory, must also be provided.

For further information contact Paula Barnhart, Computer Technology for the Handicapped, Closing the Gap, P.O. Box 68, Henderson, MN 56044.

VISIBLE SPEECH

How can a profoundly deaf person learn to speak intelligibly without an auditory model? One method is the VISIBLE SPEECH AID which turns an Apple into a vocalization trainer. The hardware consists of an interface board designed to fit into Slot 4, and a microphone that plugs into the board. The software consists of two disks -- one which contains the operating system, the other sample vocalization patterns, and an instruction book.

Simply stated, the teacher speaks into the microphone and a visual image of the word is drawn on the screen -- just as an oscilloscope traces frequency responses of its input. The teacher's input now becomes the "target" for the student to emulate. The visual target is traced for pitch, rhythm, and amplitude. The student's efforts to match the established targets can be done on a "real time" basis, or saved for repeated drill or as a record of progress useful in Individual Education Plan (IEP) planning sessions.

The cost is \$685 Canadian. For more information contact: Software Research Corporation, Discovery Park, University of Victoria, P.O. Box 1700, Victoria, B.C. Canada. Telephone: (604) 477-7246.

PUBLICATIONS

The MICROCOMPUTER RESOURCE BOOK FOR SPECIAL EDUCATION, by Delores Hagen. A major work devoted to the microcomputer and how it can be used to help the exceptional child. Written for both parents and special education professionals. \$15.95. Contact: Martin Conner, Reston Publishing Company, 11480 Sunset Hills Road, Reston, VA 22090. Telephone: (703) 437-8900.

The February 1984 issue of the SMITHSONIAN, has an article by Paul Trachtman entitled: "Putting computers into the hands of children without language." It's worth the reading. It tells of successful efforts by which children have achieved speech and language and control of their lives, though severely disabled.

EARLY THOUGHTS ON THE MACINTOSH

Because of its reliability, flexibility, and the ingenuity of the individuals that have plunged their hands into its case, the Apple][family is, and promises to be for some time, the preeminent computer for a wide variety of applications for the handicapped. However, the Mac is on the way -- and given a software base, expansion chassis (which is sure to come), a second drive (soft or hard), etc., it will be hard to beat.

Today, and straight off the shelf, a person with the use of one hand and a finger (or foot and a toe) can use its mouse and the keyboard emulation screen of MacWriter for word processing. Movement can be limited to less than 5" x 8". Faster than use of a headstick, scanning controls, or Bliss boards -- communications are immediate. With software modification, and Mac's internal speech capability, it's formidable already. Then there is the RS-422 interface.... Just think....

INTRODUCTION TO MODULA 2

- Part 3

by Robert C. Platt

This month we are continuing our overview of Modula 2, a new programming language invented by Niklaus Wirth. I am presenting the basic elements of Modula in the context of a flash card drill program which I began discussing in the January issue of the WAP Journal. Remember that Modula 2 is a regular discussion topic at WAP's monthly Pascal Interest Group meetings.

ARRAYS

Last month, we saw the need to store messages to be displayed to the student. These messages can be up to five lines long. We need a set of consecutive but identical variables in the Apple's memory to store the lines of the message. As is the case with Basic and Pascal, Modula allows us to define ARRAYS to hold a series of identical objects and to refer to a member of the series by its "subscript." If you are not familiar with arrays, think of them as a series of post boxes, each with a unique number. In Modula, all variables, including arrays must be declared before they can be used in the program. For example, to define the variable "PostBox" as a series of INTEGER numbers which will be accessed using subscript numbers varying from 1 to 10, you would write:

```
PostBox: ARRAY [1..10] OF INTEGER;
```

To store the value 250 in the first element of Post-Box, you would write:

```
PostBox[1]:=250;
```

In this example, 1 is called the subscript. The subscript tells which element of the array should be used. Note that although any legal integer value may be stored in PostBox, only values from 1 to 10 may be used as a subscript. Unlike Basic, Modula and Pascal allow you to use data types other than integers as array subscripts.

STRINGS

A string is a series of characters stored in the Apple's memory. Unlike Basic or Pascal, Modula does not have a predefined STRING data type. Instead, strings are treated as an array of characters. The length of a string can change during the execution of a Modula program, and the end of the string is marked by storing a special character called "OC."

Fortunately, you can use a special library module called "Strings" to manipulate strings without worrying about their internal representation. For example, by IMPORTing Strings, you can use the predefined data type "STRING" which is defined as ARRAY [0..80] OF CHAR. Note that when you use this predefined type, the first character of your string is stored with a subscript of 0 (in Pascal it's 1!) Also, the maximum length of any string will be limited to 80 characters.

You should learn to use the library procedures that are a part of the Strings MODULE. For example, if variables S1, S2 and S3 are defined as type STRING, then

```
S1:="Walla ";
```

will move these 6 characters into string S1. The Modula statement:

```
Assign(S1,S2)
```

will move a copy of these characters into string S2. (Saying "S2:=S1" will not do the job.) The procedure call:

```
Concat(S1,S2,S3)
```

will stick S1 and S2 together and place the value "Walla Walla " into S3, without changing the values stored in S1 or S2. (Unlike Pascal, only two strings may be concatenated with a single procedure call, and Concat returns its value in the third parameter. You may not say:

```
S3:=Concat(S1,S2)!
```

The "Pos" procedure will search a string for a pattern. For example, to find where the string S1 has the substring "@end" you would write:

```
i:=Pos("@end",S1)
```

and if S1 has the value "This is the @end.", then the variable i would get the value 12. If the substring is not present, then i would have the value 81, which is one more than the maximum size of S1. (In Pascal, 0 is used to report that a substring was not found.)

Assign, Concat, Pos and type STRING are just four items that can be IMPORTed from the Strings module. The other useful procedures are: Insert, Delete, Copy, Length and CompareStr. (See p. 11 of the Volition System Modula Utility Library manual.)

LOOP

Last month, you learned that FOR..DO..END will repeat a section of your program with the value of a "loop index" variable changed each time through. But what if you don't need an index variable? REPEAT..UNTIL creates a loop in your program with an exit condition that is tested at the end of every repetition. For example, a program to read lines of text and display them on the screen until the first character in a line is an "@" would read:

```
ReadLn(Line);
REPEAT
  WriteString(Line);
  WriteLn;
  ReadLn(Line)
UNTIL (Line[0]="@");
```

The three statements in the loop would be repeated until the first element of the string variable "Line" had an @ sign.

What if you wanted to test for an exit condition in the middle of the loop rather than at just the end? Modula has a very flexible LOOP..END statement for this. The above program could be rewritten using a LOOP:

```
LOOP
  ReadLn(Line);
  IF Line[0]="@" THEN EXIT END;
  WriteString(Line);
  WriteLn
END
```

contd.

See how the test is now in the middle of the loop and is performed between the Read and the Write. In this way, the program can handle a case where the end signal is given on the first line of input. The keyword EXIT causes the loop to stop and the next instruction will be taken from the statements following the END for the loop. Every LOOP must have only one END to mark its scope, but the LOOP can have an unlimited number of EXIT statements.

STANDARD PROCEDURES

Modula has 18 standard procedures which are a built-in part of the language and do not need to be defined or IMPORTed from another module. We will use two of them in our flash card program.

INC(i)

is the same as saying:

i:=i+1.

The INC procedure takes the parameter variable and adds 1 to it. CAP(ch), will take the CHARACTER variable ch and return its original value, except that it will convert lower case a through z into upper case. For example, if ch has the value "z", big will have "Z" with the following statement:

big:=CAP(ch)

But if ch has "4" or "G", these values will be stored in big without change. As an exercise, write a Modula program to take a string with both upper and lower case characters and print out a version with only upper case characters. I will give the answer in next month's column, along with the flash card drill listing. Ⓔ

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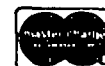
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1001 BINARY TALES or The Care and Feeding of Assemblers by Raymond Hobbs

After you have poked in your first machine language program (or your second, if you are a glutton for punishment), you generally uncross your eyes, soak your fingers and say to yourself, "Maybe I should think about getting an assembler."

For those of you who have never had the bug bite, you need an assembler program to create an executable assembly language program. And therein lies the rub. 6502 assemblers abound like word processors, and while their functions are similar, there are Pintos and Porsches among them. Hopefully, this article will help you select the best one for your purposes, or perhaps help you use what you have now to your best advantage.

The way I like to evaluate a product is to first evaluate the problem the product is designed to solve. That appears to be straightforward in the case of an assembler. We want to construct an assembly language program, and an assembler allows us to do that. However, construction of an assembly language program is a little more involved than that of a BASIC program (at a minimum, it must be assembled before it can run). That means you will wind up with the program which you write (the "source code") and the one which will execute (the "object code"). This also implies that if a program fails to run properly during testing, it must be corrected and then reassembled (although in all fairness, I must confess that I have "patched" many a program via the monitor). In other words, an assembler is going to have two parts - one to receive the source code and another to assemble it into an object program. The first part, by the way, is called the "editor" and operates like a kind of specialized word processor. The second part, the "assembler" is roughly analogous to the Apple's Applesoft interpreter.

Obviously, we would like to have an editor that is easy to use. It should allow us to enter the source code with a minimum of superfluous keystrokes, correct mistakes easily, provide rapid storage and retrieval of source files on disk, concatenate (chain) program segments into longer source files and perform any other tasks necessary to make source code entry as painless as possible. Moreover, it should do these things in response to an easy-to-remember set of commands, so we do not have to spend a lot of time referring to the reference manual.

The assembler part must be similarly efficient and easy to use. Ideally, it should allow us to specify final location of the object program (where it will reside in the Apple after it has been BLOAded). It should be able to produce relocatable programs (where location can be specified at run time - for example, from within a BASIC program) and again should have an easy-to-use set of commands. Also, in order to keep from having to access the disk drive each time we want to make changes in the source code, the editor and assembler should be co-resident. That is, they should both be in memory at the same time, and should take up as little of memory as possible, leaving the maximum amount of memory available for program files. If programs are too large to be assembled, there should be a facility for CHAINing source files at assembly time, so that large object programs can be created as painlessly as possible.

What else would make our job easier? What about the ability to code often-used procedures with just one line of code? This is termed "Macro" capability, and is currently available in many assemblers. When an assembler has Macro capability, useful procedures can be entered as Macro files, assembled, and stored in a "Macro Library". Once stored, a single line of code automatically loads the macro into the source file. Any necessary parameters for the Macro are passed along with the single coded line.

There are four other desirable features of an assembler worth mentioning here. First, the assembler should not be copy-protected. For serious applications program development, it is frequently convenient to have the assembler program stored on the same disk that has the program being developed on it. This makes program development quicker, more efficient and allows for construction of extremely complex library systems. Second is the reference section of the manual. No matter how easy to use the Editor and Assembler commands are, some recourse to the manual is inevitable. I prefer a quick reference section which contains cryptic summaries plus page references to a detailed explanation of functions. A well-ordered index is also worth its weight in bytes. The third feature is a well-written tutorial section of the manual. A product that reveals itself only grudgingly to the user is discouraging. The fourth feature is user-friendly error trapping and messages. This feature becomes very important in the debugging process, and when you program in assembly language, you will spend a not inconsequential amount of time in debugging!

Your own requirements may include attributes in an assembler that I have not covered here, or you may not need as many features as I do. Whatever your requirements, write them down on a list, and take the list with you when you shop.

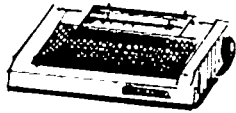
Next time I will review a number of popular assemblers. And remember to drop a card to the ASMSIG if you have a question or wish to see a subject covered in this column.

** A final note: For those of you who purchased the Machine Language Utilities disk (WAP Volume 41), if you want a hardcopy of the operating instructions, make the following changes:

1. BLOAD MASMA, A\$1000
2. BLOAD MASM DOC, A\$4000
3. CALL -151
4. 401f: ed
5. 4056: ed
6. 4070: ed
7. 1<CTRL-P>4000G
8. Follow prompts. The above assumes that your printer is in slot #1. ☺

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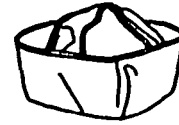
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I AM WHAT I AM AND WHAT I AM, I AM

by John A. Love III



A few months ago I listed several excellent references on both Machine language and Assembly language. One of them was Apple Machine Language by Don Inman and Kurt Inman, published by Reston Publishing Company in Reston, Virginia (703/437-8900). Thanks to the generosity of this publisher, I have been allowed to present in the public domain what I am about to describe.

The Inmans presented in their book what they labeled a "Basic Operating System (BOS)". The explicit purpose of this BOS is to enable the user to enter Machine language via the very clever use of effective screen prompts, a HEX-to-decimal conversion routine and POKES in Applesoft Basic. I have taken the liberty of significantly expanding the Inmans' code to a full-fledged Machine language editor. My justification for doing so is fairly simple -- my belief that there is a large number of Apple computer programmers who share my deep interest in the magazine Nibble, but who do not have an Assembler such as MERLIN or LISA. I propose that my expansion of the Inmans' BOS will allow a person to enter the (sometimes) very long Nibble Machine language code in relatively short order (typing prowess notwithstanding).

This expanded code is segmented via the use of REMarks, thus enabling the user to follow its logic rather easily. Because I honestly believe that the code can be easily tracked due to this segmentation approach and because the size of each segment is relatively small (thus making each logic segment straight-forward), I have chosen to limit my description of my expansion to the following:

There are six options that the user can exercise:

1. CREATE -- using the Inmans' code almost in total, this portion creates your Machine language code from scratch, mistakes and all. The only input required is the starting decimal address and, of course, the Machine code bytes in succession (in HEX). The last byte of your code is signified by tacking on a trailing "Z" before pressing "<CR>".
2. REVIEW/EDIT -- here the Inmans provide an opportunity to review your Machine code on the screen. At this point the substance of my expansion begins. While in this option, an Editing Menu is provided at the top of the screen. The editing options include:
 - a. Delete
 - b. Insert
 - c. Replace
 - d. New
 - e. None
3. SAVE TO DISK -- here you BSAVE your Machine code to disk, selecting a name of your choice.
4. SEND TO PRINTER -- here you transfer your Machine code to paper for a hard copy.
5. LOAD FROM DISK -- this portion allows you to BLOAD your Machine code from your disk. This option takes advantage of the fact that the starting memory location of the most recently BLOADED binary code is stored at \$AA72,3 and the number of bytes

in this binary code is stored at \$AA60,1.

6. RUN/END -- finally, you either BRUN your Machine code or END your use of "ASSEMBLE" (more on this title shortly). In addition, the user can non-destructively interrupt his or her execution of "ASSEMBLE" by typing a "CTRL-C" at any time.

Before I present this expanded Applesoft program, two final series of statements. First, I apologize for the somewhat contradictory title of the program, namely, "ASSEMBLE". I could not call it "Machine Language Editor (MLE)" because that name was already taken by MicroSPARC, Inc. in their release (they're the publishers of Nibble, by the way); and, quite frankly, after a while, I simply gave up on a name! Second, in the user's exercise of Option #4 -- printing out on paper -- an AWFUL LOT of paper is used. To overcome this deficiency I strongly recommend that the reader "pour over" Tim Damon's article "Binary Dump" that appeared in the December 1983 issue of Nibble.

The lower case "g" in the listing to follow stands for the bell or a "CTRL-G".

```
10 REM ** MACHINE LANGUAGE PROGRAM FILE = ASSEMBLE **
15 REM * BY : DON INMAN & KURT INMAN *
20 REM * *
25 REM * (AS MODIFIED BY : JOHN A. LOVE, III) *
30 REM * ( OF : Washington Apple P1 ) *
35 REM * *
40 REM * COPYRIGHT (C) 1981 *
45 REM * BY RESTON PUBLISHING COMPANY *
50 REM * RESTON, VIRGINIA 22090 *
55 REM *****
60 :
100 REM ***** PROGRAM MENU *****
110 :
120 D$ = CHR$(13) + CHR$(4): REM CARRIAGE RETURN
+ CTRL-D.
130 PRINT D$;"PR#0":PAPER$ = "OFF"
140 ONERR GOTO 3400
150 :
160 HOME : VTAB 5
170 PRINT SPC(1);: INVERSE : PRINT "MACHINE
LANGUAGE ASSEMBLE PROGRAM MENU": NORMAL
180 PRINT "gg": PRINT "gg": PRINT "gg"
190 PRINT SPC(5);"1. CREATE"
200 PRINT SPC(5);"2. REVIEW/EDIT"
210 PRINT SPC(5);"3. SAVE TO DISK"
220 PRINT SPC(5);"4. SEND TO PRINTER"
230 PRINT SPC(5);"5. LOAD FROM DISK"
240 PRINT SPC(5);"6. RUN/END"
250 PRINT "": PRINT "": PRINT ""
260 :
270 INVERSE : PRINT "WHICH OPTION NUMBER DO YOU
SELECT ? ";;: NORMAL : INPUT "":OPT
280 ON OPT GOTO 800,1200,1800,2000,2200,2400
290 :
300 HOME : VTAB 10: PRINT "ggggg": PRINT SPC(11);:
FLASH : PRINT "IMPROPER SELECTION": NORMAL
310 FOR DLY = 1 TO 4000: NEXT DLY
320 GOTO 100
330 REM -----
400 REM ***** EDITING MENU *****
410 :
420 HOME : PRINT "ggggg"
430 PRINT SPC(14);: INVERSE : PRINT "EDITING MENU":
NORMAL
```

contd.

```

440 PRINT "": PRINT ""
450 PRINT "DELETE=""; INVERSE : PRINT "D";: NORMAL :
PRINT SPC( 1);"INSERT="";: INVERSE : PRINT "I";:
NORMAL : PRINT SPC( 1);"REPLACE="";: INVERSE :
PRINT "R";: NORMAL
460 PRINT SPC( 1);"NEW="";: INVERSE : PRINT "W";:
NORMAL : PRINT SPC( 1);"NONE="";: INVERSE : PRINT
"N": NORMAL
470 PRINT ""
480 PRINT "*****"
490 PRINT ""
500 POKE 34,9: REM TOP OF NEW TEXT WINDOW.
510 RETURN
520 REM -----
600 REM ***** INSERT M/L INSTRUCTIONS *****
610 :
620 LAST = START + BYTES - 1: REM OLD LAST BYTE.
630 FOR BITES = LAST TO AD STEP - 1
640 DTA = PEEK (BITES)
650 NADDR = BITES + 1
660 POKE NADDR,DTA
670 NEXT BITES
680 BYTES = BYTES + 1
690 RETURN
700 REM -----
800 REM ***** GET PRELIMINARY INFORMATION *****
810 :
820 HOME
830 PRINT "": FLASH : PRINT "AFTER LAST INSTRUCTION,
TYPE 'Z':": NORMAL : PRINT "": POKE 34,4
840 PRINT "": INPUT "STARTING DECIMAL ADDRESS =
ggggg";START: PRINT ""
850 INPUT "PRESS <CR> TO ENTER PROGRAM ggggg";PROMPT$
860 PRINT "": PRINT ""
870 A = START
880 REM -----
1000 REM ** ENTER PROGRAM IN HEX, THEN CONVERT TO
DECIMAL **
1010 :
1020 FOR E = 1 TO 1.0E9
1030 INVERSE : PRINT A;: NORMAL : PRINT SPC( 2);
1040 GET H$: PRINT H$;
1050 GET U$: PRINT U$;
1060 GET L$: PRINT ""
1070 IF ASC (H$) < 48 OR ASC (H$) > 70 OR ( ASC
(H$) > 57 AND ASC (H$) < 65) THEN PRINT "1ST
DIGIT NOT HEX -- TRY AGAINggggg": GOTO 1030
1080 IF ASC (U$) < 48 OR ASC (U$) > 70 OR ( ASC
(U$) > 57 AND ASC (U$) < 65) THEN PRINT "2ND
DIGIT NOT HEX -- TRY AGAINggggg": GO TO 1030
1090 GOSUB 2600
1100 POKE A,D
1110 A = A + 1
1120 IF L$ = "Z" THEN BYTES = E: POKE 34,0: GOTO 100
1130 NEXT E
1140 REM -----
1200 REM **** REVIEW M/L PROGRAM ON SCREEN FOR
EDITING ****
1210 :
1220 HOME : GOSUB 400: REM EDITING MENU.
1230 :
1240 GOSUB 2800
1250 HOME : FLASH : PRINT "AFTER LAST CHANGE, TYPE
'Z':": NORMAL : PRINT "": POKE 34,11
1260 :
1270 FOR E = 1 TO 1.0E9
1280 INPUT "CHANGE TYPE = ggggg";CHANGE$
1290 IF CHANGE$ = "N" THEN POKE 34,0: GOTO 100
1300 INPUT "ADDRESS = ggggg";AD
1310 IF CHANGE$ = "D" THEN GOSUB 1600: GOTO 1440
1320 IF CHANGE$ = "I" THEN GOSUB 600
1330 INVERSE : PRINT AD;: NORMAL : PRINT SPC( 2);
1340 GET H$: PRINT H$;
1350 GET U$: PRINT U$;
1360 GET L$: PRINT ""
1370 PRINT "": PRINT ""
1380 IF ASC (H$) < 48 OR ASC (H$) > 70 OR ( ASC
(H$) > 57 AND ASC (H$) < 65) THEN PRINT "1ST
DIGIT NOT HEX -- TRY AGAINggggg": GOTO 1330
1390 IF ASC (U$) < 48 OR ASC (U$) > 70 OR ( ASC
(U$) > 57 AND ASC (U$) < 65) THEN PRINT "2ND
DIGIT NOT HEX -- TRY AGAINggggg": GOTO 1330
1400 GOSUB 2600
1410 POKE AD,D
1420 IF CHANGE$ = "W" THEN BYTES = BYTES + 1
1430 IF L$ = "Z" THEN POKE 34,0: GOTO 100
1440 NEXT E
1450 REM -----
1600 REM ***** DELETE M/L INSTRUCTIONS *****
1610 :
1620 LAST = START + BYTES - 1: REM OLD LAST BYTE.
1630 FOR BITES = (AD + 1) TO LAST
1640 DTA = PEEK (BITES)
1650 NADDR = BITES - 1
1660 POKE NADDR,DTA
1670 NEXT BITES
1680 BYTES = BYTES - 1
1690 RETURN
1700 REM -----
1800 REM ***** SAVE PROGRAM TO DISK *****
1810 :
1820 HOME : VTAB 10
1830 INPUT "# OF DISK DRIVES = ggggg";DSK
1840 IF DSK > 2 THEN DSK = 2
1850 PRINT ""
1860 PRINT "PLACE DISK IN DRIVE #";DSK;". PRESS
<CR>.ggggg";: INPUT "":PROMPT$
1870 PRINT ""
1880 INPUT "NAME OF PROGRAM = ggggg";PGM$
1890 PRINT D$;"BSAVE ";PGM$;"A";START;"L";BYTES;
"D";DSK
1900 GOTO 100
1910 REM -----
2000 REM * PRINT THE MACHINE LANGUAGE PROGRAM ON
PAPER *
2010 :
2020 HOME : VTAB 10
2030 INPUT "PRESS <CR> TO START PRINTER ggggg";
PROMPT$
2040 PRINT D$;"PR#1":PAPER$ = "ON"
2050 PRINT CHR$( 9);"8ON": REM PREVENTS PRINTER
OUTPUT FROM ECHOING TO MONITOR.
GOSUB 2800
2060 GOTO 100
2080 REM -----
2200 REM ***** LOAD PROGRAM FROM DISK *****
2210 :
2220 HOME : VTAB 10
2230 INPUT "# OF DISK DRIVES = ggggg";DSK
2240 IF DSK > 2 THEN DSK = 2
2250 PRINT ""
2260 PRINT "PLACE DISK IN DRIVE #";DSK;". PRESS
<CR>.ggggg";: INPUT "":PROMPT$
2270 PRINT ""
2280 INPUT "NAME OF PROGRAM = ggggg";PGM$
2290 PRINT D$;"BLOAD ";PGM$;"D";DSK
2300 START = PEEK (43634) + PEEK (43635) * 256:
REM $AA72 (HEX) + 1.
2310 BYTES = PEEK (43616) + PEEK (43617) * 256:
REM $AA60 (HEX) + 1.
2320 GOTO 100
2330 REM -----
2400 REM * RUN END RUN END RUN END RUN END RUN END *
2410 :
2420 HOME : VTAB 12
2430 INPUT "'RUN' PROGRAM OR 'END' ? bbbbbb";RE$
2440 IF RE$ = "END" THEN HOME : VTAB 12: PRINT
"bbbbbb": GOTO 2470
2450 HOME : VTAB 12: PRINT "bbbbbb"
2460 CALL START: GOTO 100
2470 PRINT SPC( 16);: FLASH : PRINT "FINISHED":
NORMAL
2480 END : REM END END END END END END END END
END END
2490 REM -----
2600 REM ***** CONVERT HEX TO DECIMAL *****
2610 :
2620 M = ASC (H$):N = ASC (U$)

```

contd.

```

2630 IF M > 57 THEN M = M - 55: GOTO 2650
2640 M = M - 48
2650 IF N > 57 THEN N = N - 55: GOTO 2670
2660 N = N - 48
2670 D = 16 * M + N
2680 RETURN
2690 REM -----
2800 REM ***** DISPLAY PROGRAM *****
2810 :
2820 PRINT "HERE IS YOUR PROGRAMggggg"
2830 FOR DLY = 1 TO 4000: NEXT DLY
2840 PRINT ""
2850 J = 0: I = 12
2860 COUNT = INT ((BYTES - 1) / 13) + 1: LOOP = 1
2870 IF LOOP > COUNT THEN GOTO 2900
2880 GOSUB 3000
2890 LOOP = LOOP + 1: GOTO 2870
2900 RETURN
2910 REM -----
3000 IF LOOP = COUNT THEN I = (BYTES - 1)
3010 FOR E = J TO I
3020 PRINT SPC( 15); INVERSE : PRINT (START + E);:
NORMAL : PRINT " : ";: GOSUB 3200
3030 NEXT E
3040 IF PAPER$ = "ON" THEN GOTO 3060
3050 INPUT "PRESS <CR> TO CONTINUE ggggg"; PROMPT$
3060 J = I + 1: I = I + 13
3070 RETURN
3080 REM -----
3200 REM ***** CHANGE TO ASCII AND DISPLAY *****
3210 :
3220 Y = PEEK (START + E)
3230 H = INT (Y / 16)
3240 U = Y - 16 * H
3250 IF H < 10 THEN PRINT H;: GOTO 3270
3260 PRINT CHR$( H + 55);
3270 IF U < 10 THEN PRINT U: GOTO 3290
3280 PRINT CHR$( U + 55)
3290 RETURN
3300 REM -----
3400 REM ***** ESCAPE VIA "CTRL-C" *****
3410 :
3420 NORMAL
3430 IF PEEK (222) = 254 OR PEEK (222) = 255 THEN
POKE 34,0: GOTO 100: REM RETURN TO MENU IF A
"CTRL-C" HAS BEEN STRUCK.
3440 POKE 34,0: HOME : VTAB 9: PRINT "ggggg": PRINT
"bbbb": PRINT SPC( 6);: FLASH : PRINT "FATAL
ERROR ----- START OVER": NORMAL : PRINT "":
PRINT "": PRINT "": REM PREPARE FOR "FATAL
ERROR" MESSAGE.
3450 POKE 216,0: REM OTHERWISE, RETURN COMPUTER TO
NORMAL AUTOMATIC ERROR HANDLING STATE.

```

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THEY'RE NOT KIDDING by Sadder B. Wiser

(Ed. Note: The following remarks accompanied this article. "This is a true story - only the name of the author has been changed. You can understand my embarrassment in not signing my real name. If you want to check up on me (you know, blackmail or whatever) my membership number starts with an integer."

We've all been warned two or thirty times about the weakness of the ON/OFF switch. You know which one I mean. It can go bad. Yes it can. So, goes the warning, take some precautions: don't use it more than necessary - install an auxiliary switch, unplug it if you have to, but best of all, just leave it ON all the time.

When will the switch go out? Let me tell you a horror story. I used that switch freely the first couple of months I had my pretty Apple. Then I got the word: don't use it. So I didn't - not for eight months. Left the power ON all the time, as a matter of fact. (DID turn off the monitor when not in use, of course.) Then I got to playing around with a few PROTECT techniques - oh, that I never had! There I was, unable to LIST, RUN, CALL or even "warm start". So I flipped the switch. Just that one time, mind you. Guess what?

Well, it was the start of a long winter's weekend (would you believe New Year's Eve?). No service shops available, naturally; probably not for DAYS. And, devout enthusiast that I am, I could not see myself doing without my daily fix on the keyboard. Besides, I had promised to finish writing a program for a friend...

With the confidence of a mouse in a cheese shop I decided that a little peek wouldn't hurt anything. So, to make the inevitable ending shorter, I got out screwdriver and went to work. The power supply is easily removed, and who heeds warnings at a time like this? (CAUTION: UNDER NO CIRCUMSTANCES - etc.) But I went right on with it - opened the box!

It was no trick at all to remove the switch. It was no trick at all to jump-wire the junction. It was no trick at all to re-solder the joint. The trick was to make it work after my "repairs". It wouldn't. It continued to "wouldn't". In fact, it still won't.

When I finally got it in for service, the friendly servicer told me that he really didn't know what could be wrong, because HE had never opened a power supply! He just sends them back to the factory for replacement. And since mine had been opened and "worked on"... (please excuse the tears - I'm still misty about this).

Not to belabor the obvious: the difference between simply waiting for proper service and doing my own tinkering was \$84.00. (And that's just for a little switch I should have known better than to try to best.) That's the DIFFERENCE - those power supply boxes aren't cheap, even on replacement.

Read the title again. And the author's name. They're not kidding about that switch. You have been warned. Anybody want a faulty power supply - cheap?

SOFTVIEWS

by David Morganstein

FORTRESS. Joshua, the family programming consultant, and I find this recent SSI release a bit habit forming. It is one of those terribly easy to learn yet difficult to succeed at games. The rules can be picked up in a few minutes. The playing board consists of a 6 by 6 square. On any turn you may either place a fortress on an unoccupied square, or, build up an existing fortress from a level one to a level two and then to a level three. Each fortress has an effect on five squares, the one on which it sits and the up to four adjacent squares (horizontally or vertically). Each square of the board is either under control of one of the two players or free. A square is under control of one player when the forces he applies to it exceeds the forces of the other player. If I have three points on a square (perhaps because of two fortresses, a level one and a level two) and you have five points (e.g. a level two and level three fortress) you are in control of the square. Your score is the total number of squares you currently command. The object of the game is to finish with the most squares under your control. A typical game is twenty-one turns though other settings are possible. Fortress comes with five "computer" opponents of varying capability. The most fascinating part of the game is that as you play many games with one of the computer opponents, he (she, it?) improves the algorithm used! SSI is having a contest for the best improved FORTRESS algorithm. SSI, 883 Stierlin Rd., Mountain View, CA. 94043-1983. Phone (415) 964-1200. Price \$34.95

MICROMASTER. (Robert Berman & Richard Norling) There are a number of Applesoft utilities available to assist the BASIC programmer. Many of these consist of ampersand linked commands which extend the limits of Applesoft. While MicroMaster contains most of the more useful and more frequently provided commands, it is in fact a far more powerful tool. The package provides access to a dynamic subroutine library with routines written in either BASIC or machine language. Many of the competing extension packages come in a single large "chunk"; you get all the routines (and are deprived of a certain amount of memory) regardless of your need. MM allows you to select the enhancements needed for any particular program and to append only these to your BASIC program, thereby minimizing loss of memory. You can readily, and dynamically, select from a collection of subroutines you have collected.

A few of the enhanced Applesoft commands are: INPUT (input anything), PRINT (formatting PRINT USING), STORE & RECALL (high speed direct storage and retrieval of numeric data arrays to and from disk), GOSUB & GOTO (variable named subroutines or transfer points rather than numeric constant), SUBSTR (find a character substring within a string), and UNDIM (free a dimensioned variable space).

Many utility packages suffer from incompatibility with other often used programs. MM has the most complete list of well known, favorite utilities with which it is compatible. Among these are Global Program Line Editor, Co-Resident Applesoft Editor, APA from the Dos Took Kit, Utility City and Double Precision Applesoft. Its users indicate it is compatible with most fast DOS packages. It certainly worked with the one I use.

The documentation that comes with the unprotected diskette includes a 126-page, readable manual and a

brief reference card. The manual includes a table of contents and an index, as well as a reference section on each BASIC extension, a memory map and a list of zero page locations used. There are numerous example applications contained in the manual. MicroPower, Ltd., 1100 East-West Highway, Silver Spring, MD. 20910. Price: \$75.00

PROFIT MOTIVE. The cover reads "A Big Business Simulation" for 1-10 players. In this marketing and manufacturing simulation you build and sell monitors, printers and computers. These are made from microprocessors, CRT's and sub-assemblies which you must purchase at reasonable prices and stock in sufficient quantities. The game goes through a series of repeated steps where you bid for parts and offer your wares. The simulation contains a number of realistic and random factors including inflation, news releases, and labor relations. Other decisions you must make include the mode of transporting your goods and of storage. You are evaluated by the Board of Directors based on the profit you can squeeze out of the business. The accompanying manual is quite brief. You will have to experience it in order to learn how to play. HYTEK, BOX 1, Dayton, MD. 21036. Price: \$34.95.

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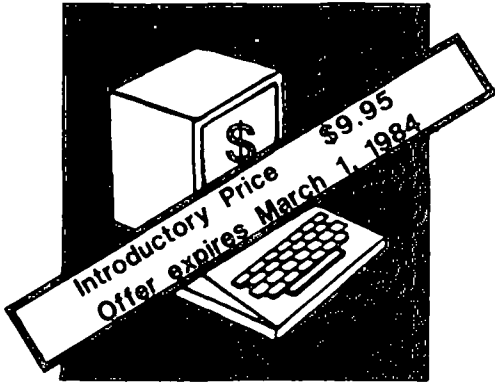
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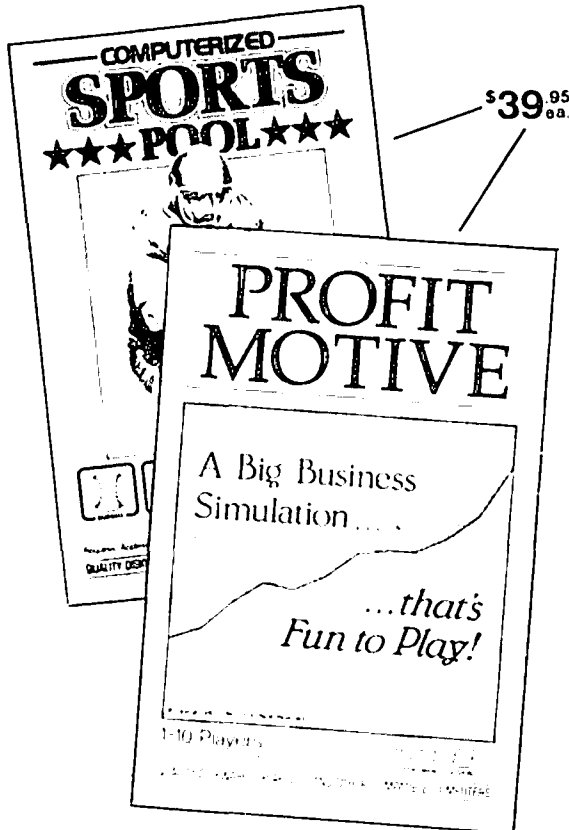
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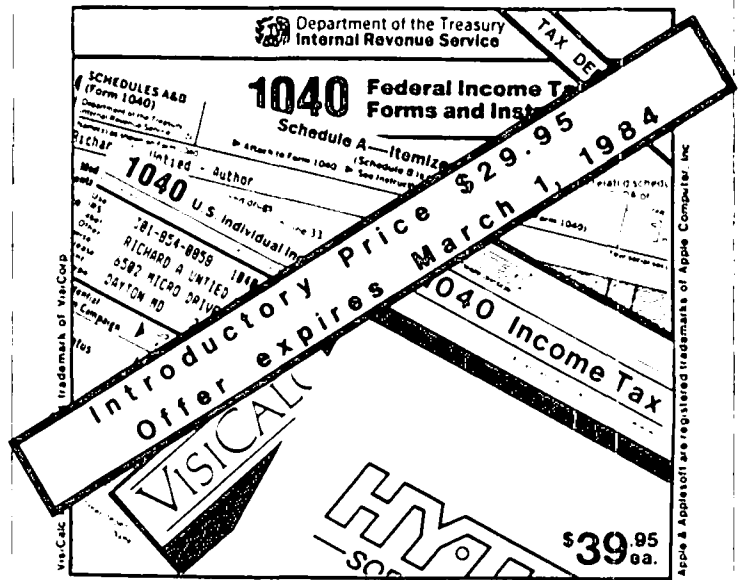


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MICROMASTER™

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).

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JUST STRINGING ALONG

by C. Swift, Prop.

When my Apple][+ and I were new to each other (whatever happened to 1982?), we treated each other with respect: I trembled when I approached the keyboard, and it trembled when I entered the room. There was no real reason on my part, for I knew full well that it wouldn't hurt me. It, on the other hand, was beginning to suspect that I would do it harm and distress. Well, I will admit I didn't always know what I was doing. But my intentions were good ---

So it was that I took it personally when it insulted me right where it hurts (my ego). I had just tried to INPUT my name, and BLAMMO! -- it got me, but good. My INPUT was

C. SWIFT, PROP.

and this is what came back at me:

?EXTRA IGNORED
C. SWIFT

Did I mention insult? I was DEVASTATED! How could it treat me this way? My intentions were always good -- my heart was in the right place -- what had I done to deserve this?

Soon, of course, I learned that was just its way of telling me that a comma is a no-no in a string. O.k., that made it not so personal, and we became friends again.

During my many studies and researches I later learned there is a way to get around this problem: just sneak up on a string with concatenated GET's. At first it was perplexing and confusing. I could copy the program listing and use it (to my continuing delight, it's a GOSUB, the use of which is one of my greatest joys). But it did have its limitations and weaknesses. Could it be improved? Could I do it? For the answer, check out this little program:

```
10 REM      STRINGING ALONG
20 :
30 REM (WITH SOME SMALL
40 REM IMPROVEMENTS FROM
50 REM C. SWIFT, PROP.)
60 :
100 HOME
110 PRINT "PRINT SOMETHING:  ";
120 GOSUB 1000
130 LET YOUR$ = A$
140 PRINT : PRINT "YOUR STRING IS:      "YOUR$
150 PRINT : END
1000 REM      HERE'S THE SNEAKY PART!
1010 A$ = ""
1020 GET B$
1030 IF A$ = "" AND B$ = CHR$ (8) THEN 1020
1040 IF B$ = CHR$ (21) THEN B$ = CHR$ (95)
1050 IF B$ = CHR$ (24) THEN B$ = CHR$ (92)
1060 IF B$ = CHR$ (27) THEN B$ = CHR$ (91)
1070 PRINT B$;
1080 IF B$ = CHR$ (13) THEN RETURN
1090 IF B$ = CHR$ (8) THEN A$ = MID$ (A$,1,LEN(A$)
- 1): CALL -868: GOTO 1020
1100 A$ = A$ + B$
1110 GOTO 1020
```

Lines 130 and 140 use YOUR\$, but this is just for convenience; you may want a variety of GOSUB 1000's in your program, each with a different string to equate with A\$.

Line 1010 starts A\$ as a blank. Line 1020 GETs a single character from the keyboard: letters, numerals, symbols ... anything, INCLUDING commas, colons, quotes (") ... ANYTHING!

Lines 1030 - 1060 are to accomodate my primitive keyboard (whatever happened to 1982?): CHR\$ (21) is a Ctrl-U, but it comes out as underline (CHR\$ (95)); CHR\$ (24) is a Ctrl-X, but it comes out as a reverse slash (CHR\$ (92)); CHR\$ (27) IS <ESC>, but it comes out as a left bracket (CHR\$ (91)). (I presume that you already know that shift-M produces a right bracket -- it took me eight months to discover it ... by accident!)

Lines 1070 and 1080 are self-explanatory (remember the semi-colon in Line 110).

Line 1090 is, I think, the best part of the whole thing. CHR\$ (8) is a "backspace" (the left arrow); the MID\$ cuts A\$ back down to size; CALL -868 blanks out whatever the "backspace" runs over; finally GOTO 1020 continues the string at whatever point you have "backspaced" to.

Lines 1100 - 1110 tack the most recently typed character onto A\$ and go back for more.

There is a weakness, of course. (I am noted for many weaknesses, and I don't want to disavow this one!). A whole lot of characters are "non-printing" ... Ctrl-C, for instance. They won't affect the appearance of the string, BUT they will be added to the length of the string (check Line 1090). If your program will later check the LEN of YOUR\$, be careful about adding such characters. (I'd like to know if there is some way to add a couple or so values to the LEN of a string without changing the string -- ignorance is just another of my weaknesses.)

And for a final pleasant note: Ctrl-G (the bell) and Ctrl-J (the linefeed) fit into this program very well. I can't think what good they might do, but it's kind of nice to know.

(By the way, you'll be pleased to learn that my little treasure doesn't tremble any more when I approach it ... but every so often it still gives me a SYNTAX ERROR ... even when I enter everything right ... do you suppose ... ?)

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ACTIONS AND INTERACTIONS

by Bob Anderson

Most software packages by themselves produce some very meaningful and pleasant actions. However, when some software packages get together in various combinations or in a specific execution order, some not so nice interactions occur. I will share with you some of these in hopes you will return the favor. I don't know why all these interactions occur, but knowing they do may save you some time and grief.

The first interaction is between the WAP "Cat" program available on some of the library disks with Apple's "Renumber Program" available on the DOS 3.3 master disk. The renumber program works fine unless the Cat program has been run any time before it. Apparently Cat changes some software hooks which Renumber expects to be unchanged. The machine needs to be purged of all Cat changes before you run the Renumber program. A power down or reboot will do it.

The second interaction is between this same Cat program and the "TED II+" assembler, available on library disks. If Cat has been run and not purged, you will get a "greater than 256" error when you attempt to reload a previously saved assembly source file. Again, a power down or reboot is necessary to clear the machine.

If "GPLE" has been run, or run and then removed, you will have problems trying to run the Applesoft Tutorial disk supplied by the Comm Center as their Dec. 1982 disk of the month. When they finish displaying a screen of data, they wait for you to press RETURN before continuing. It can take 6 - 7 presses of the key to get any action. A reboot is needed to clear this condition.

Contrary to my previous statement (in my WAP September 1983 review of the Double-Take software package), I have not been able to get Diversi-DOS, GPLE, and Double-Take to run together. I must have gotten mixed up during my testing, as I have not been able to prove my statement by any means since then.

I recently purchased an Okidata Microline 92 printer and a PKASO interface board. Apparently the PKASO firmware intercepts all control characters while the printer is activated. I have been unable to use any of the normal control characters to access any of the Double-Take routines after a "PR#1" is issued. Everything returns to normal after a "PR#0". I have been able to get around this by using the ampersand version of the Double-Take software.

I hope this litany of woes is helpful to others and that the rest of you return the favor by sharing your experiences!

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WORLD'S SIMPLEST DATA BASE

by C. Swift, Prop.

Without trying to discuss data-basing, about which I know absolutely nothing, I am nevertheless presenting for your consideration a program which justifies the title of this article. It provides a modest storage of information with an absolute minimum of effort and program design. No assembly required. (Sorry about that...)

As we all know (and if I know it, probably everybody does), we can READ DATA statements. They can be anywhere in a program and the computer will find them. But rigid creature that it is, the computer finds these DATA statements in the order in which they are embedded in the program and uses them in this order. It is this literal approach which allows us to "sneak one in" and access any DATA statement that we want!

You say you want a quick diary of the events, day by day, for April, 1984? No problem. You want to record the grades for a class of students (AND update them regularly)? Nothing to it. You want to keep an orderly record of the purchases you made on your charge card? Simple. Pick your need - here's the program for you.

Two features are especially convenient. Entering initial information is super-neat: your DATA lines are formatted for you. Updating information is super-quick: your DATA lines are just waiting for additions and/or editing.

Here's the program, with notes following:

```
0 GOTO 1400
1 DATA
999 DATA
1000 REM MAIN PROGRAM HERE
1010 ONERR GOTO 1030
1020 READ D$ : X = X + 1 : GOTO 1020
1030 HOME : PRINT "DATA = "X" ENTRIES" : POKE 34,4 :
RESTORE
1040 ONERR GOTO 1060
1050 GOTO 1080
1060 HOME : VTAB 12: PRINT SPC( 3) "WHOOOPS! TOO
MANY--"
1070 FOR I = 1 TO 2000 : NEXT : RESTORE
1080 HOME : INPUT "ENTRY NUMBER?" : A$
1090 A = VAL(A$) : FOR I = 1 TO A : READ D$ : NEXT :
VTAB 8 : PRINT D$
1100 VTAB 19: PRINT "HIT <SPACE> TO UPDATE"
1110 PRINT "HIT <ESC> TO END PROGRAM"
1120 PRINT "HIT <RETURN> TO CONTINUE"
1130 VTAB 20:HTAB 36:PRINT "< >":VTAB 20:HTAB 37:
GET Q$
1140 IF Q$ = CHR$( 13) THEN 1000
1150 IF Q$ = CHR$( 27) THEN POKE 34,0 : HOME : END
1160 IF Q$ <> CHR$( 32) THEN 1130
1200 REM UPDATE DATA
1210 GOSUB 1300
1220 POKE 34,0
1230 VTAB 17 : HTAB 1 : PRINT "WHAT'S THE UPDATE?"
1240 VTAB 19 : HTAB 1 : PRINT "O"A" DATA" CHR$( 34)
L$
1250 VTAB 17 : HTAB 1 : END
1300 REM LINE STRINGS
1310 L$ = "S" : FOR I = 1 TO 38 : L$ = L$ +
CHR$( 95) : NEXT : L$ = L$ + "E"
1320 L$ = L$ + L$ + L$ + L$ + L$
1330 RETURN
1400 REM FORMATTING DATA LINES
1410 HOME : VTAB 2
```

```
1420 GOSUB 1300
1430 PRINT "0000 DATA" CHR$( 34) L$
1440 VTAB 1
```

Line 0 can be added or deleted as needed. All it does is provide a quick access to the data writing routine at Line 1400. If you are adding new DATA, keep Line 0 as it is. If you want to READ the "files", delete Line 0.

Lines 1 through 999 are reserved for DATA statements. Since you will be adding DATA sequentially, it is convenient to have the line numbers match the entries you are making. (DATA can be accessed randomly, of course.)

Line 1000 is a convenient location for the contents name ("July Inventory", or whatever). Probably you will want to SAVE the program under this name.

Line 1010 controls the error that occurs when the program tries to READ more DATA than is present in the program. This error is automatically generated in the loop in Line 1020.

Lines 1030 to 1160 allow selection and video display of DATA, while providing options for next course of action.

Lines 1200 to 1250 provide the updating routine. It is assumed you already know how to use left and right arrows! Line 1240 (and later, Line 1430) includes a CHR\$(34) so you will have the option of including commas and colons in your DATA statements. Such versatility is highly convenient.

The simple routine in Lines 1300 to 1330 is the heart of proper screen formatting. Line 1310 turns "L\$" into a 40 character string starting with the letter "S", the 38 "underlines", and ending with the letter "E". ("S" stands for "start" and "E" stands for "end" - surprise!)

Lines 1400 through 1440 are self-explanatory.

Well, maybe this isn't really a data-base program (no foolin'!), but it does function as a convenient storage, retrieval, and update system for simple records. What more can you ask from any simple program?

Maybe you just want to catalog your stamp collection!
Happy cataloging!

ROUNDING OFF CONCEPTS

by Jim Cullen

INTRODUCTION: The Applesoft Basic Programming Reference Manual presents, on page 18, a procedure for rounding decimal places. This article does more than that. It explains the concepts for rounding off; gives a procedure for rounding off any place in any number; and lists a Basic program to demonstrate the process. It is a mini-tutorial on rounding off.

REAL NUMBER: A real number is an arrangement of digits to both the left and the right of a decimal point; for example, 1234.5678 is a real number.

INTEGER NUMBER: An integer number is an arrangement of digits only to the left of a decimal point, which is not shown; for example, 54321 is an integer number and the decimal point is understood to be immediately to the right of the digit on the right.

ROUNDING OFF BY ARITHMETIC: Two real numbers are used to show the four steps required for rounding off and how the process is affected by the value of the digit immediately following the digit to be retained:

Given:	12.345	67.890
1. Multiply by 100:	1234.5	6789.0
2. Add .5:	<u> +5</u>	<u> +5</u>
Total:	1235.0	6789.5
3. Truncate:	1235	6789
4. Divide by 100:	12.35	67.89

The general rule is: Increase the digit to be retained to the next higher value, if the digit following is 5 or greater. If the following digit is less than 5, then the digit to be retained does not get changed.

ROUNDING OFF BY COMPUTER: The same four steps are needed by the computer to do a rounding off function.

1. Move decimal point to the right of the digit place to be retained.
2. Add .5 to the number.
3. Remove the digits to the right of the digit to be retained.
4. Move the decimal point back to where it was originally.

THE INT FUNCTION: Most hand-held scientific calculators and just about all computers have a built-in function, named INT, which can be used to cut off the decimal point and all the decimal places of a real number. This is called truncation and it leaves a whole number called an integer, which is why the function is called INT.

ROUNDING OFF STATEMENT: Based on the above concepts, here is an assignment statement in the Basic computer language which will round off any place in any number stored as X:

$$X = \text{INT} (X / (10^I) + .5) * (10^I)$$

where I is an integer and the $^$ signifies 10 raised to the power of I. Positive values of I and a zero value cause rounding to the left of the decimal point. Negative values of I cause rounding to the right of the decimal point.

For example: To round off the third (hundreds) place to the left of an actual or assumed decimal point, I has to be 2. To round off the second (tens) place to

the left, I has to be 1. To round off the first (ones) place to the left, I has to be 0, etc.

To round off the first (tenths) decimal place to the right of the decimal point, I has to be -1. To round off the second (hundredths) decimal place, I has to be -2. To round off the third (thousandths) decimal place, I has to be -3, etc.

Once again, here's what the assignment statement does: It places the decimal point to the right of the digit place to be retained. Then it adds .5 and truncates the result. Lastly, it moves the decimal place back to where it was originally.

DEMONSTRATION PROGRAM:

```
10 DATA 18507.1739
20 PRINT
30 PRINT "THE ASSIGNMENT STATEMENT IS:"
40 PRINT
50 PRINT " X=INT(X/(10^I)+.5)*(10^I)"
60 READ X:RESTORE
70 PRINT
80 PRINT TAB(7) "THE ORIGINAL X= ";X
90 PRINT
100 FOR I=3 TO -3 STEP -1
110 READ X:RESTORE
120 X=INT(X/(10^I)+.5)*(10^I)
130 PRINT "FOR I= ";I;
140 PRINT TAB(12) "ROUNDED X= ";X
150 NEXT I
160 END
```

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APPLE TRACKS

by Richard Langston II

THE USER INTERFACE

Much has been said lately about a new era of user-friendliness. The Lisa, Mac, VisiOn, and a multitude of other systems and software have appeared on the scene, each claiming to be the most "user-friendly". Along with each new program is a new type of "user-interface". The mouse, trackball, joystick, touchpad, and digital pad have been battling it out on the desktops of America for the title of "industry standard" interface.

The user interface is more than just the hardware, however. These new systems use icon systems for menu selection and program functions. Instead of booting a word processor, the user manipulates the mouse (or other device) to get a piece of paper, and opens a window on his imaginary "desktop". This system of icons and mice is aimed at getting the computer "illiterate" into the computing world.

This metaphor is perhaps useful, and is certainly more interesting than pushing buttons, but for those of us indoctrinated into a world of user-unfriendliness, it may seem silly. Sure, it is more interesting than pushing buttons, but is it worth the weeks of programming that such an interface takes to program, or the time it takes to work? The machines that currently use these interfaces are 16/32 bit machines, operating at speeds that make the Apple][look like a Model T. They operate fast enough to allow "concurrent" operation. This means they will work on more than one task at a time, allowing the user to use more than one application program at a time. For instance, it is possible to use a spreadsheet and a database at the same time, each having its own "window" in the display. In order to have easier interaction between programs, a device less constrained than the keyboard was seen as needed. However, in view of the time required for even the fastest computer to process the input of the mouse, a set of cursor and function keys would probably make better use of the promise of these machines. They would be able to work much faster, and no one would call a 8 megahertz machine "too slow".

For those of us who like to "play" with these new interfaces, there is promise in sight. Such a system is reportedly being written for the Apple //e. For those of us with Apple]['s and][pluses, Steve Wozniak is pushing the development of a board for the][that will make it //e compatible. Armed with this board and the new 16 bit 6502's, we may soon be able to join the "user friendly" crowd. Until then, I have a few short programs that make the standard Apple more friendly.

MENU MAKER

This program was written by Neil Walter as part of his attempt to "bomb proof" his general ledger program. To use it, simply press the space bar until the inverse arrow points to the menu selection you want, then press return. Pressing the Reset key has absolutely no effect.

This program can be easily expanded to include menu selections. Line 10 should be modified to read:

```
10 A$=">": C$=" ": X=0: HOME: VTAB 10: FOR J=1 TO Y:
    READ SEL$: HTAB 22: PRINT SPC(J<10);J;". ";
    SEL$:NEXT...(ETC).
```

DATA statements should be added for each menu function

(ex. 120 DATA THIS FUNCTION, THAT FUNCTION, AND A THIRD).

Since this program treats Reset as an error, it is possible to add several different reset-handling routines, each routine limiting the effects of a reset at several levels in a program.

```
0 REM MENU MAKER BY NEIL WALTER
1 POKE 768,32: POKE 769,234: POKE 770,3: POKE 771,
162: POKE 772,100: POKE 773,76: POKE 774,18: POKE
775,212: POKE 1010,0: POKE 1011,3: CALL 64367
3 ONERR GOTO 100
10 A$ = ">": C$ = " ": X = 0: HOME : VTAB 10: FOR J =
1 TO 10: HTAB 22: PRINT SPC( J < 10);J: NEXT :
VTAB 5: FLASH : PRINT "SPACEBAR";: NORMAL : PRINT
" TO MOVE OR RETURN TO SELECT": VTAB 10: FOR I =
1 TO 10: HTAB 20: PRINT C$: NEXT
30 VTAB (10 + X): HTAB 21 + (X < 9): PRINT A$;:
POKE 36,( PEEK (36) - 1): GET B$
40 IF B$ = CHR$( 13) THEN HTAB 10: VTAB 22: PRINT
"YOU SELECTED ";X + 1: END
50 IF B$ < > CHR$( 32) THEN 30
60 VTAB 10 + X: HTAB 21 + (X < 9): PRINT C$:X =
(X + 1) * (X < 9): GOTO 30
70 END
100 IF PEEK (222) = 100 THEN 30
110 PRINT "UNEXPECTED ERROR"
```

KEYCLICK

Another feature I have found helpful in getting people started on the Apple is keyclick. Since most people associate keyboarding with typing, many beginners feel more comfortable hearing each key as they press it.

This program works by modifying the input routines of DOS, resetting them to jump to our program. The program then clicks the speaker, reads the keyboard, clicks the speaker again, and returns control to DOS. Addresses AA55 and AA56 hold the low and high bytes of the input handling routine. Since they are reset after every keystroke, DOS must be warmstarted every time they are modified. This can be done with the monitor command AA55:0 3N 3EAG. This tells the computer, "put values 0 and 3 into locations AA55 and AA56, and jump to address 3EA for further instructions."

The ampersand (&) vector is also modified by this program. This vector is located at locations \$3F6 and \$3F7, and it controls the location Applesoft jumps to every time the & key is processed.

Using this program is very easy. Once it is BRUN from disk, it installs the keyclick. Pressing Reset will cancel the keyclick, and the & command will restore it.

```
0300: A9 0A LDA #$0A
0302: 8D F6 03 STA #$3F6
0305: A9 03 LDA #$03
0307: 8D F7 03 STA #$3F7 ;set & hooks
030A: A9 18 LDA #$18
030C: 8D 55 AA STA #$AA55
030F: A9 03 LDA #$3
0311: 8D 56 AA STA #$AA56 ;set DOS hooks
0314: 20 EA 03 JSR $3EA ;reconnect DOS
0317: 60 RTS
0318: 8D 30 C0 STA $C030 ;click speaker
031B: 20 1B FD JSR $FD1B ;read keyboard
031E: 8D 30 C0 STA $C030
0321: 60 RTS
```

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JUST WHAT IS BERNOULLI AND WHY SHOULD MY APPLE CARE?

by L. A. Husick

In searching for a reliable, fast, cheap, efficient, and sensible mass storage device for my old Apple][+, I was faced with a very common problem. My disk library had gotten out of hand, compilations were so slow that I had to go BREW coffee, not just drink a cup, and every time I sat down, I did so on a floppy or two! At first, the typical 5 megabyte hard drive seemed tailor-made for me. But after some reflection, it was apparent that 5MB would only barely scratch the surface. What then...a 10MB drive, or 20?

Just about the time I decided on a Santa Clara Systems 15+5 as the solution, a small and innovative company introduced the real answer. It took me several weeks to discover this, but that was all the fault of the Santa Clara Systems drive.

The SCS 15+5 drive is a subsystem including 15MB of fixed Winchester disk and 5MB of removable hard disk (Syquest). The engineering of the unit is beautiful...the software and firmware of the Apple interface is not. In order to address the 20 megabytes of storage from DOS 3.3, you must tell the subsystem that you want to use "Slot 5, Drive 1-135". However, most packaged software is not so dumb as to think that the Apple can talk to 135 drives in one slot! The result? Most of the SCS drive is unuseable under DOS. I have no idea about Pascal and CP/M since the company never got around to supplying those drivers or their PROMs during the three weeks I had the drive. Add to these facts the tendency of the disk to eat data at the drop of a hat, and you have real problems. The price was just too high for that!

About the time the SCS drive went back to SCS, I spotted an ad for the Infax 101A "Bernoulli Floppy Drive" for the Apple. I, like the rest of the known world, had no idea just what a Bernoulli Floppy was. A call to Infax on their 800 number answered my question. A Bernoulli Floppy is a floppy disk which spins at 1500 RPM and has a true flying head like a hard disk. The performance of the unit is based on the same principle that keeps an airplane in the air...that a rapidly moving fluid exhibits pressure changes. In this case, the fluid is the air above the disk surface and the pressure changes allow the read/write head to "fly" over the disk just 10 microinches high! That height is about half the height of a standard hard disk head. The result is that you can fit 10 megabytes on an 8-inch floppy disk and 5 megabytes on a 5-inch disk. Add to that data transfer rates which rival the best hard disks available for the Apple, and automatic error correction, and you have the storage solution.

Now to the specifics: The drive interfaces to the Apple through a slot-independent interface card which can support up to 4 drives. (That's right, 40 MB on line.) Under DOS 3.3, the drive looks like 69 volumes (usually at S5,01,V1-69) and each volume is the same size as a floppy disk without DOS on tracks 0-2. A special catalog command, "CATALOG,V99" shows the first file name on every volume on the disk.

Under CP/M (SoftCard only) the drive is configured as two 5MB disks (E: and F:) with 512 directory entries per disk. All of this is changeable by the user... source code for the software is provided.

Under Pascal (Apple VI.1), the drive boots as Unit 4. Unit 4 is a single 19456 block unit at boot time. However, a supplied utility (MOUNT) allows the creation of sub-directories similar to those common in Unix, MS-DOS, and PRO-DOS. Each sub-directory may be of any size and may be mounted as any disk unit (4,5,9,10,11,12). This allows for Pascal to address everything from one 10MB file, to over 5550 smaller files.

Saving the best for last, this disk drive with the advantages of a hard disk has the personality of a floppy. The disks are contained in hard plastic cartridges and are REMOVEABLE. Each cartridge costs \$75 and lasts for 5 years.

My Infax drive has been spinning 24 hours a day since October 11, 1983 with no problems. Support via the 800 number is prompt and knowledgeable, and upgrades are inexpensive. At a list price of \$2395, this drive is not the cheapest "hard disk" around, but is certainly one of the most versatile and best suited to use with the Apple. (Incidentally, Infax tells me that interfaces for the IBM PC and for the Mac/Lisa will be available shortly.)

I can heartily recommend the Infax 101A drive for the Apple][,][+ and //e as a good buy in a fast, high capacity mass storage device. &

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DO IT BETTER AND FASTER WITH A RAMDISK

by Alvin Neider

So, Bunky, you fall asleep while waiting for dBase to do a sort. And Word Star wears out your disk drive (and patience) scrolling a line at a time. And it takes forever to run your super duper program that opens, closes, reads, and writes to a sack full of disk files. Well, Bunky, I have some very good news for you, your Apple computer, and your floppy disk drives.

The good news is that there is an incredibly good pseudo-disk drive in the marketplace. Load up to 256K worth of programs from disk drives into the CSC RAMDISK (that's two Apple disk's worth), and all remaining disk input-output time disappears. It comes with a program floppy that contains the DOS, CP/M and Pascal programs to initialize the RAMDISK, and a concise and simple six page instruction booklet. The RAMDISK is configured as one or two drives under DOS, and one disk under CP/M and Pascal. The RAMDISK is in every way functionally identical to floppy disks.

How fast is it? Well, Bunky, the Apple COPYA program took 50 seconds (in several 5-10 second spurts) to read an entire disk from my floppy, and less than .5 seconds to write all that stuff into the RAMDISK. Getting files and programs out of the RAMDISK is equally fast. From what I have read, accessing a pseudo-disk is about 50 times faster than a hard disk drive, and up to 1000 times faster than a floppy. My last dBase II sort using two disk drives took 30 minutes, and I almost forgot what I wanted to do by the time it was done. When my files and dBase II were loaded on the RAMDISK, the same operation took less than two minutes. I can't guess how much the lifespan of my disk drives has increased by using the RAMDISK, but it is considerable.

How good is it? How reliable is it? Just what is it? Well, Bunky, things just don't get too much better. The CSC 256K RAMDISK is a small board that fits into any of slots 1-7 in DOS and Pascal, and slot 5 for CP/M. The board is top quality, contains 4 rows of the new 64K memory chips, and a minimum of support chips - all are easy to replace, should anything ever go wrong. Since pseudo-disk drives do not have on-board power supplies, the RAMDISK data disappears when the computer is turned off, just like the rest of the Apple memory. So, when you're done processing, you just copy the RAMDISK back to your floppies.

Bunky says he wants to know where he can get one, how much they cost, and how good is the warranty? Bunky, this is really the best part. But first, let me give you the competition: lots of vendors have pseudo-disks for sale, retailing "\$895 boards" on sale for "only \$595", or "only \$695" - and that's usually for 128K or 184K byte modes. Even Bunky realizes that's no bargain. The CSC RAMDISK is a bargain - it sells for only \$400, and comes with a six month warranty. I've had mine for 3 months and highly recommend it. Bunky notes that \$400 is cheaper than most places charge for just 256K bytes worth of 64K RAM chips.

Yes, Bunky, there is a Santa Claus. This year he is Lenny Gross, and you can find him at home in the evenings at 1718 Aberdeen Circle, Crofton, MD 21114, phone (301) 261-0937, or during the day at (301) 677-5966. For all true Washington Apple Pi fans, Lenny is a member and regularly makes the meetings. Lenny takes cash, money order, or bank draft, and runs a very legitimate small business. He personally repairs, fixes, or does whatever will spread his good reputation among happy Apple users. &

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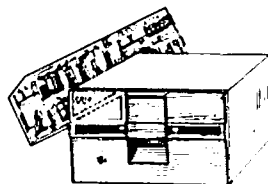
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RELABELING THE APPLE KEYBOARD:

A Simple Tape Method
by Barry Slotnick

Sooner or later all Apple users will find themselves needing to use redefined keys in support of valuable programs such as word processors or spreadsheets. I recently faced this problem when trying to implement numeric and hexadecimal "phantom" keypad utilities, both of which redefined a whole block of keys. What was needed was a quick, cheap and reversible method to add new labels to several keys in the same row, yet not obscure the original key label during normal use. My solution: strips of an elastic, translucent fabric tape, available at every drugstore!

To set up your own custom keyboard labels, obtain a roll of 1/2" white "Dermicel" rayon first-aid tape, a cloth tape made by Johnson & Johnson. You will also need an inch ruler, scissors, and fine felt-tipped marker pen. First, tear off a foot of tape and lightly fix it to the edge of your computer cover, just below the keyboard. Next, use the ruler to make small tic marks at 7/8" intervals (note that this is 1/8" wider than the 3/4" distance between left edges of adjacent keys). Now, cut the strip at the leftmost tic mark, and 1/2" beyond the rightmost tic mark in the strip, which needs one tic per key you want to cover.

Before placing the strip, clean off your keycaps with a cloth and rubbing alcohol. Now lift the strip, and lay it lightly over the keys to be covered. Starting with the leftmost key, place the tape with each tic mark at the bottom left edge of the key. Use the ruler to press a loop of the excess tape between adjacent keys. When the row is finished, press down to fix tape in place on each key. Note that you can easily see the original white markings on the grey keys, through the weave of the white tape. Press each key, to make sure that adjacent keys are not affected; if they are, then the loop needs adjustment. Finally, use your pen to make desired labels on the tape, leaving the original label visible.

These custom key label strips can be left in place for extended periods, or they can be removed and stored on the lid, above the keyboard. The adhesive does not appear to mar key surfaces, and any residue is easily removed with rubbing alcohol.

I hope you find this tip a versatile aid to your multiple APPLecations! ☺

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SERIAL INTERFACE CARDS FOR THE ANCHOR MARK 12 MODEM

by George V. Kinal

So you've ordered an Anchor Mark 12 modem to join the 1200 baud revolution and now you need a serial interface. Which one should you get, if you don't already have one? Or, how do you connect the one you have?

I. CRITERIA FOR EVALUATING THE COMMON I/F BOARDS

An evaluation of serial boards for use with the Mark 12 should not be based on the same criteria as for use with a printer, or even for modems without intelligence. I believe there are six key factors to consider:

- 1) What firmware does the board come with, if any?
- 2) How is the baud rate controlled and selected?
- 3) How is the board's baud rate clock generated and regulated?
- 4) Handshaking functions supported (control leads in the RS-232 interface).
- 5) Wiring (connector) type.
- 6) Software Compatibility.

Most, but not all, boards have some firmware which allows them to function in a "dumb terminal" mode without any software for the computer. The baud rate on most boards is set by means of a switch or switches. Those which use the 6850 ACIA chip also allow a "4 to 1" change in the baud rate under software control. A few allow complete control of baud rate under software control. The actual baud rate generation is based either on use of the Apple's clock signal, or derived from a separate on-the-board crystal oscillator. Most interfaces designed for communications allow for sensing the "carrier detect" and the "clear to send" signals from the modem, and the most advanced ones allow control of the "request to send" from the computer to the modem. All serial interfaces come with the "DB-25" 25 pin RS-232 connector, and most use a female connector (accepts a male cable plug).

Almost all interfaces intended for modem use are configured as a DTE (data terminal equipment), but interfaces originally designed for driving a printer have DCE (data communication equipment) connections. Since the modem itself is wired as a DCE, the interface must look like a DTE to it. Once upon a time, many communication software packages were compatible only with the Hayes Micromodem, and little else. That is no longer true, but that does not mean that every communications program will work with every obscure serial card you might run across.

II. EVALUATION BASED ON WHAT THE ANCHOR MARK 12 NEEDS

Table 1 at the end of this article shows how six popular interface cards that I am familiar with meet the criteria described. But what does the Mark 12 need? Let's examine each criterion:

1) If you have gone to the trouble and expense of a 1200 baud modem, then presumably you want something more than dumb terminal operation (in fact, using a terminal at 1200 baud is ridiculous unless you're a speed reader). In other words, if you are going to use a communication software package such as AE-Pro, Transend, or Softerm, you'll end up bypassing the firmware in the board's PROM anyway. There might be some utility to firmware if you use the board alter-

) For the Mark 12, you need only two data rates. All the boards listed have a means whereby two rates related by a factor of 4 can be used without changing any switch settings, although I'm not sure that all software packages make use of this feature. AE-Pro does, so all of the boards shown will operate at both 300 and 1200 baud under AE-Pro software control (BUT the Apple Comm. card clone must be modified slightly for 300/1200, instead of the original 110/300 baud). Therefore, if you are or have access to a soldering expert, all the boards are equivalent in this respect. If you are not, the Apple clone is not for you.

3) Cards which derive their baud rate from the Apple clock will transmit data just a tiny bit off (0.1% I think) from exactly 300 or 1200, whereas those with their own on board crystal should be spot on. This is almost never of any importance, though once in a blue moon you may have a problem exchanging files with someone whose baud rate is sufficiently off in the other direction. This problem should never occur when communicating with commercial systems. I therefore see no particular advantage to the crystal clock method over the simpler use of the Apple's clock.

4) With some modems and with printers, handshaking is important. With a Mark 12, however, handshaking is not necessary. In fact, it is undesirable. In order for the user to see the various prompts that a "smart" modem sends back (like "OK", "BUSY", "DIAL TONE"), the carrier detect lead of the interface must be fooled into thinking that carrier is always present. The key phrase in the Mark 12 documentation concerning the interface is that the "minimum to operate" leads are 2, 3, and 7. These are the data leads. In other words, the modem really doesn't care about handshaking. Thus, the simpler the handshaking the better, for the Mark 12. The Apple Comm. card clone is actually the most convenient to use in this respect.

5) For the Mark 12, the interface should have a female DB-25 connector wired as a DTE. Then you can plug the Mark 12's cable right in, without needing to buy a separate cable. The CCS' DCE interface is, in my opinion, one of the greatest disasters ever to befall personal computer communications. Whole chapters of books have actually been written describing how difficult and tricky it is to connect modems to computers. Many of these have been based on horror stories of using the CCS 7710. And, unbelievably, CCS has actually stopped selling the crossover (adapter) cable needed to turn the DCE into a DTE! Still, it's not that hard in principle to connect the CCS to a Mark 12, as you shall see. Don't get me wrong, by the way. Technically, it's an excellent card, and comes with a better manual than the SSM products. When it was designed and placed on the market (1979 or so), it was far superior to the two Apple cards (Comm. and serial). However, at that time the demand for printer interfaces was larger than that for modems (because the Hayes Micromodem dominated Apple modem demand), so CCS apparently decided to lay out their board according to a DCE configuration. Now, the market has changed and serial interface boards are equally in demand for both printers and modems.

contd.

6) The popular communication packages such as AE-Pro, Transend, Softerm, and several others now are all "configurable" for any one of the listed cards. Software compatibility is now only a concern with some of the really obscure cards, and perhaps with new cards that have not achieved an established status. I do recommend that you confirm that the software you plan to use is in fact compatible with the card you select. The Mark 12, since it is controlled entirely via sequences of characters, is of course itself compatible with any type of software. However, you should have "macros" available in order to take advantage of auto-dial capability.

CONCLUSION: If you can do simple soldering, the Apple Comm. Card clone can't be beat. Otherwise, the SSM ASIO is a clear choice over the CCS or the more expensive Apple Super Serial card.

NOTE: There are several other good serial interface boards on the market, with which I have no personal experience. Intra-Computer's PSIO, for instance, provides current loop as well as RS-232 capability, and also allows Baudot as well as ASCII code operation. The MPC AP-SIO has been mentioned to me by several local members as a good, reasonably priced board which can be set up in both DTE and DCE configurations. The Dual-Comm Plus by Bit3 provides two separate serial ports on one card; Port A is for communications, while Port B is primarily for printers. Unlike the others, this interface may be used with synchronous as well as asynchronous modems/software (but the Mark 12 is asynchronous only). And, many Apple owners obtain their serial port by means of the Mountain Computer CPS card.

IV. CONNECTING THE CARD TO THE MARK 12

4.1. "Plug in and Go" - All cards except CCS.

The Apple and SSM cards come with a female DB-25

configured as DTE, so you can take the male DB-25 which is on the end of a 12" ribbon cable from the Mark 12 and just plug it in. This will work immediately without further muss or fuss. There is a drawback, however, with most software packages including AE-Pro. Before you have reached a modem on the other end, there is no "carrier detect," so although the Mark 12 sends to you a variety of response messages, you will not see them on the screen because the interfaces will not accept data until carrier detect is high. (The Apple Comm. card clone is an exception; its carrier detect is wired "high" on the board itself). Another minor disadvantage is that the cable may be too short for your particular installation.

4.2. Extension Cable (for DTE-type interfaces only)

An "extension cord", with a male DB-25 on one end, and a female on the other might be useful. If this cable is made up using regular wire, not ribbon cable, it is then easy to add a jumper connection between pins 8 and 20 on the male (interface card) end. This makes the carrier detect always high so you can receive the Mark 12's messages before establishing a connection.

4.3. The CCS 7710 Card

Do not be misled by what the CCS manual says you should do. The following is the simplest and most reliable cable arrangement for the CCS and a Mark 12:

CCS 7710 end			Mark 12 end	
Pin 2	<----->		Pin 3	
Pin 3	<----->		Pin 2	
Pin 7	<----->		Pin 7	

Wire pins 4, 6, 8, and 20 all together at the CCS end.

TABLE 1.

CARD	CRITERION					TYPICAL PRICE	COMMENTS
	1 Firmware	2 Baud Rate Selection	3 Baud Rate Generation	4 Hand-shaking	5 Wiring (connection)		
Apple Comm. Card Clone	No	Fixed *	Apple's clock	None	DTE Female	\$ 60	No longer supplied by Apple
SSM ASIO	Yes	Switch *	"	Yes	"	\$ 125	
SSM AIO	Optional	Switch *	"	Yes	"	\$ 150	Both serial and parallel but only one firmware can be installed
SSM AIO-II	Yes	Switch *	Crystal	Yes	DTE and DCE -cable extra	\$ 200	Both serial and parallel available simultaneously
CCS 7710-A	Yes	Switch *	Crystal	Yes	DCE Female	\$ 120	Must make your own crossover cable
Apple Super Serial	Yes	Switch or Software	Crystal	Extensive	DTE or DCE (strap selectable) - Female	\$ 180	Has both printer and communications firmware

* Permits change to 1/4 of normal baud rate by software control.



MODIFICATION OF CP/M "MODEM" PROGRAM FOR 300 BAUD by George V. Kinal

In previous articles, I have commented on how I believe that 1200 bps communications is the "wave of the future", and how this is sparking renewed interest among Apple II owners in serial interface boards. In addition to the flexible but expensive Super Serial Card, popular interface cards for the Apple II are the CCS 7710, the SSM AIO and ASIO, and clones of the old Apple Communications card. These cards all use the 6850 ACIA. This interface chip has a feature whereby the baud rate can be switched via a software command between two baud rates, e.g. 300 or 110; 1200 or 300; 4800 or 1200, etc. The higher of the two rates in each case is the default value; the lower speed is obtained via the software command. Users of ASCII-Express Professional should be aware of this feature, which the program supports (see the manual).

The CP/M "MODEM" program written by Ward Christensen is available for Apple (Softcard) CP/M on WAP disk No. 403, and bears the internal title "APMODEM.ASM V2.0". The modification is attributed to Gordon Banks. When this program is set up for the Apple Communications card, either 300 or 110 baud may be chosen by input command. Banks perhaps did not realize that the same procedure could be used for the CCS and SSM cards as well.

110 baud is of diminishing interest to most users. By setting up the card to normally (default) run at 1200 bps, the user can operate at 300 baud when desirable, or 1200 bps. Although the 1200 bps mode suffers the common problem of dropping characters, it is most likely to be useful for file transfer in the verified ("Christensen protocol") mode, where this is not a problem. File transfers are possible between MODEM and AE-Pro in a fashion not unlike that documented in my August 1983 WAP article. Also, using MODEM, you may download from the various RCPM boards, and exchange files with non-Apple CP/M computers.

The relevant source code (MODEM.ASM) modifications are as follows. First, set the appropriate EQUate true (lines 78 through 81); the SSM EQUate will also work for the CCS. Near the end of the program is a routine called "INITMOD", normally invoked only for the Hayes Micromodem or the Apple Card. Shown below is this routine modified for any of the 6850 cards, and allowing 300 or 1200 baud. The program will choose 300 unless the suffix ".1200" is used (e.g., MODEM T.1200). The serial board MUST be preset to 1200, as with AE-Pro; then 300 will be chosen as the "low speed" choice. Don't set the board to 300 baud. If you do, then choosing .300 (or no speed choice at all) will actually cause the interface to run at 110.

```
INITMOD:
  IF SSM OR COMCARD      ; SSM CARD
; ALSO WORKS FOR CCS 7710
  MVI   A,03H           ; MASTER RESET
  STA   MODCTLP
GETBAUD LDA   FCB+9      ;GET FILETYPE
  CPI   ' '             ;DEFAULT?
  JNZ   GETBAU1         ;NO - DO BAUD RATE STUFF
  MVI   B,16H           ;300 BAUD STATUS CODE
  JMP   GETBAU2
GETBAU1 CALL  CVBIN      ;CONVERT TO BINARY
  PUSH  H               ;SAVE BAUD RATE
  MVI   B,15H           ;ANTICIPATE 1200 BAUD
```

```

LXI   D,-120           ;GET CONSTANT
DAD   D                 ;SUBTRACT
MOV   A,H
ORA   L
POP   H
JZ    GETBAU2          ;1200 BAUD
MVI   B,16H           ;300 BAUD STATUS CODE
INR   C
LXI   D,-300          ;GET CONSTANT
DAD   D
MOV   A,H
ORA   L
JNZ   BADRATE         ;INVALID RATE(300 OR 1200 ONLY)
GETBAU2 MOV  A,B       ;GET SET UP
  STA   MODCTLP       ;STORE TO STATUS PORT
  RET
ENDIF  ;SSM CARD OR COMCARD
IF     COMCARD OR SSM
CVBIN: LXI   D,FCB+9   ;TO ASCII VALUE
  LXI   H,0           ;INIT BINARY RESULT
DECLP LDAX  D          ;GET ASCII DIGIT
  INX   D             ;TO NEXT DIGIT
  CPI   ' '           ;BLANK ONE?
  JZ    DECLP         ;..YES, SKIP IT
  CPI   '0'           ;VALIDATE IT
  JC    BADRATE       ;ERROR
  CPI   '9'+1         ;VALIDATE
  JNC   BADRATE       ;ERROR
  SUI   '0'           ;MAKE DIGIT BINARY
  MOV   B,H           ;SET UP FOR
  MOV   C,L           ;MULTIPLY BY 10
  DAD   H             ;MULTIPLY BY 2
  DAD   H             ;X 2 = 4
  DAD   B             ;+ 1 = 5
  DAD   H             ;X 2 = 10
  ADD   L             ;ADD IN DIGIT
  MOV   L,A           ;SAVE BACK
  JNZ   DIGNC         ;NO CARRY?
  INR   H             ;ADD IN CARRY
DIGNC  MOV   A,E       ;SEE IF PAST
  CPI   FCB+12        ;..LAST DIGIT
  JNZ   DECLP         ;NO, LOOP
  RET
BADRATE CALL  ERXIT
  DB    '++INVALID BAUD RATE++$'
ENDIF
```

TRANSCEND 2 AND MAGICALC: Two

Reviews

by Bob Oringel

TRANSCEND 2

Transcend 2 is a communications program. It is one of the software packages that, together with a modem, permits your Apple to communicate with the "outside world". Transcend 2 is unique in that it is TOTALLY menu driven. After once apprising it of the peripherals attached to your Apple, you proceed from a main menu to a seemingly endless and extremely effective set of additional menus. Each has a group of selections. You choose one, by letter (A, B, C), your choice inverts, and you are asked to confirm the choice with the usual "Y".

The last item on EVERY menu is the choice of returning to the previous menu. There is no getting lost here!

The program permits communication between Apples, set-up of differing protocols for data exchange with other brands of computer, communication with a remote database like The Source, and the ability to send large files, with error detection and automatic retransmission, hopefully for error-free data exchange.

Transcend 2 supports a fairly large number and variety of modems and interfaces, including modems which do not have auto-dial. It is compatible with Apple][+ and //e, 80-column boards, and with the lower case modification. Incoming data are stored in a capture buffer, part of Apple's memory, and can be edited, printed or saved to disk as a text file. The text files then can be treated in the same fashion as any Apple text file.

The Transcend program is on a copy protected disk, with one backup disk provided. The documentation is clear, extensive and well written. It has also been reduced in page size to fit a small looseleaf format, making it somewhat a chore to read for aging eyes.

My overall impression of Transcend 2, despite the eye strain, is that it is a fine communications program.

MAGICALC

Fresh from my review of Fliptrack's Learning System's "How to Use VisiCalc", and with a boldness that belied my normal trepidation for things accountant-like, I decided to take a hard look at Magicalc, by Artsci, of North Hollywood, CA.

I already owned Artsci's Magic Window word processor. It came gratis as part of the package when I purchased my Microbuffer 2. I took a fast look at it then, and decided to stay with my faithful Apple Writer II. I hoped that Magicalc would make a stronger impression, and indeed it did.

Magicalc's impressive use of up to 512K of RAM was limited in my case by my Apple's 64K. Its ability, however, to divide a large spreadsheet model into pieces that can be stored on several diskettes can be very useful. Magicalc supports a variety of 80-column cards. My normally 40-column Apple][+ might have been treated to 70 columns from software except that the sample size Magicalc made available to me did not have that feature.

The program uses all of the (/) commands found in VisiCalc, and more, and in fact Artsci suggests that the user obtain a VisiCalc "How-To" guide as a begin-

ning. Magicalc has commands for varying the width of columns, and permits assignment of attributes to every cell, every row and every column. Cells may be hidden, or protected from tampering, and a feature provides skipping to the next unprotected cell when entering data. The file option provides LOAD, SAVE, DIF, LOCK and UNLOCK. SAVE may be accomplished to a disk or printer, and the print options are extensive. Finally, Magicalc is less expensive than VisiCalc, which I find most important to the user whose purchase is not supported by an employer that picks up the tab.

If you need a spreadsheet program, I think that you will like Magicalc. Ⓔ

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

FCC ASSIGNED DATA NETWORK IDENTIFICATION CODES

by Hunter Alexander

Computerists may have been brought closer together by a Federal Communications Commission notice of inquiry of December 22. Responding to requests by a number of non-common-carrier entities seeking assignment of DNICs, the commission asked for comment on the idea.

A DNIC is a unique four digit number designed to provide a discrete identification of individual public data networks. The assignment of a DNIC to a particular data network allows network switches throughout the world to recognize that network and to direct traffic to it. Assignment of a DNIC is, therefore, useful to a service provider's business.

The FCC now informally assigns DNICs. However, to date, the commission has never formally adopted any policies regarding their issuance. Because the number of DNICs available for U.S. use is potentially limited, and because extension of U.S. procompetitive policies to international services may increase the number of entities to whom a DNIC would be useful, the FCC believes it is now the time to inquire whether it needs more formal policies for assignment of DNICs. Accordingly, the FCC asks interested parties to comment on this. If you write the FCC, refer to CC Docket 83-1230.

Here are the Data Network Identification Codes (DNICs) that have been assigned:

- 3101 Western Union Digital Data Service
- 3102 WUI Digital Datel Network
- 3103 ITT UDST Network
- 3104 WUI Database Access Network
- 3105 WUI Leased Channel Network
- 3106 Tymnet Public Data Network
- 3107 ITT Datel Network
- 3108 ITT Short Term Voice/Data Transmission Network
- 3109 RCAG (RCA Global Communications Inc.) DATEL II
- 3110 Telenet Public Packet Network
- 3111 RCAG DATEL I (Switched Alternate Voice-Data Service)
- 3112 Western Union Broadband Exchange Network
- 3113 RCAG Remote Global Computer Access Service (Low Speed)
- 3114 Western Union Infomaster Service
- 3115 Graphnet Interactive Network
- 3116 Graphnet Store and Forward Network
- 3117 WUI Telex Network
- 3118 Graphnet Facsimile Network
- 3119 TRT Packet Switching Network
- 3120 ITT Low Speed Network
- 3121 FTCC (FTC Communications Inc.) DATEL
- 3122 FTCC Telex
- 3123 FTCC Leased Channel
- 3124 FTCC Packet Switched Transmission Service (PST Service)
- 3125 ITT Network Service Service of Uninet, Inc.
- 3126 ADP Autonet
- 3127 GTE Telenet
- 3128 TRT Telex Network
- 3129 TRT Leased Channel Network
- 3130 TRT Digital Data Network
- 3131 RCAG Telex
- 3132 Compuserve
- 3133 RCAG XNET Service

The FCC is also looking into the need or desirability of developing a policy regarding conferral of Recognized Private Operating Agency Status upon trans-

national non-carrier providers. This inquiry grew out of a petition of the Association of Data Processing Service Organizations (ADAPSO) and other organizations.

To assure that foreign postal and telegraph administrations will agree to operate with U.S. enhanced service providers, ADAPSO suggests that the FCC adopt a program to confer RPOA status upon those enhanced-service providers who provide services which would be classed as telecommunications under the International Telecommunications Union Convention.

Recognized Private Operating Agencies now include International Business Machines Corp., Control Data, Hewlett-Packard and Wang Labs. &

DIG OUT THAT OLD TAPE RECORDER

by

George V. Kinal

Recently, I found it necessary to convert a text file on a CP/M disk to Apple DOS 3.3 text file format. But I did not have the necessary utility program. What I do have, however, are communication programs running under both operating systems. Now, if I had two Apples with modems, I could use one with CP/M to transmit the file to the second one (with DOS), capture the text, and save it to disk.

Instead, I used a tape recorder to record the modem signal while sending using a CP/M communications program (actually, a PIP to PUN: will do the same thing, namely output text to the slot #2 interface card). I then played this recording back to a modem, with the Apple now running ASCII-Express Professional and the capture buffer on. This technique can be used to exchange text files between incompatible computers. You will probably find that 1200 baud will succeed only with very high quality tape and a high-fidelity tape deck, but 300 baud modem signals can be handled by any "cheapie" cassette recorder (still, you will require good quality tape).

To do this, simply make up some RJ-11 telephone plug to mini-plug cords using parts from Radio Shack. There is one problem with this method, however, depending on the modem you are using. Many modems will refuse to transmit unless they are getting a carrier (signal) from another modem. But some old "dumb" modems, as well as the Hayes Smartmodems, can be set or commanded to transmit even when they are receiving nothing. To tell if you have succeeded in getting the modem to transmit, plug an earphone into the recorder's monitor jack, with the recorder set for recording. The modem should be switched or commanded into the originate mode for the recording. The playback should be to a modem operating in answer mode. &

ORBITAL SYSTEMS E-Z CARD:

A Review

by Bob Hicks

There has been so much CP/M in our newsletter lately that I begin to think it must mean "Cherry Pi/M-mmm". Well, here goes some more. After hearing so much about the great software which runs in CP/M there should be some interest in what hardware is needed to take advantage of it.

One of the first products released by Orbital Systems of Mesa, E-Z is a Z-80 card for the Apple][+. Apparently, a separate version is offered for the Apple //e. The unit I tested would not work at all on the //e. It is available either as a kit (\$60) or assembled (\$90). I assembled the unit tested from a kit.

The job of assembly is not at all difficult. I think that this project would be suitable as a first kit IF YOU ALREADY KNOW HOW TO SOLDER. If you lack that skill, soldering IC sockets is not the way to learn. The assembly instructions provided are adequate to avoid any other pitfalls in a small scale project like this. While Heathkit-type step by step instructions are not provided, descriptions are included of resistor color codes for each resistor and specifics like observing polarity on the (one) electrolytic capacitor. There is one potential problem with installing bypass capacitors; there are two sets of holes on the board which seem equally appropriate but there is a handwritten note on the instructions sheet which explains which set to use. The kit that I received included sockets for all IC's; this appears to be an upgrade because the documentation cautions the builder to purchase sockets.

Building the kit is a nice way to spend a winter evening. I don't think that even a first time builder would require more than about three hours to complete this job. If the board doesn't work recheck all your solder joints for bridges (solder making connections it shouldn't) and cold solder joints (a connection that looks more like moon rock than a shiny new dime). If it still doesn't work there is almost certainly a bad chip. Unfortunately, one cannot run to Radio Shack for replacements. My one big complaint about this product concerns their 'treated' IC chips. For some reason (secrecy?) they have obliterated the markings on about five of the chips and painted them. No local store will be able to supply a 'red' or 'yellow' chip. I scraped most of the paint from one chip and found that the original markings had been removed. If you just can't make your board work, Orbital Systems will fix it for \$30 if all chips are socketed. Since \$30 is the price difference between kit and assembled versions, nothing is lost.

The board also includes pads to install certain option jumpers. These are for enabling interrupts, disabling the address offset between Z80 and 6502, and DMA daisy chain. The area on the board where the jumpers go is marked but it is not very clear which pads are to be joined.

These points have no bearing on the performance of the card on a day to day basis. I have used the card with a variety of applications every day for about two weeks. The uses include Word Star, dBASE, SuperCalc, and Z-TERM plus a wide array of public domain utilities. There have been no problems at all. If you have CP/M system software (not included with the card) and need hardware, the E-Z CARD seems the least expensive alternative. If Orbital Systems would supply unpainted chips, I would buy their card without

hesitation.

As a closing comment, I would like to applaud Orbital Systems for offering their products in kit form. For me, there is a lot more to kit building than the monetary advantage. It provides another learning experience of course, but primarily, there is a definite thrill in having 'your' creation work! ☺

A MOUSE FOR THE APPLE

by Jeff Billman
Apple Peel

Birmingham Apple Corps

Radio Shack has produced a piece of computer equipment that is worth buying! That new piece of equipment is the TRS-80 Color Mouse. The mouse is a little larger than a cigarette pack and is made of black and red plastic (this won't last long on my mouse, because I am going to paint it Apple tan). The color mouse retails for \$49.95.

Now for the bad news - you must modify the mouse to work with the Apple. The modifications are very simple to make. (If I can make them, anyone can.) I made an adapter cable to go from the male 5 pin DIN connector to a male 16 pin DIP header which plugs into the Apple game paddle port. A list of the pin connections is given in Table 1.

Now comes the hardest part. You now must open the mouse and make the modifications to the inside of the mouse. See Figure 1 for the locations of the trace cuts and jumpers you must make to the mouse. This modification is necessary because the color computer wires the pushbutton between the input to the computer and ground, whereas the Apple wires the buttons between +5V and the button input. While you are working on the PC board, you need to modify the wiring on the pots. You need to swap the orange and green wires on the X pot and the red and brown wires on the Y pot. After swapping the wires be sure and check for shorts in the wiring you have changed.

After you reassemble the mouse you will be able to use it like a joystick, except that you will only have one button. To save money and parts you can cut off the 5 pin DIN connector and solder a 16 pin DIP header. Table 2 gives the color coding of the pins on the 16 pin header. If all goes well, and it should, you will have one of the most up-to-date additions to your Apple and for a lot less than buying a Lisa.

Programming the Apple Mouse

If you have converted a Radio Shack Color Mouse for use with the Apple you can create some pretty sophisticated software for using it. Even if you don't have a mouse you can use some of these techniques for using a joystick or game paddles. I have tried to build a series of subroutines for use within a Basic program which allow a program to look at the status of the keyboard, the X and Y position of the mouse, and the status of the pushbuttons.

contd. on pg 60

PEACHTEXT WORD PROCESSOR: On the Other Hand by Bob Trexler

Thanks to Carl Eisen for his review of Peachtree Software's word processor called PEACHTEXT. It's high time someone said something affirmative about a WP other than Word Star.

However, I have used Peachtext for about six months, and have a somewhat different opinion of it than does Carl. In fact, my opinion is rather negative, which is why I have reacted so quickly to his review in the January 1984 Washington Apple Pi Journal.

To be fair, it may be the environment that makes the difference. I use Peachtext with a CDC 110 standalone PLATO terminal. Not only is this keyboard the pits for anyone who has worked with the Apple (and most typewriters), but there are other aspects of the terminal that are, shall we say, "not human engineered". Anyway, Carl's use of Peachtext in the //e environment may make the difference. In case this is not true, I wish to alert my fellow Applemaniacs to some of the unpleasant and cumbersome aspects of the version of Peachtext that I am familiar with, in the hope that Carl's effusive endorsement of this program may be counterbalanced with caution borne of my experience with it.

I am no doubt less proficient with any word processor than a real professional would be. As a result, I tend to go from the edit or input mode to the print-out mode and back again. In each of these iterations, I make changes to correct errors or improve readability. I need an easy way to go from the edit function to the print function and back again. I prefer ScreenWriter II's method for this because the RUNOFF (or print function) remembers the title I have selected. Although I must tell the editor the file number when I return for another edit I do not have to input the entire filename, and the process is rather simple and quick.

On the other hand, with Peachtext, I must input the entire filename each time I switch functions. After I have created a text file, and have returned to the Edit menu page, I must type "end". Then I wait for the computer to settle down and return me to the main menu. Here, I may select "PR" to print the file I have just created. However, Peachtext has now forgotten the name of the file. After inputting "PR" to enter the print function, I must type the whole filename again. After I have printed the file and wish to make some other changes, I must leave the print function and re-enter the editor using "ED". Then I have to again enter the whole filename of the file I wish to edit, since Peachtext has forgotten it again.

ScreenWriter II cuts that red tape in half, at least, since the RUNOFF menu retains the name of the files that have been selected. Because Peachtext imposes this wasteful practice (forcing the keying of the filename again and again) I call my workfile "A", without the quotes of course. That means I only have to type one key to bring the file forth. Naturally, when I am finished with the file I rename it to something more meaningful.

On the other hand, ScreenWriter has a macro generating capability which permits me to represent a whole filename by a single keystroke. This facility is invaluable during editing. I merely type the macro symbol for the filename when I wish to save it, and I can reduce my keystroking from a sequence like: "sLetter

to Aunt Sue,d1" to "s,d1". The program simply substitutes "Letter to Aunt Sue" for the "" I actually keyed.

On the other hand, unfortunately, Peachtext cannot do this. In fact, Peachtext restricts the number of characters that you may use for filenames. (This is a characteristic of CP/M, I think.) Consequently, I find I must be rather creative in constructing filenames that communicate something intelligible.

I would like to comment on Carl's remarks about Ctrl-O. This is the keystroke combination that puts Peachtext into the Insert mode. Everything typed after Ctrl-O will be inserted into the text of a file that is already present. I find this to be an awkward practice. In ScreenWriter, the Insert mode is the default mode. I rarely use the overwrite mode. It is best used when there is a predefined number of characters to replace, such as a date, a Social Security number or a telephone number. Since most of my text preparation is new, if not novel, I rarely need a replace capability. Insert in ScreenWriter simply pushes the existing text ahead of it. Peachtext normally overwrites text. This means that if you have a space to insert you must either do a Ctrl-O to enter the insert mode, or Ctrl-V to insert a single character.

With ScreenWriter I merely move the cursor with the left/right arrows to position it for editing. On the other hand, with Peachtext I must use the Ctrl-A to move the cursor to the left, the Ctrl-S to move it to the right, the Ctrl-Z to move it down, and Ctrl-W to move it up.

With ScreenWriter I type Ctrl-D (DOS command) to execute a delete, or catalog. On the other hand, I must leave Peachtext to execute a DOS command. I cannot find out how much space is left on my disk without going to "STAT" in CP/M. This means booting Peachtext all over again.

I cannot agree with Carl about documentation. Again, it may be a difference in versions, since my version is for the CDC terminal, but loose-leaf or not, the documentation is not that great. Seemingly, people who write these manuals hardly every test the manual's ability to communicate. In some cases, the manuals are dead wrong. That is, the system just doesn't work the way the writer thought it does. While I would not condemn the Peachtext manual, given how poor others are, I have wished many times that the writers had been a bit more precise in their descriptions.

I have found the Peachtree spelling text editor to be just as cumbersome to use as the word processor, at least as it is implemented on the CDC 110 terminal. For example, although it uses the 44,000 word Random House Dictionary, everytime I want to spell-check a document I must tell this program which dictionary I wish to use, even, though the RHD.DIC is the default dictionary. It gets pretty old having to type "RHD.DIC" each time.

The spelling checker doesn't know what to do with embedded commands, so it stops to ask how to classify "rm" (meaning right margin), which it reads from the "setup" that precedes the text in a file. What I have done is to add these commands (which aren't really

contd.

words at all) to the RHD.DIC just so I won't have to be bothered answering the same question each time I process. In addition, when the dictionary detects a word that it cannot find it asks you to mark it as misspelled, or skip it, or add it to the dictionary. Mind you, it does not give you the correct spelling. (On Line's Dic-Tio-Nary, used with ScreenWriter, will let you take a look at the Wordbook to check the approved spelling.) Indeed, with Peachtree's program you do not get the correct spelling until you enter the Maintain Dictionary section of the program and ask for it. By then, you can easily have forgotten what words you wanted to check.

Once you have marked all the words you think may be misspelled, you then leave the spelling proofreader, and return to the file being processed. You are told that the original file has been saved, and that the file under the old name now has a left bracket ([) replacing the last letter of each word that has been marked as misspelled. This permits you to use the Peachtext "find" function to locate the bracket. This function is executed by entering "Ctrl-G, shift-left bracket". Upon entering this key combination the cursor moves to the first available bracket following the cursor's present position. You then replace the bracket with the previously correct last letter, and search for the error in the remaining letters. Since you don't know the proper spelling and are not in the spelling proofreader, you should have a hard copy dictionary handy.

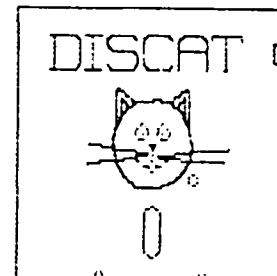
On the other hand, The Dic-tio-Nary will not only mark the work for you, it will spell it correctly and change it in the new replacement file. (Please don't take my comments about The Dic-tio-Nary as a recommendation of this program. I have many negative comments to make about it, as well. I'll save them for another time.)

Recently, I wrote a self-instructional manual to teach word processing. The process entailed a considerable amount of "beta" testing in the real world. This word processor is the best I have seen to date, Word Star notwithstanding. It is neither Peachtext nor Screen-Writer. It is not Wang nor CPT. On the other hand, it operates in a multi-taking, multi-user environment that behaves much like UNIX is reported to behave. To my knowledge it is not available to 8-bit machines, and I won't go into details, but if it ever gets loose in the orchard, it will knock the pits out of all the fruit, be they apples or peaches.

So, my fellow WAPers, be advised that the task of selecting the right word processor is, as Carl suggested, fraught with many perils. You really need to try it before you buy it. ☞

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LETTER TO THE EDITOR

From Ken Selk

Dear Editor,

I want to share a recent very frustrating experience of mine with other interested Apple users. This is in part a book report and in part a therapy session. The book that gave me heartburn is titled Interface Projects for the Apple], by Richard C. Hallgren.

BACKGROUND

I am a Chemist, not an Electrical Engineer. Since I bought my Apple][+ two years ago, I have had an urge to learn how the computer works and how that little 6502 can be linked with the world of laboratory experimentation. It takes a lot of effort to input data from a keyboard. It would sure be nice if the computer could collect its own data. It would be nicer still if I could understand how to make the computer do it. There are plenty of interface packages available commercially, but they seem to be expensive, and often assume that the user already knows what I wanted to learn. What I needed was a cookbook - some recipes to follow so that I could learn what I wanted to learn without becoming an electrical engineer. That is the way I was thinking when I saw this book.

THE BOOK

When I first picked up this book, I read the introduction. Mr. Hallgren seemed to address his book to my specific needs. I wanted to "...use my machine as extensively as possible..." I wanted to monitor and control my environment. I was interested in the theory of interfacing, but more than anything else I needed a "...selection of interface projects that can be built and expected to work."

Was this the book I sought? How much experience is required? It said that a "fairly good understanding of the commands in Applesoft BASIC" and some experience in program writing was assumed. Further, familiarity with the 6502 instruction set is needed to understand some of the machine language examples. It also said, "While construction of the circuits is straightforward, it should be understood that a certain amount of experience, and a certain level of expertise is expected. Previous construction of a commercial kit would probably qualify most individuals." I had that much going for me so I bought the book.

RESULTS

The first two chapters of the book were rather fundamental. Chapter 1 was the two-page introduction. Chapter 2 compared serial and parallel data transfers. Some simple example circuits suitable for doing input and output (I/O) for switches that are either on or off was presented for the parallel transfers. The serial I/O circuits seemed rather simple too, but by themselves useless. I didn't have anything to connect in serial so I didn't pay much attention to that part of the chapter.

Chapter 3 got me going. Here were instructions for a low speed and a high speed analog to digital (A/D) converter. That is what I wanted to build. Especially when I saw in Chapter 6 that the low speed A/D converter can be used to do biofeedback. Here was a way to connect my body (at least skin temperature and heart rate) to my Apple, and see part of myself in

hi-res graphics. Wow! What an awesome concept.

I ordered the parts, about a dozen integrated circuits, some resistors, capacitors, and pots. For the circuit board and connections I used some prefabricated materials (E-Z circuits) from Bishop Graphics, Inc. The materials for one A/D converter and the biofeedback stuff cost about \$55 (John Bell Engineering, Inc. offers a 16 channel A/D converter for about \$90, but you don't learn very much).

When I finished building the thing (about two months later) and put it in my I/O slot, I was ready for the worst. With a fire extinguisher ready and visions of depressing trips to the Apple Doctor, I booted the DOS - it didn't boot. Well, at least, it didn't destroy anything. After weeks of troubleshooting the A/D card, I found out why Mr. Hallgren had failed to meet his goal of "... projects that can be built and expected to work." One of the IC's (#3 of Figure 3.13 in the book) should be a 7427, not a 7402. It must be a typo, or something, right?

That's when I started getting frustrated. I was only irritated when I bought an IC (# 10 of Figure 3.13) that was listed but not used anywhere, but my temper flared when I got to the combination BASIC and Machine code programs that do the data transfers and found that I had to rewrite the Machine code to make it relocatable to get the device to work continuously.

I didn't know very much about machine code when I started, but I was just angry enough about all the "typos" that I learned a great deal. The proofreader must have slept through the flow charts. I don't know if Mr. Hallgren or the publisher put the errors in the text accidentally or intentionally. In either case, the device I built and expected to work, didn't. I had to learn a lot on my own to make it work.

Other devices which may or may not work are described as follows:

Chapter 4, a Digital to Analog converter is described in about 4 pages.

Chapter 5 shows how to interface a Houston Instruments HIPLLOT Digital Plotter with the Apple using the serial circuit discussed in Chapter 2. However, since I learned not to trust the author's software, the listings which make up the bulk of the chapter are quite suspect.

Chapter 6, as noted earlier, has some interesting biofeedback applications.

Chapter 7 tells the reader how to interface a Betamax video playback unit with the Apple (more questionable software listings).

Chapter 8, on data analysis techniques, has linear regression, exponential regression, and Fast Fourier program examples.

I haven't had the time or the inclination to build any more of these "straightforward" circuits, so I don't know all of the pitfalls of the books.

Now that I have had a chance to release my frustrations by telling the world that this book has some GROSS ERRORS and is not to be trusted, I am actually
contd. on pg 54

GUMBALL: A Game

Review

by Robert C. Platt

(Gumball: by Robert Cook; Broderbund Software, \$29.95. Color monitor or TV required.)

The documentation fails to conceal the social satire of Gumball. It claims that you are called upon to operate the Sticky Sole Gumball factory using either a joystick or keyboard controls. A random sequence of "gumballs" appear at the top of the screen and you must operate the pipe valves in the factory to sort the flow of gumballs into storage carts of the same color.

In fact, I suspect that this game will be very popular in Washington as the professionally animated flow of gumballs across the hi-res screen more closely resembles the operation of the Federal bureaucracy than it does even the most convoluted of factories. (The factory layout will remind you of either the flow of bills through Congress or those TV aspirin ads from the 1950's which portrayed the human digestive system as a series of wires and pipes.)

The game is played on five levels. On the first level, as a mere employee you must sort between two colors of gumballs. Once you have collected gumballs in the sorting bins, you must pilot your carts to the edge of the screen in order to increase your score. Upon meeting your "quota" of sorted gumballs, you may quit for the day and advance to the next level of play. Advanced levels offer higher quotas, up to four colors of gumballs and even "gumball bombs" fed into the factory by radical dental assistants. As soon as you spot a bomb you must disarm it before it explodes and ends the game.

At the end of each level, you walk home from work in an animated sequence which features increasingly larger homes (to reflect your daily promotions.) The game automatically maintains the record of the ten top scores on the game disk.

The game can be played with keyboard controls, although many will find a joystick more convenient to use. Because you control the pace at which gumballs enter the factory, you can learn the game at your own pace. (Level three can be attained after one evening's practice.)

The game is well-done and offers many entertaining touches. For example, if you mistakenly allow a gumball to fall into a cart of the wrong color, your supervisor, Mr. Nitpicker will walk out, shake his fist at you, make disparaging noises and dump out your cart. The sound and graphics are first rate.

Overall, it's an excellent, non-violent arcade game suitable for both children and adult bureaucrats-at-heart. &

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GRAPHICS DISPLAY SWITCHES

by Richard M. Rowell

I naively thought that computers were going to make my life easier; they haven't. There are just too many numbers to remember. It's quite confusing. Last week after working on a short assembly language program I tried to call home. Couldn't find my auto dial program because I didn't remember the number of the disk that it is on, so I dialed from memory ... \$302-148C. I got a recording announcing "The C&P Telephone Company does not recognize hexadecimal telephone numbers; please redial in decimal!". I gave up. I used to know my telephone number in decimal.

My frustration with having to remember too many forms of too many numbers is exacerbated when incorporating graphics into my programming. Sometimes I remember the addresses of the eight graphic display soft switches residing at 49232-49239 (or is it \$C050-\$C057?). I would never dare to try to remember that the LORES switch is at address -16298!

Because I use a lot of graphics in my instructional programs I finally settled on my own one line subroutine that will handle the numbers for me, while I return to the safety and comfort of using words (variable names). Line 30 in the following listing will produce the desired display if you first identify your preferences: RES = HI or LO; PAGE = 1 or 2; DISPLAY = FULL or MIXED.

```

0 TEXT : HOME : CLEAR
10 HI = 1:MIX = 1
20 GOTO 100
30 POKE 49238 + RES,0: POKE 49235 + PAGE,0: POKE
49234 + DISPLAY,0: POKE 49232,0: RETURN
90 :
100 REM *****
110 REM ** **
120 REM ** M **
130 REM ** A **
140 REM ** I **
150 REM ** N **
160 REM ** **
170 REM ** P **
180 REM ** R **
190 REM ** O **
200 REM ** G **
210 REM ** R **
220 REM ** A **
230 REM ** M **
240 REM ** **
250 REM *****
    
```

example:

```
100 RES = LO:PAGE = 2:DISPLAY = FULL: GOSUB 30
```

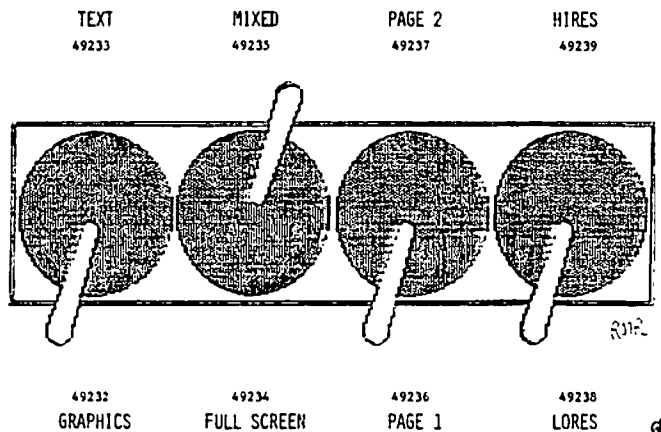
Of course you can use the Applesoft commands GR, HGR and HGR2, but these commands are destructive (they clear the screen before showing a display). The graphic display soft switches allow you to rapidly change from one graphic to another. If you want to be able to use words to do the switching then try my subroutine.

The following lines demonstrate flipping consecutively through three graphics pages (one orange, another violet and the third yellow) but the appearance is so psychedelically hideous that it should not be run under any conditions! Instead BLOAD three of your own pictures onto the three pages (A\$400, A\$2000 and A\$4000) and try flipping those.

```

100 HGR : HCOLOR= 2: HPLLOT 140,80: CALL 62454: GR :
COLOR= 13: FOR Y = 0 TO 47: FOR X = 0 TO 39:
PLOT X,Y: NEXT : NEXT : HGR2 : HCOLOR= 5: HPLLOT
140,80: CALL 62454
110 FOR I = 0 TO 111:RES = HI:PAGE = 1:DISPLAY =
FULL: GOSUB 30:RES = LO: GOSUB 30:RES = HI:PAGE
= 2: GOSUB 30: NEXT
    
```

Don't let anyone tell you that BASIC is too slow to handle good animation. By using these soft switches from within an Applesoft program you will have all the speed you want for four full screen picture flips.



To use these word-controlled graphic page flips within your own Applesoft programs include the subroutine (lines #10 and #30) at the beginning of the program and then specify what you want in lines such as the following:

```

90 REM SAMPLE LINE #1
100 RES = HI:PAGE = 2:DISPLAY = FULL: GOSUB 30

90 REM SAMPLE LINE #2
100 RES = HI:PAGE = 1:DISPLAY = MIXED: GOSUB 30

90 REM SAMPLE LINE #3
100 RES = LO:PAGE = 1:DISPLAY = FULL: GOSUB 30
    
```

There are eight (2^3) possible forms of graphics display using these switches. The three shown above offer displays that are frequently needed. Some of the other forms are not often used. LORES page 2, for

Letter to Editor contd. from pg 52

grateful to Mr. Hallgren for providing me with more of a learning experience than I had expected. I am still constructing the heart rate monitor, but the temperature monitor I built from his design works great. (Ed. Note: Hurry, so we can check your blood pressure.) I was fortunate in that I had access to the appropriate component data sheets and enough confidence in my own abilities to make the thing work.

I recommend this book to anyone that likes surmountable challenges in the area of computer interfacing, but now that you have been warned, you may prefer to become an electrical engineer yourself. The book is published by Prentice-Hall, Inc. 1982, \$12.95.

THE BIGGEST SCAM SINCE TELEVISION

by Philip Noguchi

Time: sometime in 1978...

He: "I'm going to buy an Apple!"

She: "We have plenty of them in the refrigerator!"

He: "No, No! I mean an Apple Computer..you know, color graphics, 16K memory and all that!!! I can do the checkbook and your recipes and..."

She: "You don't even do the checkbook now, and I don't need some piece of junk to tell me how to save my recipes!"

He: "Well, I'm going to do it anyway..."

....sometime in late 1982

He: "I'm going to buy an Osborne.."

She: "You're going to buy a person?"

He: "No, no! It's a CP/M microcomputer with thousands of dollars of software bundled in with Word Star, Supercalc.."

She: "So what does that mean?"

He: "You can do word processing and spreadsheets and, and, and..."

She: "Sweetie, I still do the checkbook...by hand!"

He: "See you in about an hour with the Osborne!"

....January 1984

He: "I'm getting the first Macintosh that's available from Harvey's store."

She: "I told you, we have plenty of apples in the refrigerator! Besides, you don't like McIntosh apples, you like Red Delicious!"

He: "It does windows... and empties the trash..."

She: "!!... Oh?? How about bathrooms and cooking dinner?"

He: "Not yet, but Real Soon Now..."

....one week later

He: "Uh, honey...can I use the Mac?"

She: "Wait your turn! I have to finish this manuscript, and then Jamie is going to tidy up his pictures and Matthew wants to learn how to use the spreadsheet...say, why don't you use your Osborne?!"

Indeed, this is a true scenario. A little background is in order. My wife and I are biomedical scientists and we use a variety of computers at work, including DEC and IBM mainframes as well as Tektronics and Data General micros. In actual fact, Connie is a superb biochemist, mathematician and physicist; programming Lagrange equations or non-ideality of water solvents in sickle cell disease is so trivial that she never even thinks about it at a conscious level. Thus, it is somewhat ironic that until recently she did not share my enthusiasm for micros at home. Not at all. As she said, "Home computers are the biggest scam since television! You turn them on and nothing useful ever comes out of them!"

That attitude changed when we saw the Macintosh in person...her first comment was that one was not going to be enough. Both the kids (Jamie-six and Matthew-four) sat down and immediately began to explore the Mac Desktop. I tried to start MacPaint for Jamie and couldn't quite do it; by the time I found another disk to try, about 30 seconds, he had already started MacPaint and was drawing and erasing as though it were the natural thing to do. One of my colleagues at work came to look. She has absolutely no use for computers at all; she would rather work numbers with a pencil than use a calculator. I couldn't move out of the chair fast enough before she was drawing a rose on the screen! Really, the biggest scam since television!

Just one look, that's all it took...and you want to take it home! Unlike TV, though, after you turn it on, it doesn't do anything for you - you have to do something with it. What a tremendous thought...one in every home, with family members lining up, not to tune out, but to use a new tool that's limited only by your imagination! No more having to accept what others such as TV producers think is worthwhile; you and I can now write and draw and even play, but we're in control. Ah, well, a scam alright, but one where the victim might even be the ultimate victor. &

HEARD AFTER "THE MEETING"

The following are direct quotes heard around the office during the week after the January 28 meeting:

"That machine is like 'WOW' - I want to trade my Apple][in right now."

"MacPaint is awesome - MacWrite, too." (from a 15-year old)

"Superb - to be congratulated - I belong to a lot of organizations and that was the best meeting I have ever attended with any organization."

"When I saw the Macintosh at a store with hands-on or some demonstration from sales people who were not that familiar, I was skeptical - but after seeing it put through its paces at the meeting by people who know it, I WAS VERY IMPRESSED!"

"If Apple put the demonstration which they gave at the meeting on TV for the general public, they would sell millions of Macintoshes."

"Impressive - all the people with me were really impressed, especially with the mouse."

"Super! Best meeting Washington Apple PI has ever had."

One wag said, "We're starting an Anti-Mac SIG and we're wearing badges that say, 'We don't do windows'."

"There must have been subliminal messages in their ads saying, 'Buy a Mac, Buy a Mac', cause I have just got to go out and buy one."

"I was fascinated by the up-close and personal marketing approach. My G.W.U. colleagues were equally impressed."

"I'm suffering from MacMania and am having a real Mac Attack." &

THE NEW MICRODISK

CHARLES R. SMITH

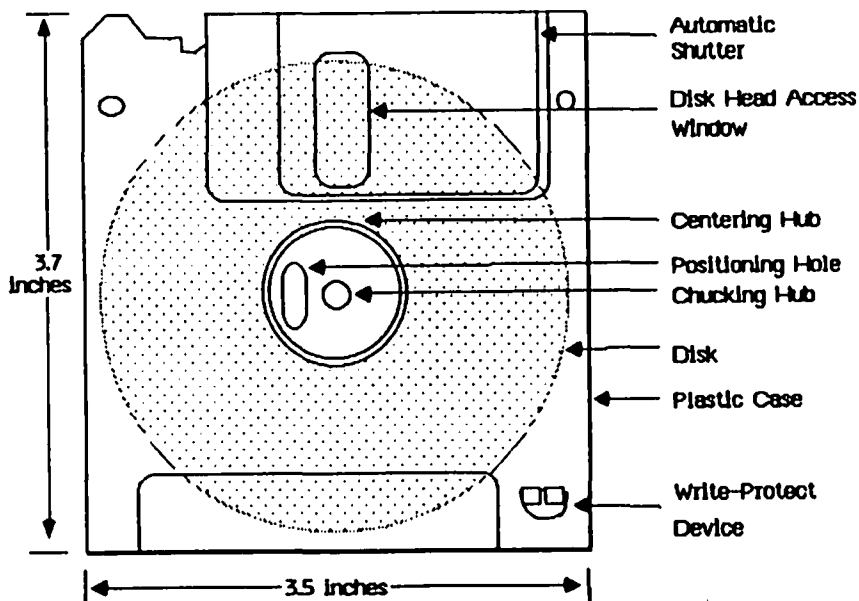
The Maple Orchard is published by
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VOL. 3, No. 3

The recent agreement by a group of several dozen companies on a standard media for a microfloppy disk will serve to bring order to the conflicting formats being promoted. A group called the Microfloppy Industry Committee (MIC) of the American National Standards Institute (ANSI) is recommending a new microfloppy disk standard to ANSI. The fact that Apple Computer is a member of the MIC suggests that, in the future, one or more Apple computers may be manufactured using this drive. Look for it on the MacIntosh.

In the past several years, at least five different types of microfloppy disks have been created, and each development company (or group of companies) naturally promoted its format as the best. The market for microfloppies is being to grow rapidly, as more manufacturers realize that a shirt pocket-sized microfloppy disk (somewhere between 2 and 4 inches in diameter) can pack almost as much data as the larger 5 1/4 inch format. This demand for microfloppies will be fueled by the rising demand for portable computers.

Several different microfloppy formats are currently available. A 3 inch drive was developed by the Hitachi/Matsushita/Maxell group using the specifications of the 5 1/4

inch standard of 300 rpm and 40 tps. (Maxell is owned by Hitachi.) Amdek and Micro Peripherals Inc. produce disk drives that are compatible with this 3 inch format, which is also being used on Canon, Fuji and Sanyo computers. A 3 1/4 inch format was developed by Dysan along with three companies in which it has a financial interest, Seagate, Brown and Tabor. Unlike all the other microfloppies which are encased in a hard plastic shell, this format uses a soft outer disk envelope which is similar to the 5 1/4 inch drive and is less expensive to manufacture. (Seagate originally wanted to build 3 1/2 inch drives using the Sony standard, but Sony would only licence Seagate to build drives using parts manufactured by Sony.) The original 3 1/2 inch format was developed by Sony, and was used in their machines and by Hewlett-Packard, Tandon and others. Sony is changing to the 3 1/2 inch format recommended by the MIC. A 4 inch format was developed by IBM but is larger, slower and less capacious than the smaller microfloppy formats; it has a limited future, as even IBM does not use it in any of its computers. Canon produced a 3.8 inch drive whose days would seem to be numbered. Recently introduced, and presumably also of limited future because of the new MIC standard, is a Taiwanese 2 1/2 inch drive.



The 3 1/2 inch microfloppy disk standard
from the Microfloppy Industry Committee

contd.

THE NEW MICRODISK

The new 3 1/2 inch MIC format has 80 tracks, media thickness of 40 to 50 micro-inches, and a coercivity of 650 oersteds (an oersted being a unit of magnetic resistance used in quantifying the performance of magnetic media). Mechanical protection comes in the form of an autoshutter which automatically exposes the head access window for the read/write head upon loading the disk in the drive. The hard outer shell also uses a sliding mechanical write-protect tab.

Sony disagreed with the standards being developed, most notably the MIC's desire to use a Shugart-compatible plug. This meant that the disks would have a speed of 300 rpm; Sony wanted a speed of 600 rpm to allow for a faster data transfer rate, but this was not accepted by the committee which felt that the higher speed would cause too much heat and thus would result in reliability problems due to disk expansion and contraction.

While the MIC standard refers only to the magnetic media and not the mechanics of the disk drive itself, to some extent the media will dictate the nature of the drive. It would appear that the microflop drives will have a Shugart interface (making it plug-in compatible with 5 1/4 inch Shugart drives), inasmuch as the companies making up the MIC will be using a Shugart interface format (Apple, Atari, Control Data, Shugart, and the media manufacturers Memorex, Nashua, BASF, Verbatim and Wabash), and 3 1/2 inch drives with a Shugart interface are now being used by Control Data, Epson, Gavilan, Tandon and TEAC. The Shugart drive runs at 300 rpm and transfers data at 250 K bits per second.

Currently the Shugart 3 1/2 inch SA300 drive is single-sided (80 tracks packed together at a rate of 135 tracks per inch) and is capable of storing 500K unformatted. (When formatted, a disk is capable of storing less data. Expect at least 320K to 380K formatted.) The Tandon drive records data on both sides, storing 875K per disk. Rumour has it that IBM will be using these Tandon drives.

Does this mean that 3 1/2 inch disks will be interchangeable between different personal computers? Don't bet on it. The MIC has proposed a media standard, not a disk drive standard. The different drive manufacturers have some freedom in how they use this media. My hunch is that it will result in a situation similar to the 8 inch disks with single/double sided drives and single/double density, but even that is better than the numerous incompatible formats using by the many companies building computers with 5 1/4 inch drives.

The cost? Look for disks at \$7 to \$10 (Cdn), and disk drives at about the same cost as the 5 1/4 inch counterpart. But a characteristic of the microcomputer industry is that as the demand increases, prices fall.

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THE APPLE //e MOVES INTO SOUTHERN MEXICO

And Tuxtla Gutierrez Moves into the Computer Age

by Norvan Meyer

A tiny American school in southern Mexico is moving into the computer age. To ensure that its 25 students continue to receive an education compatible with that of the United States, the Instituto de Educacion Bilingue del Sureste has just purchased an Apple //e and a selection of software.

The Instituto, a private, non-profit school funded by the U.S. Department of Agriculture, is located in Tuxtla Gutierrez in the state of Chiapas, Mexico. The school provides an American-style education for children ranging from pre-kindergarten through eighth grade. The students are dependents of employees of USDA's Animal and Plant Health Inspection Service - APHIS - currently working on a joint Mexican/American project to eradicate screwworms, a serious pest of livestock.

The school is staffed by four U.S. certified teachers and a director. Together, they have a combined total of over 30 years experience in education. Although the Instituto provides a standard U.S. curriculum and is currently in the process of receiving accreditation from the Southern Association of Colleges and Schools, the educational experience that it provides for its students is definitely unique. Since enrollment is small, each child receives a generous share of individual attention.

The school operates in a rented house located in a beautiful residential area overlooking the city of Tuxtla. In addition to this homelike atmosphere and the special attention students receive from the staff, the children enjoy several other advantages. English-speaking students begin formal training in Spanish upon entrance. After a short time in the Instituto,

most of the children are bilingual in English and Spanish. In addition, they are all able to take flute and guitar lessons. They have regular physical education classes, plus special training in swimming and gymnastics.

With only 25 students, whose families are close both professionally and socially, the Instituto benefits from almost 100 percent parent participation in school activities. Regular parties and school functions provide opportunities for the children to exhibit their musical, athletic and acting talents. These social events also attract Americans with no children in school, as well as members of the Mexican community.

Since its opening in September 1974, the Instituto has had 24 students graduate from the eighth grade. These children have entered U.S. public, private and military schools in various states, and several have since entered leading U.S. universities. The Apple //e is a new step in education at the Instituto, designed to enable students to remain competitive with their peers in the U.S. and to maintain the school's excellent record of education.

If any of our Apple Pi readers would like to assist these U.S. students with their new leap into computer education, you might consider donating (tax deductible) some of the software you no longer need. Any such gifts can be directed to Dr. Robert E. Reichard, U.S. Embassy - Mexico, Washington, DC 20520; or to WAP members #3449, Dr. Norvan Meyer, 605 N. Mansfield Street, Alexandria, VA 22304. Add a note inside that your gift is for the American school in Tuxtla.

COMPARISON OF THE SOURCE AND COMPUSERVE

by Hunter Alexander

	<u>THE SOURCE</u>	<u>COMPUSERVE</u>
Founded	1979	1979
Subscribers	50,000	100,600
Separate Databases	700	800+
Most Unusual Service	Exotic Auto Newsletter	X-rated CB, "like having a dirty book that talks back to you."
Registration Fee	\$100	\$ 20
Connect Time 300 Baud/hr.	\$20.75 - daytime; \$ 7.50 - evening	\$15.00 - prime \$ 6.00 - after 6 PM & weekends
Connect Time 1200 Baud/hr.	\$25.75 - daytime \$10.50 - evening	\$15.00 - prime \$12.50 - standard
Most Popular Service	Electronic Mail available 24 hrs/day. Easier to use than Compuserve elect. mail, most people agree.	Bulletin Boards
Location	1616 Anderson Road McLean, VA 22102	5000 Arlington Centre Blvd. P.O. Box 20212 Columbus, OH 43220

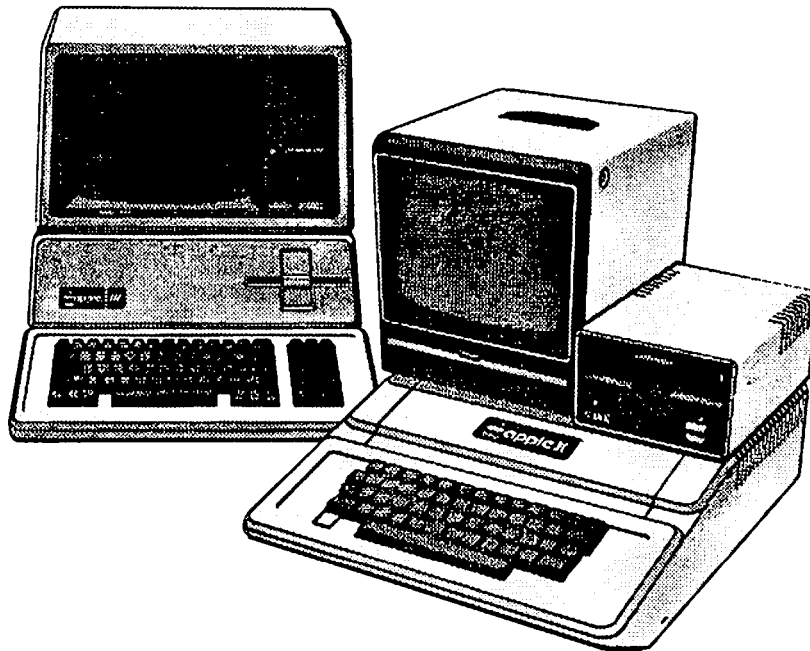
Reference: "The Battle of the Networks, The Source Versus Compuserve", PC Magazine, January 1983.

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A Mouse for the Apple contd. from pg 49

The basic structure of a mouse program, as I see it, is:

1. Print a welcome screen and show instructions.
2. Begin the main program loop.
3. Check the keyboard for a keypress.
4. Read the X and Y position of the mouse.
5. Update cursor based on mouse position.
6. Check button input.
7. Go back to #2.
8. Keyboard read subroutine.
9. Paddle read subroutine.
10. Read button input.
11. Command determination subroutine.
12. Error handling routines.

mouse DIN plug	Apple Game I/O
Brown 1----->	6
Red 2----->	10
Orange 3----->	8
Yellow 4----->	2
Green 5----->	1

Table 1

Mouse	Apple Game I/O
1 Brown left - right X axis	1 +5V
2 Red up - down Y axis	2 Pushbutton 0
3 Orange ground	6 Game Controller 0
4 Yellow pushbutton	8 Ground
5 +5V	10 Game Controller 1

Table 2

This is only an outline, but I have found that all of the programs I have written so far for the mouse follow this basic outline. This has decreased the time it takes to write a new program considerably. All I have to do now is write the command processing routines and the instructions, and I have a new program.

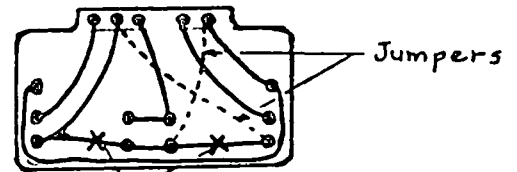
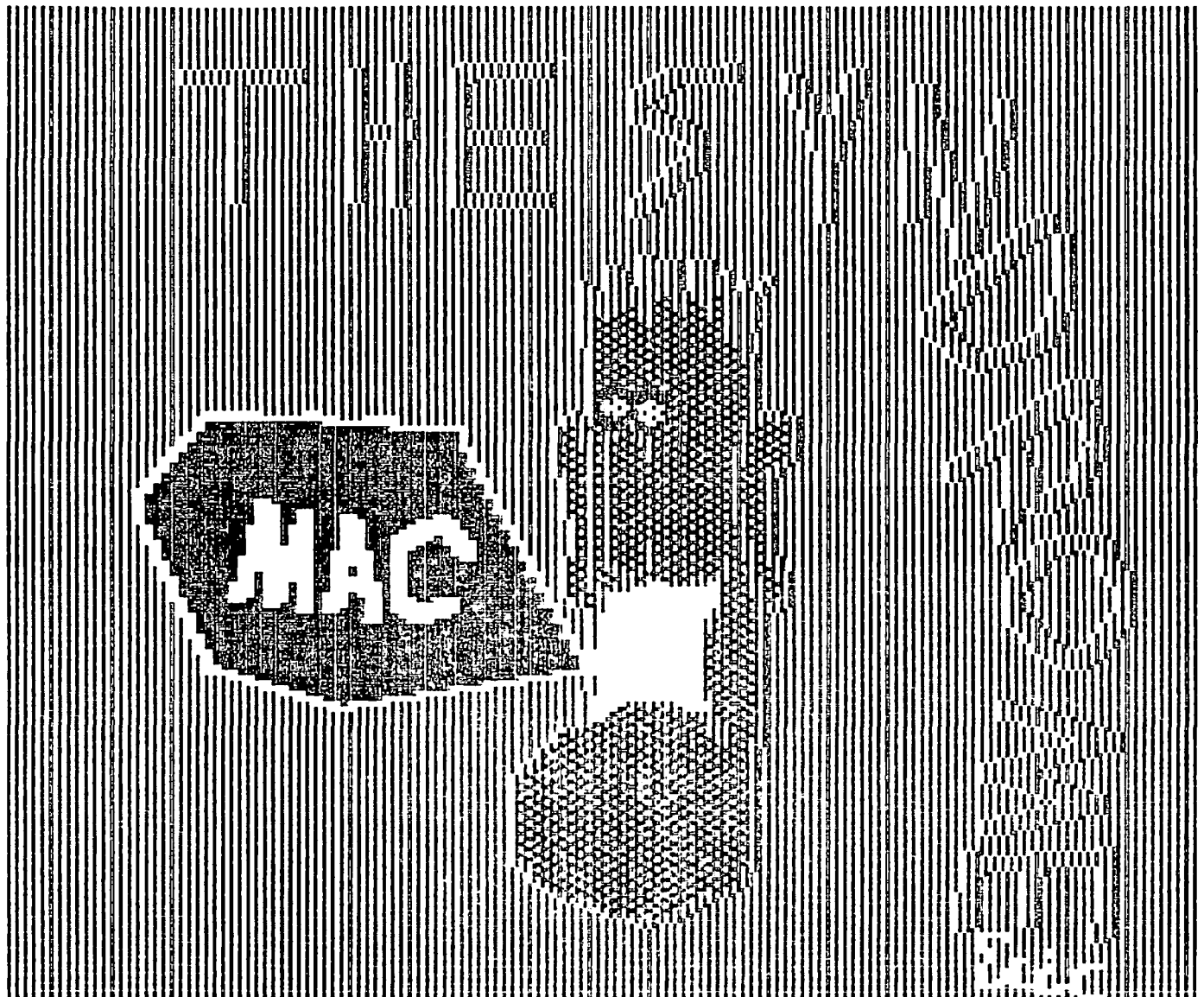


Figure 1 CUT HERE



WAP QUESTIONNAIRE

Please help us to provide better service to WAP members by answering and returning the following brief questionnaire. Some of the questions ask you to rank the alternatives. Use a rank of "1" for your highest priority, a "2" for your second highest, etc. Continue your ranking only as far as your interest. (If you are only interested in three choices, rank these "1" to "3".) Feel free to add any suggestions on the back on this questionnaire.

1. Journal Articles. Rank the following types of articles according to your interest.

Product reviews: Hardware _____	Software _____
About a language: _____	
Applesoft _____	Pascal _____
CP/M _____	DOS _____
Machine Language _____	LOGO _____
Fiddling with hardware _____	
Other Subject (specify _____) _____	

What are your three favorite recurring monthly columns? (e.g. Q & A, Page From the Stack, Bottom Line, Softviews, news from the SIGs, VisiCalc, etc.).

What is your opinion of the amount of material included in the Journal?

Too much _____ Just right _____ Not enough _____

2. Tutorials. Rank the following tutorials according to the likelihood of your attending one given by WAP and held at our office.

	Introductory	Advanced
Machine Language	_____	_____
Pascal	_____	_____
Applesoft	_____	_____
Graphics on the Apple _____	_____	_____
Specific Products:		
VisiCalc	_____	_____
ScreenWriter	_____	_____
dBase II	_____	_____
Word Star	_____	_____
Other (specify _____) _____		

3. Software for Commercial Software Library. Rank the following programs according to your interest to come to our office and use the product to learn about it.

MagiCalc (alias Spreadsheet II) _____	VisiCalc _____
The Graphics Solution _____	dBase II _____
Bank Street Writer _____	Modula II _____
ASCII Express Professional _____	
Other word processors (name _____) _____	
Other data base packages (name _____) _____	
Other communications packages (name _____) _____	
Other graphics packages (name _____) _____	
Other programs (name _____) _____	

4. Would you be willing to be a Hotline volunteer for any computer related subject, hardware or software product? If so,

Name _____

Subject area or product _____

Phone No. including area code (____) ____-____

If you have not done so, please fill in this questionnaire and return to the WAP office.

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.

- () March 6 - INTRODUCTION TO APPLE COMPUTER HARDWARE () April 3
- () March 13 - HOW TO USE YOUR APPLE SOFTWARE () April 10
- () March 20 - BEGINNING BASIC () April 17
- () March 27 - BITS, BYTES, NIBBLES () April 24

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

- Tutorials at \$10.00 (with equipment)
- Tutorials at \$15.00 (without equipment)

The following "non-regular" tutorials are being offered (also at the office). Please register in advance.

ADVANCED APPLESOFT - Richard Untied, Sat. AM Mar. 10 9:30-12:00 CP/M - Bob Fretwell, Sat. AM Apr. 14, 9:30-12:00

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The following tutorials are planned but no exact date yet:

Pascal - Pascal Sig, June; 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:

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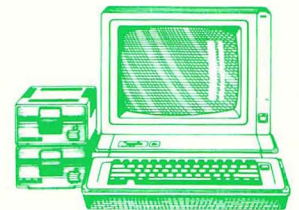
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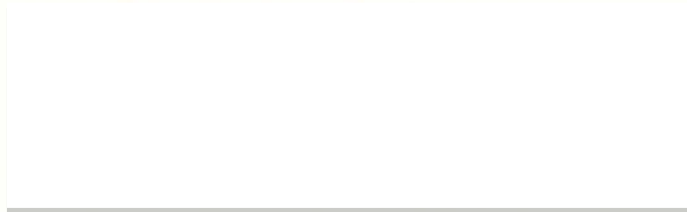
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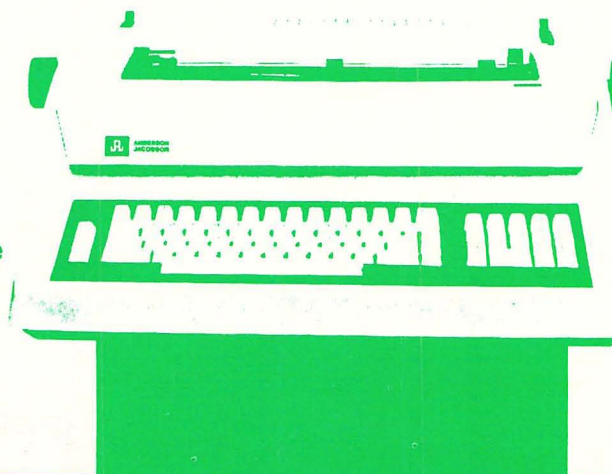
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