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Washington Apple Pi

Volume 4 January 1982 Number 1

Highlights

RUNNING A TELESCOPE WITH A MICRO

TEXT ON THE HI-RES SCREEN

subLOGIC GRAPHICS PACKAGE:

A Review

In This Issue

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Membership dues for Washington Apple Pi are $18.00 per year, beginning in the month joined. If you would like to join, please call the club phone and leave your name and address, or write to the PO Box above. A membership application will be mailed to you.

Subscriptions to the Washington Apple Pi Newsletter are not available. The newsletter is distributed as a benefit of membership.

Members who would like to sign onto the Washington Apple Pi ABBS system should call the club phone and leave your name (first and last), WAP number and phone number. You will be assigned a password and John Moon will take care of signing you on.

CLASSIFIEDS

ATTN. AUDIOPHILES - FOR SALE OR TRADE: Technique 9010 Barometric Equalizer and Sansui 890 Stereo Receiver. Want enough for disk drive or equitable trade. Rip Toren, (301) 776-6156.

FOR SALE: APPLE Pilot, including backup disk and documentation. $90. Dave Einhorn, 593-8420.

FOR SALE: Locksmith 4.0, $85.00. Kevin Duffy, (202) 363-6245.

EDITORIAL

I feel that I must comment on the discomfort experienced by many at the Fleamarket last month. We had originally planned to have it in the George Washington University Ballroom but were rescheduled to Building C due to a University sponsored activity which took precedence. Our main club activities took place on the stage where there wasn't sufficient room for the club store, the library diskette sales and the pickup of the newsletters. Our logistics were just wrong, but we could not rework them on the spot. Everyone, volunteer and member alike, grumbled and complained. Some members were given rather short treatment for which I apologize, and I am sure I speak for the others as well. We leave all this behind, for our next and all succeeding (??) meetings will be at USUHS in Bethesda.

We get good comments regarding the newsletter from many out of towners but we rarely hear anything, good or bad, from the folks in the immediate vicinity. Hello! Is there anyone out there? Do you like what you see? How about some feedback? Better still, articles of your choice!

Happy Holidays, folks, and a great New Year!

EVENT QUEUE

Washington Apple Pi meets on the 4th Saturday of each month at 9:30 AM (sales are from 8:30 - 9:30), at the Uniformed Services University of the Health Services (USUHS), Building A, 4301 Jones Bridge Road, Bethesda, MD, on the campus of the National Naval Medical Center. This is a new meeting site.

Following are the meeting dates for the next three months, with their topics and speakers.

January 23 - Music Boards
Bernie and Paula Benson

February 27 - Assembly Language Prog.
Bill Schultheis

March 27 - Assembly Language contd.
Bill Schultheis

The Executive Board meets on the 2nd Wednesday evening of each month. All members are welcome to attend. Details will be on the club phone and ABBS.

NOVAPPLE meets on the 2nd Saturday of the month at 1:00 PM at Kings Park Library on Burke Lake Road in Fairfax County; and on the 4th Thursday of the month at 7:30 PM at Computerland of Tysons Corner. In addition, tutorials will be presented on the 2nd Wednesday at 7:30 PM at Computers Plus on Franconia Road.

PRESIDENT'S CORNER by David Morganstein

All New Years begin with resolutions. The WAP needs its members to resolve to contribute a little bit of time to help continue our activities. Yes, folks, this is a request for aid. We need the following: articles for the magazine; programs for the library; an assistant editor for the magazine; an older member to help the Appleseeds group organize; an advertising chairman; and a NEWSIG chairman. Where do we turn to find this help? To you! Please don't tell us you gave at the office...Call me or our volunteer coordinator, Boris Levine, to offer your services.

• • • •

The flea market seemed to be very popular. Our last meeting at George Washington University saw a swarm of new faces attend to buy or sell APPLE items. Many thanks to NOVAPPLE for originally proposing the idea and joining in on the work. Thanks also to Nick Santelli, the organizer, and his legions of assistants.

• • • •

There are now at least two manufacturers of 64K or more memory cards for the APPLE: Legend Industries and Sorrento Valley Associates. Of course, the cards are of no use without software to take advantage of them. The software I have seen so far allows the extra memory to appear as a virtual disk, available for access through the usual DOS commands. This does not mean that the workspace of your computer has been increased. Rather, it means that tasks which previously were slowed down by disk I/O can be done almost as quickly as straight memory operations. Overall, it means more capability for the APPLE owner.

• • • •

Our tutorial planned for February is picking up steam. We have over 20 members signed up so far. While there is space for another 15 or 20, if you are interested in participating send in your application soon. A brief course outline and registration form is provided in this issue. We will hold the tutorial in one of the labs at the USUHS so that there will be plenty of table space and power outlets for those who bring their own APPLEs. We have one couple coming down from New Jersey, who will drive down on the Friday evenings before the class day!! We will mail out a more detailed outline containing reading assignments for those who want to do a little preparation.

Wonderful Holiday Season

WAP HOTLINE

Have a problem? The following club members have agreed to help. PLEASE, respect all telephone restrictions, where listed, and no calls after 10:00 PM.

General		
	Ben Acton	972-1533
	Robert Fretwell	971-2621
	Dave Harvey	527-2704
	Tom Jones	460-8773
	Robert Martin	498-6074
Operating Systems		
APPLE DOS	Richard Untied (weekends only)	241-8678
CP/M	Robert Fretwell	971-2621
Languages (A=Applesoft, I=Integer, P=Pascal, M=Machine)		
A,I	Jeff Dillon	422-6458
A,I	Tom Jones	460-8773
A	Mark Pankin	370-9219
A,I,P,M	Bill Schultheis (except Tue.,Thurs.)	538-4575
A,I,M	Richard Untied	241-8678
P	Robert Fretwell	971-2621
DB Master	Dave Einhorn	593-8420
Printers	Walt Francis	966-5742
Word Proc.	Walt Francis	966-5742
	Ben Acton	972-1533
VisiCalc	Ben Acton	972-1533
	Walt Francis	966-5742
Time-Sharing	Chuck Reinbrecht	299-6810
	Dave Harvey	527-2704
Graphics	Bill Schultheis (except Tue.,Thurs.)	538-4575
Games	Jim Eatherly	232-6046
Mem. Expansion	Fred Schulz	223-1397
Other Disk Drives	Fred Schulz	223-1397

VOLUNTEERS NEEDED !!

ADVERTISING CHAIRMAN. Someone to coordinate the WAP advertising. Work with the advertisers to insure that their ad copy is in and that payment has been received. Contact other potential advertisers for the Pi.

ASSISTANT EDITOR. Someone interested in doing publications. Help the Editor in assembling the magazine. Take a more active role in this process during the summer months.

APPLESEEDS ORGANIZER. Someone to help the younger members get more out of their meetings. Answer questions, arrange speakers and demonstrations for them.

MINUTES

EXECUTIVE BOARD MEETING

The Washington Apple Pi Board met at 7:30 PM on November 11, 1981 at the home of Bernie Urban. President David Morganstein presided; 14 members were present.

A cover price of $2 for the Newsletter will go into effect in January 1982. There will be an increase in advertising rates for the Newsletter. Apple clubs in the U.S. and many foreign countries were sent one-page announcements regarding Inside Apple Pi. Club store policy and issues were discussed, particularly concerning getting the best possible prices for our members vs. obtaining good dealer support. It was moved and passed that the club purchase an answering machine. There was discussion about the role of IAC. Documentation of club disks was discussed.

GENERAL MONTHLY MEETING

Washington Apple Pi met at 9:30 AM on November 21 at George Washington University. The meeting was conducted by Bernie Urban with about 350 people attending.

Announcements were made regarding tutorial classes to be held in February, the club store, the next meeting on November 19 at USUHS, and SIG items. The rest of the meeting was a fleamarket. The meeting adjourned at 11:00 AM.

NOTICES

SPECIAL OFFER ON BACK ISSUES OF WAP

If you have joined Washington Apple Pi in the last few months, you may be interested in obtaining back issues. We are making a special limited offer. If you buy five or more copies by mail, we will pay the postage. If you want to pick up five or more copies at a monthly meeting, we will deduct $2.00 from the total price. We have a good supply of issues since July 1981, but a limited supply of January - June 1981. We also still have a good supply of October - December 1980. There is an order form elsewhere in this newsletter which shows prices and further details.

MEMBERSHIP DIRECTORY IS BEING PRINTED

The new WAP Membership Directory has gone to press and should be ready for distribution at the December meeting or for mailing in late December. Only those members who gave us permission to have their names, city, state, zipcode and/or phone (and we tried hard to get updated permissions) will be listed and receive a copy. The cutoff date was November 21. Any corrections or new members after that date will not appear. Those joining after November 21 who give us their permission to be in the directory will receive a copy as long as the supply lasts. We will try to print one-sheet updates from time to time.

BRING YOUR CHECKBOOK TO THE MEETINGS

If you plan to make any purchases at the monthly meetings, please bring your checkbook. Checks are preferred because members do not like to be responsible for large sums of cash. Management reserves the right to refuse cash over $5.00.

SIG NEWS

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.

This month's newsletter features two new regular SIGAMES columns: HIT PARADE and SIGAMES NEWS, both by John Alden. HIT PARADE is SIGAMES' new buyer's guide to games. Each month a new group of games will be featured. SIGAMES NEWS will present the agenda for the current month's SIGAMES meeting, the next month's agenda, a synopsis of the prior month's meeting and a review of one or two new games.

PIG, the Pascal Interest Group, meets on the third Thursday of each month at 7:30PM at the Uniformed Services University of the Health Sciences, Bldg. A, Room A2054 (2nd floor), on the campus of the National Naval Medical Center at 4301 Jones Bridge Road, Bethesda, MD.

EDSIG will meet immediately after the regular meeting of Washington Apple Pi.

NEWSIG will meet just after the regular Washington Apple Pi meeting. The meeting seems to best help the new members by answering their questions, and telling them what to do to get their system up and running. We also tell them something about WAP, how to order the disks, what's on the disks, etc.

The following members have agreed to answer questions over the phone when someone gets stuck and needs help between meetings:

Bob Chesley	560-0121
Paul Hoffman	831-7433
Sara Lavilla	926-6355
Boris Levine	229-5730
John H. Smith	439-4388
Steve Sondag	281-5392

Happy New Year

A PAGE FROM THE STACK

by Jill & Vance Giboney

We have two new disks for the library this month:

Volume 107 - DOS 3.3 Games B
Volume 108 - DOS 3.3 IAC 10 (Graphics)

Volume 107, The new games disk, consists of games (what else?) of different types, difficulties and sophistication. Rather than try try to describe each game in a useful way, we'll simply give a catalog listing and assume that you will get as much useful information from the names and file lengths as we could give you in a couple of sentences.

DISK VOLUME 107

```
*I 046 APPLE TRIVIA
*A 012 ARTILLERY
*I 029 BRAIN TEASER
*I 050 CLUE
*A 017 COLLISION
*A 020 CONNECT-A-DOT
*A 010 CRAPS
*A 008 DARTS
*I 016 FOOSBALL
*A 032 FOOTBALL
*A 002 HELLO
*B 005 HELLO.CATALOG.OBJO
*A 039 HIRES BLACKJACK
*B 003 HIRES CHARACTER GENERATOR
*B 006 HIRES CHARACTER TABLE
*I 030 INTERNA-MAZE
*A 018 KENO II
*A 017 MADLIB 1
*A 012 METEOR STORM
*I 010 NOT ONE
*A 004 NUMBER GUESSER
*A 006 ROCK SCISSORS PAPER
*B 012 SHAPES
*I 026 TV TRIVIA II
*A 020 WHO AM I?
*A 015 WISHING WELL
```

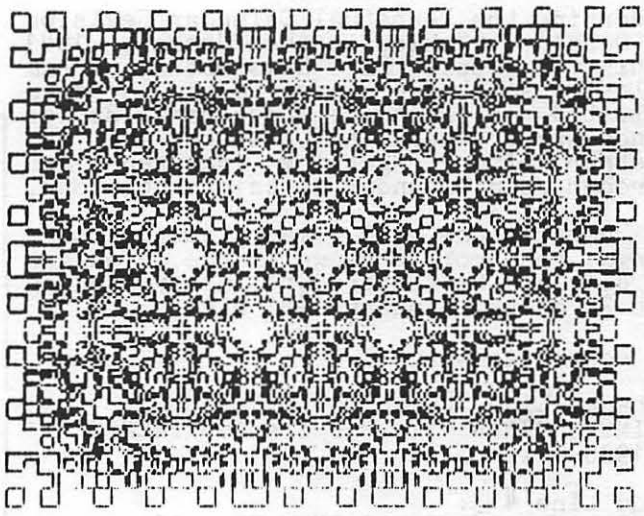
Volume 108, the new IAC disk, comes with the following message from the IAC:

> DEAR APPLE USER GROUP
> FOR A CHANGE OF SCENERY, WE THE IAC,
> ARE ENCLOSING A GRAPHICS DISK FROM
> OUR FRIENDS IN EUROPE.
> WE HOPE YOU LIKE IT.
>
> NEIL D. LIPSON
> SOFTWARE CHAIRMAN

Many of the programs on this disk give spectacular displays, especially in color. We've included a screen from LACE as an example.

There are more disks in the works, but we need your continuing contributions to keep the library growing.

LACE



LETTERS TO THE EDITOR

Concerning the Perpetual Calendar Revision by Donald E. Kahler in the January 1981 Washington Apple Pi Newsletter, I am enclosing some corrections to the program as listed. A friend of mine, Mark Hansel (a non-APPLE owner), and I worked them out together after getting incorrect and improper results under certain conditions.

The corrections will remedy, among other things, the problem shown in the calendars for July and September 1981, as printed on page 26 of the January 1981 WAP.

The corrections are:

Change Line 180 to:
```
INPUT "YEAR ";Y:  IF Y < 100 THEN Y =
1900 + Y
```

Add Line 413:
```
M2 = M:  IF M2 = 1 THEN M2 = 13
```

Add Line 417:
```
Y2 = Y:  IF M2 > M THEN Y2 = Y - 1
```

Change Line 420 to:
```
PRINT R$(M2-1);:PRINT " ";:PRINT Y2;:
PRINT " ";:PRINT "###";:HTAB 24
```

Add Line 757:
```
IF EN > .5 THEN L$ = ""
```

I think these corrections will enable the program to render better calendars.

Keep up the good work with WAP. I look forward each month to receiving it.

With Regards,
Stephen E. Bach

P.S. This letter was composed using the best text processor/editor (I hate the term 'Word Processor', thinking it a gross misnomer) for us paupers: APTYPE from the Apple Pugetsound Program Library Exchange.

OMISSION IN "INSIDE APPLE PI"

The following letter was sent to us regarding an omission in one of the articles in "Inside Apple Pi":

"The article on page 50 of Inside Washington Apple Pi seems incomplete. Dr. Wo discusses a UNIT stringstuff which is not reproduced in the article. This UNIT, however, defines several variable types and contains some of the major operational code. Where was this UNIT written up? I would appreciate that a copy of this UNIT be sent to me to complete an otherwise fine article and publication.

Stan Schretter
11410 Running Cedar Road
Reston, VA 22091

The article referred to by Mr. Schretter is Dr. Wo's article "Blaise Away - Spring Planting: Seeds for a Text Formatter" which appeared in the May 1981 issue of the WAP Newsletter. The last section of the Pascal listing, beginning with "UNIT stringstuff" was inadvertently omitted in Inside We are including it as a one page insert for those purchasing Inside in the future. If you already have a copy and need this unit, please let us know and we will mail you a copy, or it can be picked up at the monthly meeting.

TRICKY GET PROGRAM

by L. Benner

```
100  REM  TRICKY GET PROGRAM
105  REM  BY L BENNER WAP155
110  CLEAR : HOME : PRINT "THIS P
     GM LETS YOU ENTER MIXED STRI
     NGS"
115  PRINT : PRINT "TRY IT FOR DI
     SPLAYING AN AREA WITH THE  F
     ORMULA L * W = A"
120  PRINT : PRINT "EXAMPLE: ENTE
     R 24L THEN 40W THEN 31L    T
     HEN 11.5W THEN T AND WATCH R
     ESULTS:"
125  PRINT : PRINT "THEN EXPERIME
     NT A LITTLE."
130  REM  GET EACH KEYSTROKE
135  GET A$
140  IF A$ = "L" THEN 180
145  IF A$ = "W" THEN 200
150  IF A$ = "T" THEN 230
155  REM  BACK ARROW ERASES ENTRY

160  IF A$ =  CHR$ (8) THEN  PRINT
     " REDO LAST ENTRY ":A$ = "":
      PRINT  TAB( 12): GOTO 135
165  REM  DISPLAY NUMBER ON SCREE
     N
170  PRINT A$;:B$ = B$ + A$: GOTO
     135
175  REM  TO END STRING
180  IF A$ = "L" THEN  PRINT A$,:
     L =  VAL (B$):B$ = ""
185  REM  TO ADD LENGTHS IF YOU W
     ANT THEM
190 LL = LL + L
195  GOTO 135
200  IF A$ = "W" THEN  PRINT A$,:
     W =  VAL (B$):B$ = ""
205  REM  DO CALCULATIONS WHEN YO
     U HAVE ENOUGH ENTRIES
210 A = L * W: PRINT A;"A"
215  REM  SUM AREAS FOR TOTAL PRI
     NTOUT
220 AA = AA + A
225  GOTO 135
230  REM  TOTALS
235  PRINT "TOTAL AREA = ",,AA
```

SIGAMES

by John Alden (Associated with Columbia Computer Systems)

I'm back!!! More reviews and news about SIGAMES events.

The next few months promise to be very exciting. (I told you I would change the opening line for last month but not for this month.)

The categories are: __

A highly recommended purchase. This software is outstanding. You play it many times and it still is interesting and fun.

A recommended purchase. An outstanding program but has a few flaws. A very fine line exists between this and "a highly recommended purchase".

A suggested purchase. Better than average but I wouldn't go out of my way to buy it.

Average. Speaks for itself.

Poor. Avoid any programs which received this category.

On to the good stuff.

The November meeting featured the darkest dungeons of Wizardry. After the Appleseeds meeting and before they scattered, they were invited to become participants in a Wizardry adventure. Twelve Appleseeds were selected by random drawing and invited to create characters in Wizardry. Six were the main party and the other six were replacements for fallen heroes (or heroines). The adventure was a huge success with the Appleseeds.

Jim Eatherly has arranged for a special speaker for the December meeting. Richard Orban (Three Mile Island and International Gran Prix) will present both games and discuss various aspects of developing games.

Do you have a game you would like demonstrated or explained? Let's hear from you. This is your meeting and we want to help people make educated decisions when purchasing software.

Recently released software includes: From Sirius Software: Hadron, Beer Run and Dark Forest. From Sierra Software: Space Adventure. From Datamost: Snack Attack. From Gebelli: Firebird. From Eduware: Empire I - World Builders.

THE REVIEWS

'Firebird' is a pyromaniac's delight. It's also a super arcade game. "The object of the game is to quench the fires and, failing that, to save the victims from the burning rooms. To quench the flames you must position PIGGO just to the left of the fire and press the space bar. To save a falling victim position PIGGO just to the left of the victim, close enough to touch him. PIGGO will grab him automatically, then take the victim to the top of the ladder where the circling helicopter can pick him up. The helicopter will return with a replacement for the lost room and place it where it is needed most. If you position PIGGO directly over the burning room, the leaping victim will knock PIGGO off the ladder... So stay away, you only have three firepigs for the game. Finally, you can't quench fires while PIGGO is holding a victim, and there is only room for one victim at a time at the top of the ladder ...". Firebird is terrific. (This is Nasir's newest game and the first since he started his own software company. He plans three more games by the middle of January. More about them when they are released.) If you like roast ham for Christmas (you supply the apple), this is the ideal game. A highly recommended purchase. From Gebelli for $29.95.

'Hadron' is a revised 'Epoch'. But what a revision! It has all the excitement of 'Epoch' and more. The object is to destroy the alien bases. In 'Epoch', the bases were part of the display. But not in 'Hadron'. You have to follow the fighters back to their bases before you can destroy the base. If you just try to fly and find the bases, you won't. With a choice of paddles, joystick, keyboard, or joyport (for the Atari joysticks) you will have hours of adventure and dogfights. Blast off. A highly recommended purchase. From Sirius Software for $34.95.

'Dark Forest' is a new approach to both adventure games and wargames. You choose between four predefined maps. The map you choose is fixed on the screen. There are about 30 territories and 6 castles. From one to six persons may play. When less than 6 people play, the gruds take over the remaining castles and territory. (I knew the neighborhoods were going to the dogs, but to the gruds ?????) The object is to control all the territory at the end of the game. Each player may move only once per turn. If you move into an adjacent territory occupied by another person, you have attacked (not arrived). Only the attacker may retreat. May your Trents survive the firewood season. A highly recommended purchase. From Sirius Software for $29.95.

'Beer Run' is the newest arcade game from Sirius (serious). In their words, "'Beer

contd. on pg 11

QUESTIONS, QUESTIONS, QUESTIONS

by Mark L. Crosby

Q. I am experiencing a peculiar symptom when I first turn on my APPLE II and try to boot a disk with "6 Ctrl-P". I get a beep and sometimes double 6's on the screen. On the second try it will boot.

A. Thanks to WAP056 for shedding some light on this. When you power up the APPLE II, the keyboard buffer has random data and the keyboard strobe is set (meaning when you hit RETURN, the APPLE will attempt to process the keyboard buffer as if you had typed in something). When you type "6 Ctrl-P", then, you are entering that AFTER the random characters. Naturally, this is not the correct syntax that the Monitor expects so it beeps at you (same as a syntax error in BASIC). I always hit RESET twice after I turn on the power. This clears the keyboard buffer (apparently). Another method is to type Ctrl-X first or press RETURN. Both will clear the keyboard buffer. For those of you that have an APPLE II Plus or the Autostart ROM...nevermind - this is not for you.

Q. I am having trouble killing the Cyclops in Zork. Does anyone know how to neutralize this character?

A. Because I am opposed to directly answering such questions (though I am not opposed to hearing direct answers), let me refer you to classical literature. There was a certain fellow who slayed a Cyclops. Mention his name and you just might scare it away. This is not the only way, however.

Q. Is the 16K of RAM in the Language Card available for Applesoft programming?

A. Well, not really. Generally, it is available only to the machine language programmer, and not to the native ROM language (Applesoft on the Plus and Integer on the II). The problem here is that when you select the 16K RAM card, the native language is disabled. This is due to the fact that the same addresses are used for both the language and the RAM ($D000-$DFFF). Using software switches you may switch back and forth between these two physical areas. For machine language programmers, this is ideal. Machine language can access the 16K card without disabling itself whereas Applesoft (and Integer) cannot. To handle the 16K card, you could CALL some machine language from Applesoft or Integer. The soft switches start at -16256 and go to -16241 (non-contiguous). There may be others. Be careful here if you are using DOS 3.2. You might affect your diskette or DOS if you start POKEing stuff into these areas. It is beyond the scope of this column to go into much more detail since the subject is like a bottomless pit. Seek some personal help through the ABBS or at a meeting. Maybe someone will write something about this in a future issue??? (hint, hint).

Q. Is there any way to eliminate (turn off) the cursor using a POKE?

A. See the November-December 1980 CALL A.P.P.L.E. magazine page 23 for details on producing a non-flashing cursor. I have never seen a method to actually eliminate the cursor - only change it. For those of you who would like to experiment, try this as a HELLO program:

```
NFC HELLO BY RICHARD E. RETTKE

100  HX$ = "300:20 54 FF 9A 68 18 69
       11 85 38 68 69 00 85 39 20 EA
       03 60 48 29 3F 91 28 68 4C 1B
       FD D0 ND823G"
200  FOR I = 1 TO LEN (HX$)
300  POKE 511 + I, ASC (MID$ (HX$,I,1))
       + 128
400  NEXT
500  POKE 72,0
600  CALL -144
700  CALL 768
```

This code should produce a non-flashing cursor. Hitting RESET or running a program that changes the keyin hooks will disable the code, however. In the article referred to, there is also code to permanently change DOS on a 3.2 disk to produce the non-flashing cursor. Anyone out there have any ideas on this subject?

Q. Is there any way to change the Hi-Res screen to allow more text, such as top half graphics, bottom half text in the same way HGR allows 4 lines of text at the bottom?

A. There are no POKEs that will do what you want. The easiest way is to make the text into Hi-Res characters and place it on the screen along with the graphics. This can be quickly accomplished with a Hi-Res Text generator program. There are several sources: The DOS Tool Kit has such a program. The club library has a disk (#31) which has a text generator program and the Apple Software Bank Contributed Programs Volumes 3-5 has an excellent generator for low cost. Higher Text, from Call A.P.P.L.E., is an excellent choice since it has many desirable features such as smooth scrolling, enlarged text (Tall, Wide, Color, etc.) and animation capabilities for a reasonable price. These are usually machine language programs that can easily be hooked up to Applesoft or Integer programs of your own. They are worth their weight in gold.

contd.

ERATTA:

Thanks to Bob Sander-Cederlof for a correction to an answer in the November 1981 issue (the last question on page 18). Here is what he says:

"Applesoft NEVER sets decimal mode. The monitor MOVE subroutine does not use ADC operations. It uses one SBC, but only to compare against the upper limit of the move. The reason behind the different operation of the two versions is in the Y-Register. Applesoft leaves the low half of the CALL address in the Y-Register. Integer leaves Y=0. The monitor MOVE subroutine expects Y=0."

contd. from pg 9

Run' is a light-headed (not lite-headed - my comment) ... You are a beer runner at the bottom of the Sirius Building. Your task is to look for Artesians. Clues to the whereabouts of these elusive creatures will occasionally appear on the screen. But, usually, they wil be on the platforms just above you. If you reach the roof, the Sirius blimp will pick you up and transport you to the roof of the Olympia Brewery next door...". Along the way, you must avoid the guzzlers and the bouncers. This is the best rendition of an arcade game that I have seen. A highly recommended purchase. From Sirius Software for $29.95.

GROUP PURCHASE POWER by Rich Wasserstrom

Holiday Sale

The W.A.P. Store will offer three goodies at great prices to help you fill your extra holiday programming hours: the Microsoft Z-80 Card, the Mountain Computer CPS Multifunction Card (bi-directional serial interface, parallel output interface, and real-time clock/calendar all on one card), and the Microsoft 16K Ramcard. See me at the meeting (or call) for prices.

Group Purchases--Printers and Monitors

I will continue group purchases of Epson printers and Zenith green-on-black monitors so long as there is interest in these items. The Zenith ZVM-121 strikes me as the best buy among 80 column capable monitors and the Epson printers have proven capable, reliable and popular among those looking for an all-around graphics and character printer.

There are, however, two new dot-matrix printers which appear to eclipse the Epson MX-80/FT at a comparable price: the NEC PC-8023A and the C.Itoh Pro/Writer (8500 Series). Both of these printers offer proportional spacing, bi-directional tractors and friction feed, built-in hires graphics (no extra chips necessary), multiple character sets including Greek, mathematic symbols and, on the C.Itoh, Katakana. Both print at 100cps, feature a variety of fonts (including Pica and Elite with or without enhancement), and provide correspondence quality print. The NEC is available only with a parallel interface, but the C.Itoh is available with either a parallel interface or, as an option, both serial (1.3k buffer standard) and parallel interfaces. The best part is that both printers are available for group purchase at a price more than competitive with the Epson MX-80/FT. See me at the meeting if you are interested.

Member Discounts

The following Washington area computer stores have agreed to extend a 10% discount to W.A.P. members:

HLA, Inc., 5700-J Sunnyside Ave., Beltsville, Md. (301) 345-1123. HLA carries a full line of Apple hardware and software. See their ad elsewhere in this issue.

Computerware, Inc., 6845 Elm St., Mclean, Va. (703) 821-8220. Computerware offers ribbons, paper, diskettes and other supplies. The member discount does not apply to GSA schedule items.

Please present your membership card or your newsletter mailing sticker with other identification to qualify for the 10% discount. Thanks HLA and Computerware!

W.A.P. invites all other Washington area computer stores to participate in this membership program.

I CAN'T REMEMBER HOW MUCH MEMORY I HAVE by David Morganstein

With the advent of the 64K, then 128K, and according to an ad in Byte, 256K memory cards, it is possible to do yet more amazing things with our Apple II's. From last months issue, we know that our esteemed Dr. Wo has already made a 64K card from Legend Industries look like just another Pascal Volume with 128 blocks. The latest flash is that the 128K card worked just as well for him and now he has a "hard disk" in the form of another occupied slot in his magic computing machine. When he loads the card with the SYSTEM files, you should see it jump from the E)ditor to the C)ompiler and back again...look Ma, no disk swaps!!!

Well that is all well and good for the Pascal buffs out there, but what about the good DOS users among us? What can we use these new memory cards for? Basically, the same ideas apply. The cards, so far, do not add any more usable memory to the 6502 address space. Thus, they can not be used to work on bigger VisiCalc files and other types of memory resident data. But having a fast access disk available can speed up a lot of jobs that take the relatively slow Apple disks a while to perform.

Let's divide the subject into two pieces, the hardware and the programs that support it. Dr. Wo's article pretty much described the new Legend Industries 64K memory card. The 128K version is quite similar, instead of four banks of 16K (each of which looks like a language card), you get 8 such banks. The more interesting part of the discussion is the software that lets you take advantage of the new cards' power.

The first piece of software sold by Legend Industries is the Memory Manager, a program which moves the DOS up into the first of the 16K partitions on the card. This program does not really take any more advantage of the added memory and could be used with any old 16K card. The primary function of relocating the DOS can be accomplished using a program written by C. Bongers and published in Call A.P.P.L.E. in the July/August 1981 issue (and on our Library Disk Vol 101). Each of these two programs to relocate DOS has some unique advantages. The Memory Master has some very nice added features like: a .FLIP command to flip between 13 and 16 sectored DOS; a .BSTAT to print out the starting address and length of the last bloaded file and a .SHOW to indicate the current DOS version.

The C. Bongers version, however, does something that should be part of any new software, it maintains compatibility with currently available utilities. With a one byte change to FID and MUFFIN, needed because of an oversight in them, these handy utilities will work with the Bongers' relocated DOS. One important table used by DOS, the file manager input parameters (see Beneath Apple DOS, p.6-8), is kept on page BF on the Bonger's version, but moved onto the RAM card in the McLaren version. The way you take advantage of the RAM card, be it for using relocated DOS' or running that "other" Basic, is to turn the card on when its contents are needed and turn it off when the motherboard ROMs are needed. The Legend Industries program has this important table in the RAM card, which is turned off when FID is running. The results are that the poor program is out looking for a table in the middle of the Applesoft ROMs!! I contacted Mike McLaren at Legend and discussed the problem with him. He was very interested in this issue and thought he could make a modification to eliminate the problem by moving the table back into the motherboard RAM address space, pages 0-BF. Based on his skill in writing the Disk Emulator, this should be no problem for him...

The real gem of a program is the Disk Emulator. Imagine telling DOS to load the 128K RAM card with the contents of the entire disk in slot 6, drive 1 by saying ".M1,S6,D1". To move the card contents to a disk use "U1,S6,D1". The M1 and U1 (mount and update) refer to disk emulator 1 (that's right, you can have M2, or M3 if you can afford that many 128K cards!!!). Once a card has a disk Mount'ed (someone at Legend has a sense of humor...) the card is addressed as any other disk device. Type CATALOG S5, D1 (assuming that you assigned the card that slot number...it does not have to physically be in that slot...) to see the fastest catalog in the world. Try Opening and Writing to a file or Reading from one to get really impressed.

I use a statistical package called Astat which has the desirable feature of allowing computations on a file as big as a disk will hold. It performs its computations one record at a time and is therefore not limited to small data files. However, up until now, it has been intolerably slow in completing a task due to the turning on and off of the disk drive after each read...no more delay. By simply .M1,S6,D2 my data file, the program whizzes past the records merrily computing my statistics. Thanks Legend!

Latest-late flash - Mike has already reworked Memory Master to take care of the compatability problem by relocating the data table into the lower 48K.

CREDIT FOR LAST MONTH'S "TROUBLESHOOTING GUIDE"

Last month we printed "Troubleshooting Guide for the APPLE II and APPLE II PLUS System", with an anonymous author. Credit for this guide goes to Jose Sanchez.

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BENEATH APPLESOFT ''LIST''

by Iver P. Cooper

"I've got a little list."
Gilbert & Sullivan,
The Mikado.

This is the first in a series of articles which will examine the workings of a single Applesoft ROM routine, the routine which allows you to "LIST" a program. (You may wish to look up the "LIST" command in the Applesoft Reference Manual, and make sure that you understand all of its little foibles.)

Enter Applesoft and type the following short program:

```
1 LIST
2 REM ABCDEF
```

Now type "CALL -151" <cr> to put yourself in the Monitor, as shown by the asterisk prompt in the leftmost column of the screen. Type "300: 20 B1 00 4C A5 D6" <cr>. Then type "300L" to see what you have wrought. The screen will be filled with lines, of which only the first two are of interest:

```
0300-  20 B1 00    JSR $00B1
0903-  4C A5 D6    JMP $D6A5
```

$00B1 is the location of the CHRGET routine in the ROM version of Applesoft. It increments a two-byte pointer known as TXTPTR, and puts the value it finds in the indicated memory location into the accumulator (A). Depending on the nature of this value, CHRGET sets certain bits, or flags, in the status register. If the value of A corresponds to a colon <:> ($3A) or an end-of-line marker (eol> ($00), it sets the Z(ero) flag. If A's value is that of an ASCII number, i.e. 0 through 9, it clears the C(arry) flag.

$D6A5 is the location of the LIST routine in Applesoft. Typing "D6A5G" in the Monitor, or the equivalent CALL in Basic, will not cause the routine to list the program unless the appropriate value is in A and the Z and C flags are in the appropriate state. This "preconditioning" is performed by CHRGET.

CHRGET, of course, must have its TXTPTR pointed at the location of the "LIST" token (the one-byte value which Applesoft uses as internal shorthand for that command). TXTPTR is at locations B8,B9 in the "zero-page" of your APPLE's memory. If your first line contains the LIST command, the "LIST" token will be at $0805. This is easily confirmed. Type "800" <cr> <cr> and, if your first line is "1 LIST", you will see the following:

```
0800- 00
*
 07 08 01 00 BC 00 14
*
```

The first two bytes give the address where line 2, "2 REM ABCDEF" begins. As is customary, the low byte of the address, "07", is shown before the high byte, "08", and thus bytes $801 and $802 tell us that the next line starts with byte $0807. The third and fourth bytes give the line number in a similar format, so the line number is $0001. The fifth byte, $BC, is the LIST token, and the sixth byte is the end-of-line marker, $00.

To point TXTPTR at the "LIST" token in line 1, type "B8: 05 08" <cr>. Now, type "300G" <cr>. Voila! The program is listed, thanks to the short machine language routine we entered at $300 earlier.

TXTPTR pointed at the LIST token. The program jumped to the subroutine CHRGET, which incremented TXTPTR. The value it pointed to, the end-of-line marker $00 in $806, was placed in A, with Z set, and the program jumped to the LIST routine.

Change line 1 to read "1 LIST 2". Enter the Monitor and once again set the TXTPTR to point to $0805. Run the routine at $300 again. This time it prints "2 REM ABCDEF". Experiment further until you are convinced that this procedure works for all the forms of the LIST command and for progams of greater length.

In this first article, we have learned that some Applesoft machine language routines, like "LIST", require "preconditioning" of certain registers and memory locations in order to run properly. Specifically, we have learned one method of running the Applesoft "LIST" routine from the Monitor. In the next article we will talk about how the routine at $D6A5 parses the "LIST" command (e.g., "LIST 10,1000"). Later we will learn how it steps through the Applesoft program itself, and how it converts tokenized commands such as the byte "80" to the ASCII characters "to END". finally, we will examine an enhanced "LIST" routine, my own "SUPERLIST". ¢

A REPRINT

Editor's Note: The following article, reprinted with permission from SKY AND TELESCOPE, was given to me last Spring by Dave Skillman, WAP#039. As a result of this article Dave has landed a job in Phoenix, Arizona, where he now controls with micros one of the United States' largest telescopes at Kitt Peak. Congratulations, Dave! We would have reprinted this much sooner but someone took a fancy to the SKY AND TELESCOPE issue at our monthly meeting, and it wasn't until three weeks ago that I got another copy from Dave.

contd.

GLEANINGS FOR ATM's

CONDUCTED BY ROGER W. SINNOTT

Running a Telescope with a Microcomputer

OBSERVING variable stars with a photoelectric detector is one way that an amateur can make a contribution to astronomy. Accuracies of a few hundredths of a stellar magnitude are typical.

An evening's work, to be sure, seemingly provides only a list of numbers. But then these brightness measures are plotted up, and imagination and analysis are brought to bear. The insights gained often make you feel that you have been carried to the star, and are an intimate spectator of its behavior.

My particular interest is eclipsing binaries. After several years as a member of the American Association of Variable Star Observers (AAVSO), using a variety of photoelectric photometers, I became convinced that it would be a powerful advantage to have a computerized telescope.

With this thought in mind, I began building a fully computer-controlled 12½-inch reflector in my yard. A fork mount was chosen so that the telescope would be able to follow a star across the meridian without interruption. I took apart the German mounting of my earlier 6-inch homemade reflector and used its polar and declination bearings on either end of a new, longer polar shaft. The fork was welded together out of ⅛-inch steel, and a 14-inch box of ¼-inch welded aluminum formed the telescope tube.

A commercial 12½-inch Cassegrain mirror set was ordered with a short back focus, along with a Newtonian diagonal. This diagonal is mounted on a second spider directly in front of the primary mirror, to form a bent Cassegrain configuration whose final focus lies about an inch beyond the side of the tube. Black flock paper and baffles inside the tube reduce stray light.

The bent light path minimizes the fork-tine length, and also brings the heavy photometer as close as possible to the intersection of the polar and declination axes. This leads to a very stable arrangement, and the telescope is hardly disturbed at all when the photometer is being operated manually. Moreover, the eyepieces of the photometer and 4-inch finderscope are in close proximity, and always conveniently placed.

DRIVING THE AXES

How could the telescope's right-ascension and declination shafts be aimed automatically? Since I wanted remote positioning capability at the arc-second level, this became a serious problem. Stepper motors were the logical choice on each axis, so that the computer could issue drive pulses and use the total count of pulses to keep track of the telescope position.

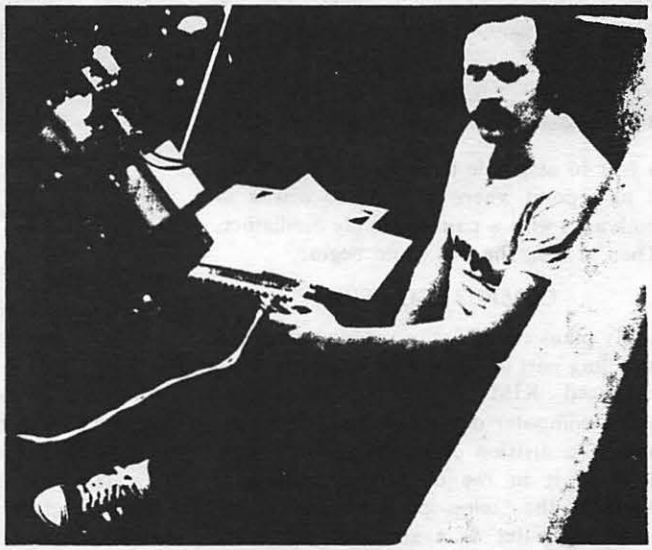
Small telescopes typically have natural vibration frequencies of a few cycles per second, so I knew it would be important that the stepping rate not coincide with, and thus excite, any structural vibration. After several tests, I finally chose a tracking rate of 10 steps per second.

Since the earth rotates 15 arc seconds per second of time, the 10-step rate required a geared-down step size of 1½ arc seconds. My hour-angle stepper is connected to a worm through a compliant coupling that helps dampen mechanical vibration. This secondary worm drives a 100-tooth worm gear that directly turns the primary worm.

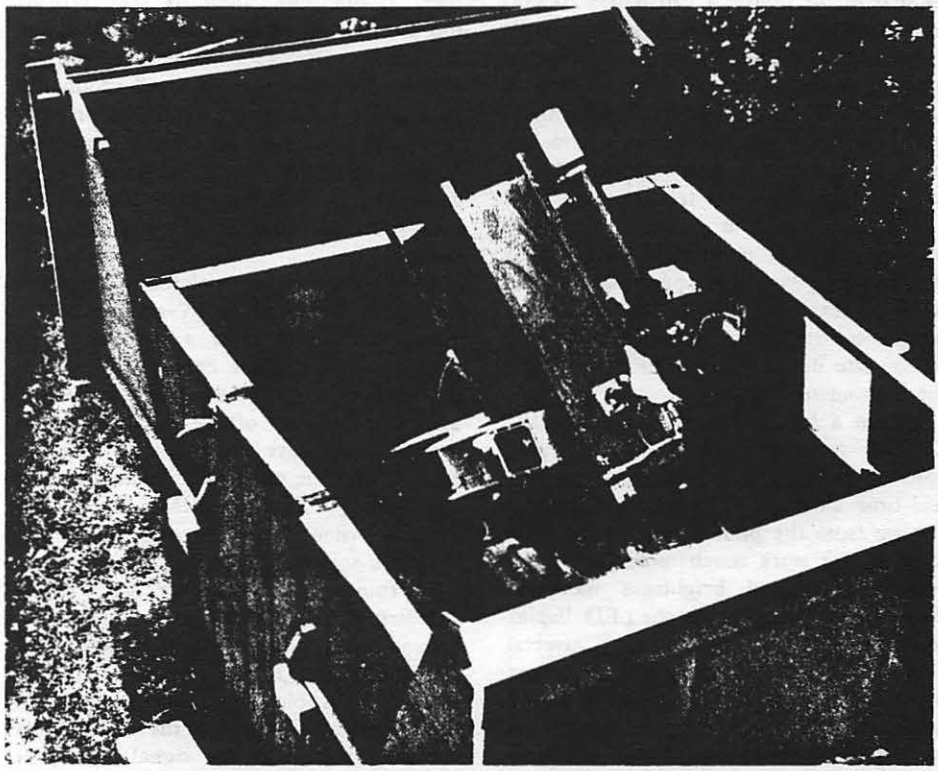
Mechanical "slop" between the primary worm and the primary worm gear is minimized by preloading the telescope or unbalancing it slightly. Play between the stepper's worm and its worm gear can easily be held to a tenth of a motor rotation, or about five steps, corresponding to 8 arc seconds on the sky. Once the motor has made enough steps to take up this slack, each subsequent step can be depended on for an additional 1½ arc seconds of motion.

The electronics were completed in stages, with gradually increasing sophistication. I designed special controller circuits, which drive the multiphase steppers using direction and step pulses alone. These circuit boards are mounted near each motor and are fully interchangeable.

Starting from scratch, it took me about



In Maryland, David R. Skillman has built the first amateur observatory, as far as the editors of *Sky and Telescope* know, that performs complex activities under the remote control of a home computer. The key pad he is holding is used only for initial setting of the 12½-inch telescope on a variable star field. A 1P21 photomultiplier tube is attached to the eyepiece holder at upper left for measuring star brightnesses to high accuracy.



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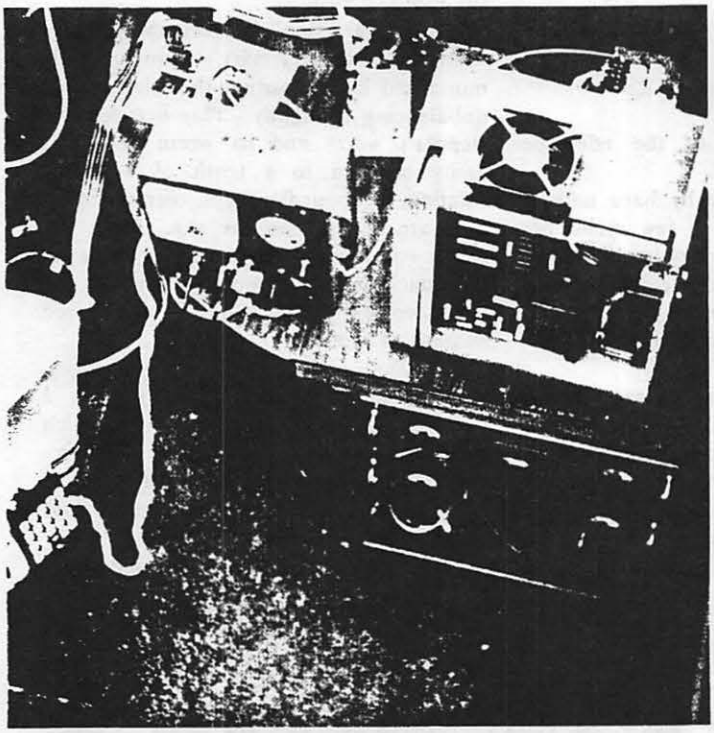
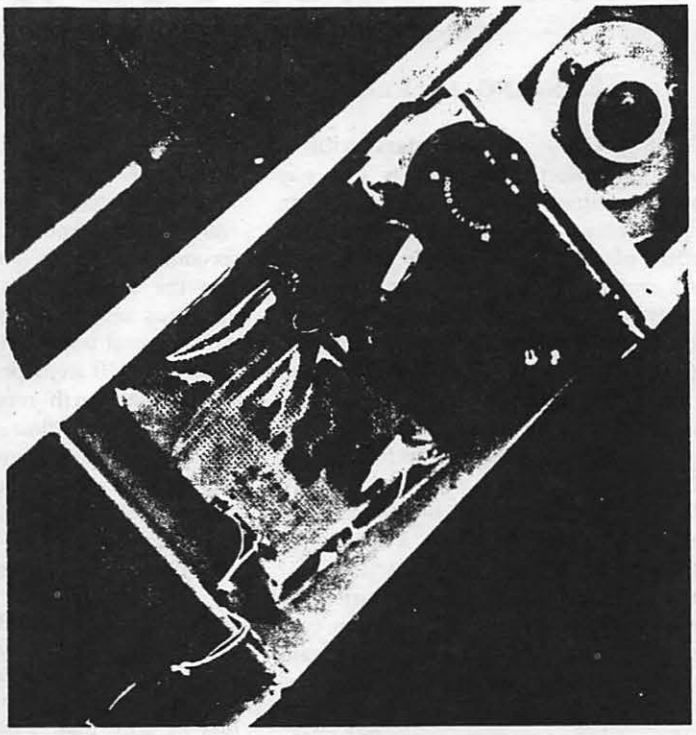
January, 1981, Sky and Telescope





Left: **The electronics beside the telescope include the high-voltage supply for the photomultiplier, the photocurrent amplifier (left front box), the KIM-1 telescope-control computer (with cooling fan), and several power supplies. The hand key pad hangs on the fork at left.**

Right: **The declination drive nestles in the fork. Here are seen the stepper electronics, the stepper motor and gearbox, and the declination worm gear with its protective cover. All photos are by the author's brother Tom.**

a year to assemble the telescope and bring it to a point where it could be driven in both axes with a pair of simple oscillators. Then at last, the fun could begin.

COMPUTERIZATION

My plans called for two computers, each handling part of the work load. One is an enhanced KIM-1, the popular single-board computer developed by MOS Technology, a division of Commodore. I have installed it in the observatory, where it serves as the "telescope controller." The other computer is a standard Apple II located in my house; I call it the "operations controller" because it issues simple commands (normally from a program written in Basic) to the KIM, which in turn handles the details of carrying them out. The KIM will also accept commands from a push-button hand paddle when I am standing beside the telescope.

The hand paddle is a reworked calculator key pad that is routinely scanned by the machine-language program in the KIM. I can use the paddle for slow-motion control of the telescope as well as for on-site display (using LED digits) of the photometer signal.

Within a few months I had gotten the KIM to perform these additional functions: track stars in hour angle, monitor a real-time clock, and integrate the signal coming from the photometer. This made variable star work much more convenient because integrated brightness measurements could be copied off the LED display and written down along with the Universal time. The KIM receives its brightness values through a 12-bit analog-to-digital converter. Thus, stars that differ by as much as four stellar magnitudes (40 times) can be measured to ±1 percent directly, and there is no need of ½-magnitude sensitivity steps on the amplifier, as would be the case if I were putting out the data on a strip-chart recorder.

A 26-conductor cable was buried underground during construction of the observatory. It runs more than 100 feet, providing a data link to the control area inside my house. Optical isolators were put on each end of the cable to avoid grounding problems, and to prevent failures or electrical shorts in one area from damaging equipment in the other. Each wire in the cable can transfer data at a 10-kilobaud rate (that is, 10,000 off-on pulses per second).

My "operations control room" contains the Apple computer, a TV-set monitor, a floppy-disk drive, and a printer. This popular type of home computer was chosen because of its excellent documentation, and because it offers high-resolution graphical displays on the video screen. Also, it uses the same 6502 microprocessor chip that is in the KIM, simplifying matters when I am writing assembly-language software.

As things now stand, the Apple sends out strings of commands via the underground cable to the KIM, which must execute them and return answers. For example, the Apple might ask for the time, the coordinates to which the telescope is currently aimed, or the signal level produced by the photomultiplier tube. Or it might tell the KIM to shift the telescope to another star.

Thus, in a very literal sense, the telescope has become a "peripheral device" of the Apple computer 100 feet away! Automatic operation commenced in May, 1980, a little more than two years from the start of the project. Its first variable star was 44 Bootis, on which the system performed very well for some six hours.

A TYPICAL EVENING'S ACTIVITY

As darkness falls, I turn on the Apple and run a prediction program to find out which variables will be in the sky and undergoing an eclipse that night. If I am not familiar with the star, I then prepare a finder chart and select a comparison star. The observatory will already have been opened around sunset to acclimatize the equipment to the night air.

Next I turn on the electronics in the observatory and press the reset button on the KIM. Returning indoors, I power up the Apple again, load in the machine-language telescope-controller program, and transmit it through the cable to the KIM.

Moving back out to the telescope, I manually find the comparison star and place it in the aperture of the photometer, which is only 30 arc seconds across. When the sliding mirror is withdrawn, the light of this star alone falls on the sensitive cathode of the 1P21 photomultiplier tube. I adjust the tube voltage and

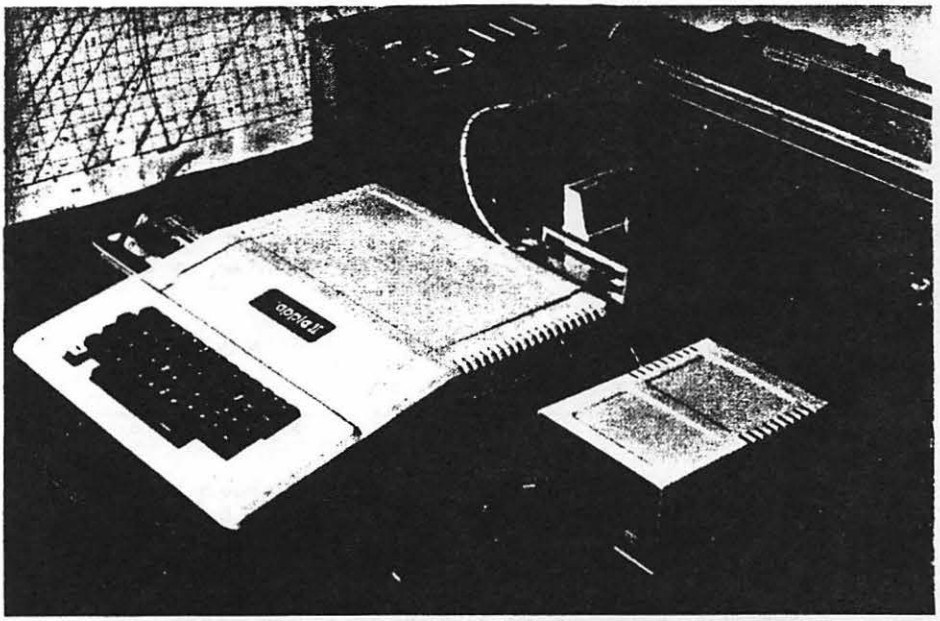
contd.

amplifier gain to provide reasonable signal levels for the comparison and variable, and then leave these settings alone for the rest of the night.

With the comparison star well centered, I press a hand-paddle button labeled "origin," which clears the position counters in the KIM's memory. (Rather than keeping track of the right ascension and declination, the program works more conveniently in step coordinates, with the origin at the comparison star.) I then use the slow-motion controls to select a starless patch of sky that will be used for monitoring the sky background and press another button. Finally, I locate the variable star, center it well, and press a third button. Each time, the KIM stores the relative coordinates. There is no limitation on either the number of objects to be measured or the order in which they will be observed.

Another button starts the sequencing through the list of objects. Every time the telescope successfully returns to the comparison star, the computer clears its position counters, to avoid cumulative errors.

Now the two computers take over complete control of the telescope. I can watch the progress on the video screen in the house, which displays the time, relative coordinates, photometer output, number of data points collected, and a narrative of the operations.



The Apple II computer (with keyboard) stays inside the author's house. Flanking it are a cassette recorder (left) and floppy disk drive (right), either of which can store many hours of brightness measurements of stars. In the foreground is the joystick for fine-tuning the telescope aim. The old TV set provides a real-time display of data being gathered. In the rear is the KIM-1 computer, which would normally be out in the observatory, but which can be brought indoors and hooked directly to the Apple for tests.

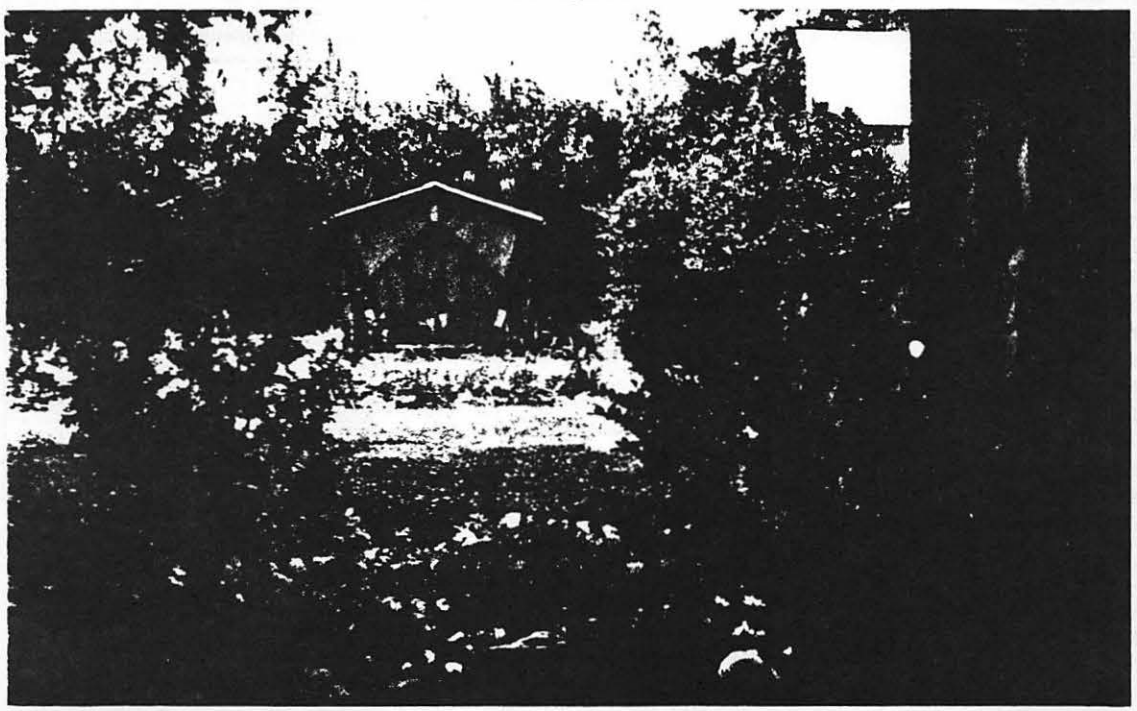
HOMING IN ON A STAR

Periodic error in the primary worm on the polar axis is one area that needed special attention. Such a gear error can easily cause the telescope to miss a star because of the small acceptance angle of the 30-arc-second diaphragm. To handle this problem, and to fend off a myriad other real-world perturbations (such as wind on the tube), an automatic telescope like this must be able to search a small sky area near the star's coordinates.

In my system, if the telescope slews to a star and finds it absent, the KIM will cause it to sweep in an ever-widening rectangular spiral, looking for the star. If the search fails for some reason, say the brief passage of a cloud, it moves on to the next object. On the other hand, if the star is found during a search (as indicated by a sudden rise in the photometer signal), the telescope will usually overshoot, and the computer must make it backtrack until the star is detected again.

Merely putting the star in the photometer aperture is not sufficient in photoelectric work; the telescope must *center* the star as well. My software uses a centering algorithm that is independent of gear errors in the drives.

First the telescope moves 40 arc seconds to the north, then scans slowly southward until the photometer signal has risen and fallen again as the star moves through the aperture. Having counted the number of steps needed for the star's chordal passage, the computer moves the telescope northward again, to the point of redetection and then further by the half-width of the chord. A similar sequence is performed in the east-west direction, thus cen-



The observatory is a 7-by-7-foot plywood affair, with easy disassembly as part of the design in case the author wants to move it. He adopted the split clamshell roof because a roll-off type would have required twice as much yard space. In the open position, the roof panels partially obstruct the sky at altitudes lower than 30°, where photometry is not normally attempted. Thus they help to block any wind. The closed structure seen here looks remarkably like a standard tool shed and attracts little attention. At near right is the house.

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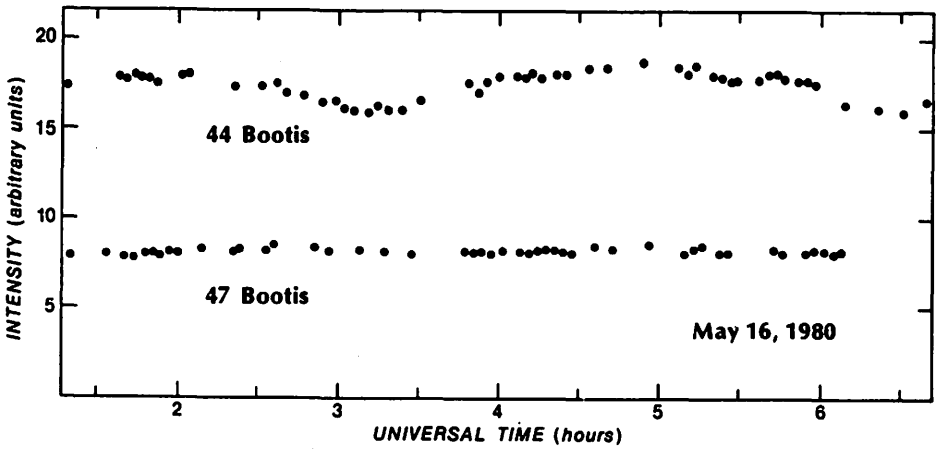


The eclipsing binary 44 Bootis underwent a primary minimum just after 3 hours UT and a secondary one after 6 hours, as revealed by the author's equipment. Although the eclipses are about 0.4 magnitude deep, the readings include light of a brighter visual companion star 1.0 arc second away, diluting the measured depth to barely 0.15 magnitude. Note the much steadier light of the comparison star, 47 Bootis, which is 0°.6 away.

tering the star very accurately. For consistency, exactly the same centering technique is used on all stars being observed.

The computer then samples the output of the A/D converter about 100 times per second for 25 seconds; the sum of all these readings is sent back to the Apple for retention as a single data point.

After watching a few cycles through the list of stars, sometimes I interrupt the program and enter better relative coordinates to trim up the operation. Out at the telescope, the movements are quiet, and only the flickering of the needle on the amplifier and the racing digits on the LED display show that the system is functioning. It is fascinating to watch through the finder and see the stars moving back and forth silently.

In general, if the telescope cycles correctly through the sequence once, it will continue to do so indefinitely. But if the telescope is poorly balanced or the wind gusty, I sometimes must go outdoors and relocate the comparison star.

Data reduction is done later, by another computer program on the Apple, during the day or on a cloudy night. This Basic program can take raw readings, plot a light curve on the video screen, and then perform the standard operations of subtracting the sky brightness and converting the readings to magnitude differences between the comparison and variable.

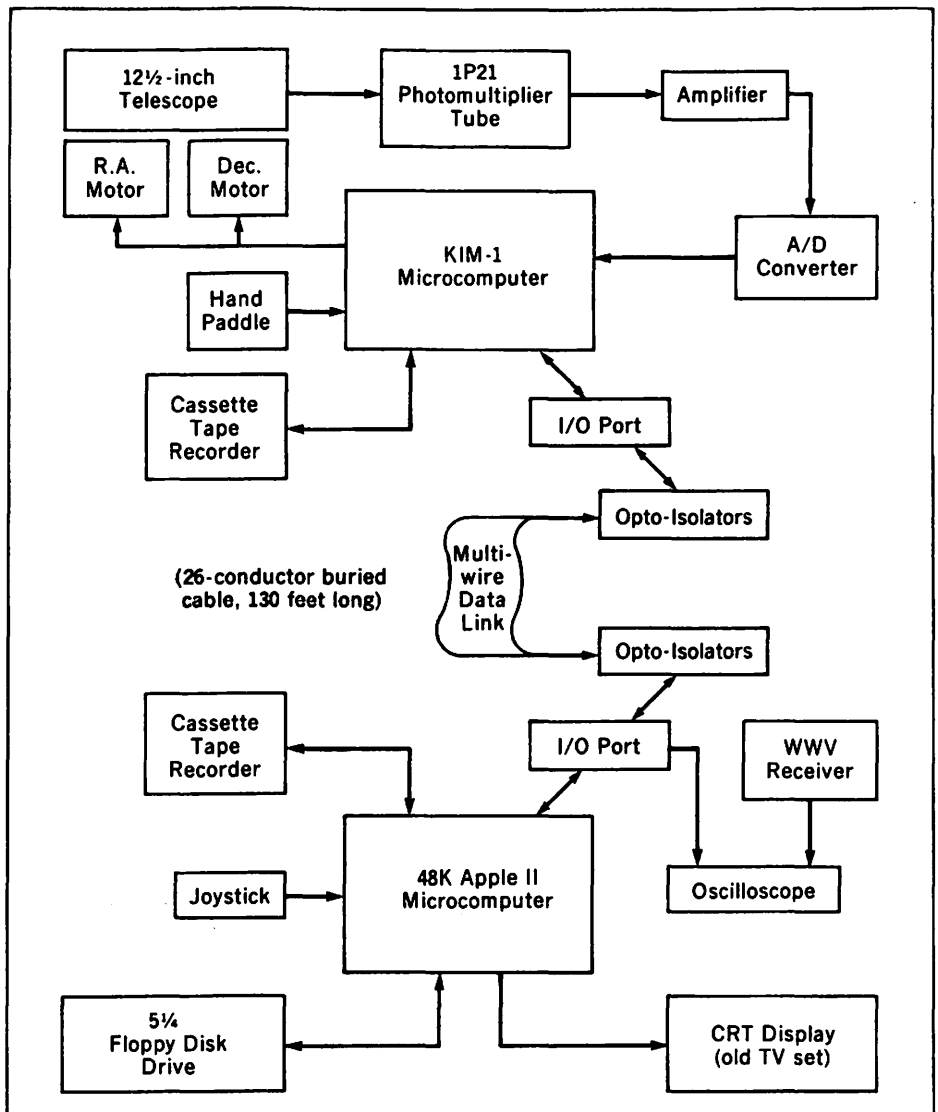
When Howard Landis, the head of the AAVSO photoelectric group, stopped by for a visit last July, we decided to observe u Herculis even though the eclipse wasn't very well placed during the hours of darkness. That night the telescope performed perfectly, although we interrupted it several times for data dumps. After four hours the system was still faithfully gathering data. Then I could see that the variable would be disappearing behind a hedge shortly, so I closed up shop.

There are endless enhancements possible on a computerized system like this, and I plan to try a software correction of the periodic worm error. Also, a graphical display of the status would be nice, rather than the present numerical display.

The cost of a system like this is not trivial, of course. But adding it all together — optics, mounting, electronics, observatory building, two computers, printer, disk drive, and photometer — comes to only about half the cost of a station wagon. I have probably put in a thousand hours of my time in design, construction, and software development. With the bulk of the debugging behind me, I am looking forward to future observing sessions, which should be some of my most productive ones.

DAVID R. SKILLMAN

contd. on pg 48



This flow chart summarizes the relationships between electronic and mechanical components. Everything in the upper half is located in the observatory, while the lower items are in the Skillman household. The analog-to-digital converter needs only 14 microseconds to change a signal level to its 12-bit representation. Each I/O port passes 10 bits in and 10 bits out. The WWV receiver is one of the Radio Shack TimeKubes.

LOOSE DB25 PLUG

by Boris Levine

The connection between the APPLE and the printer or modem is usually through a standard DB25 receptacle. If you have been irritated because a loose plug gave you intermittent problems at the printer, read on.

My APPLE Communications Board, for example, uses a DB25 receptacle, which is clamped firmly in a slot at the rear... However, getting the mating plug to stay in position took a two-step solution.

STEP 1 - See Fig 1:

Take a look at the flange on the plug. It's wider than the slot in the APPLE's cover. So, file the upper corners of the flange until it fits. This doesn't take much, maybe an eighth-inch. (See Fig 1). Push the plug on and it should now hold nicely.

But...if it doesn't...go to

STEP 2 - See Fig 2:

The DB25 plug comes with little fastening screws in its flange which are supposed to screw into matching holes in the receptacle flange. However, the screws which hold the receptacle plates in position also use the same holes and they got there first. So, for Step 2, replace each screw with a a pair of extenders. Use kit, AMP part number 205817-1, which contains the extenders plus an assortment of nuts and washers. It's obtainable locally from Arlington Electronics. It's also listed in Inmac's catalog. You will need two kits, which run about a dollar each.

To install, simply:

a. Remove the two screws holding the DB25 receptacle in place.

b. Install an extender on each end of the inner plate and lock it in place with one of the nuts in the kit.

c. Place a lockwasher on each remaining extender.

d. Insert one of the extenders into the lower hole of the outer plate; then the other into the upper hole and engage the inner plate loosely.

e. Replace the DB25 receptacle in the slot (following the original instructions for installation).

f. Tighten the outer extender so that the receptacle is held firmly (but not so tightly as to bend the plates).

Now attach the DB25 plug, tighten the little screws to hold it to the receptacle, and dare it to fall off.

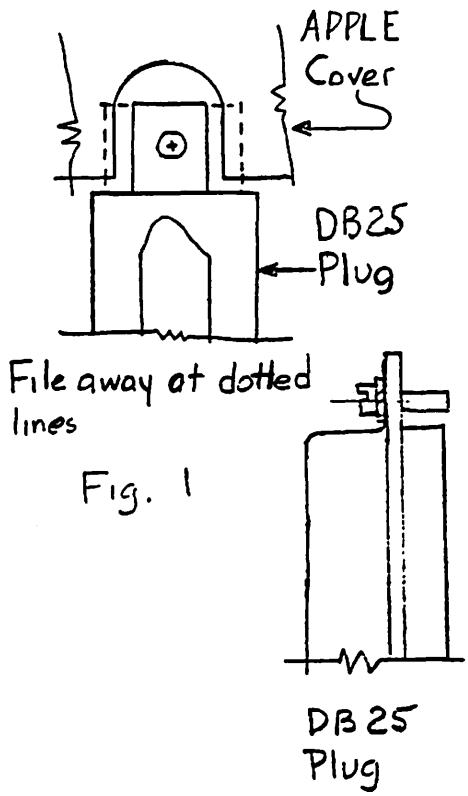


Fig. 1

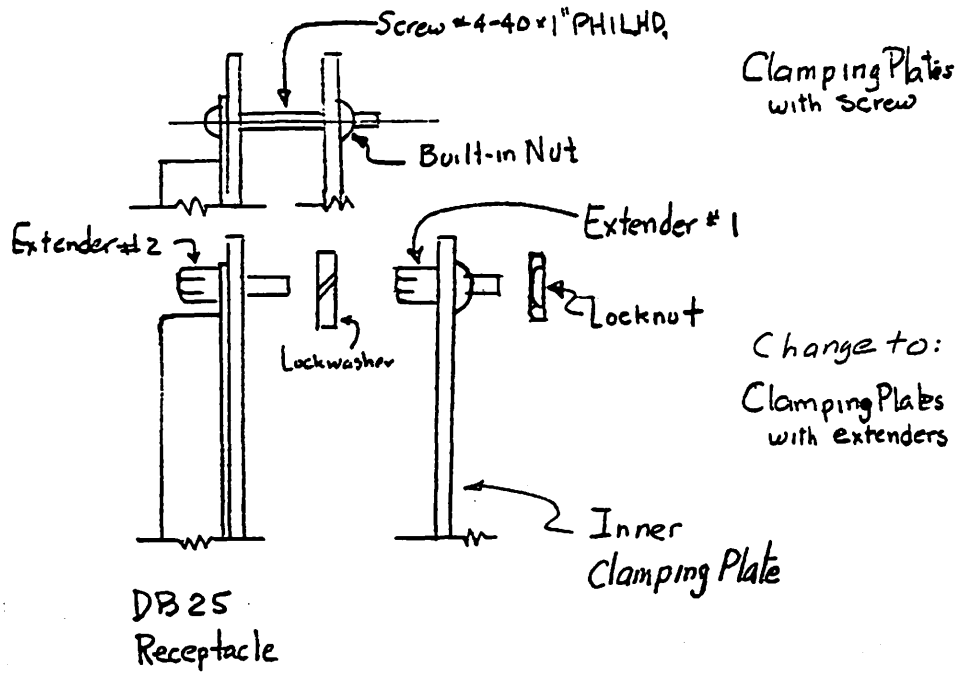
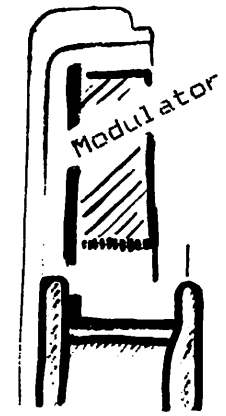


Fig. 2

TWO SIMPLE WIRING PROJECTS

by Jay Thal



Fan Installation
WAP July 1981

① AUTO REPEAT

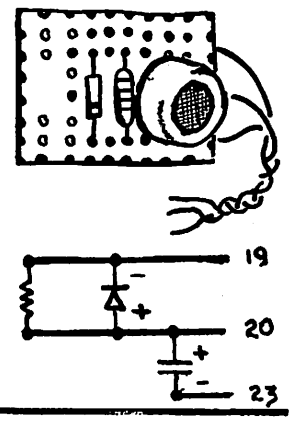
Readers of NIBBLE, Volume 2, Number 7 were provided with a relatively simple construction project to build an Auto Repeat function into their Apple IIs. It allows any key to automatically repeat when depressed for one half second. Designed by Stephan Alsop of Sheffield, England it cost me less than $1.00 in parts. HOWEVER, there is a minor ERROR in his soldering instructions in that he identifies the striped end of a diode as the positive end. Otherwise, the instructions are simple and direct. I modified the project by placing the parts on a 1"x 2" phenolic board instead of soldering them directly to the encoder board (new type keyboard). The parts board is attached to the case by a Velcro fastener with leads going to the appropriate encoder pins for soldering.

The parts needed are a 10K 1/4 watt resistor; an IN4148 or IN914 silicon diode; and, a 220uF 16 Volt capacitor (the recommended Tantalums are not readily available).

a) The 10K resistor between Pins 19 & 20.

b) The IN4148 between Pins 19 & 20 (the Negative/striped end to Pin 19.

c) The 220uF between Pins 20 & 23. The Negative end to Pin 23.



② SHIFTING SUPERSCRIBE II

Those who have purchased SuperScribe II (reviewed in WAP, December 1981) are able, without an adaptor, to use lower case letters. Upper case is accessed through the ESC key. However, SSII recommends a modification so that the SHIFT key can be used instead. Rather than bending PIN 4 of the game paddle connector, as SSII suggests, and inserting a wire into the socket I soldered a wire to PIN 4 of a 16 pin socket and "piggybacked" it onto the game socket. The game connector now nestles on top of the new socket. The other end of the lead is soldered to PIN 24 of the keyboard encoder (newer

THE INDEX: A Review

by Bernie Urban

This is for all you computerists who don't have enough manuals and documentation, and especially for all you recent purchasers of the APPLE II and others like you who have gone Atari, North Star, Ohio Scientific, TRS-80, etc. There is a new publication on the market, "THE INDEX", which indexes articles that have appeared in over 900 issues of home/personal computer publications. Actually this will prove to be an invaluable reference guide for all of us... especially if it is updated regularly. THE INDEX is put out by Missouri Indexing, Inc. with William H. Wallace as its indexor. William, by the way, is a member of Washington Apple Pi.

THE INDEX is subdivided into 14 subindexes which include computer types and chips, a CP/M and a general article subindex. Listed at the end are the names of 45 sources, examples of which are BYTE, DR. DOBBS, NIBBLE, CALL -A.P.P.L.E. and our own WASHINGTON APPLE PI. Each article is KWIC (Key Work in Context) indexed by title. Each keyword of the title is permuted and sorted alphabetically within the subindex. KWIC indexing is a relatively inexpensive method of organizing large bodies of information, but the process suffers if the indexed materials do not have meaningful titles. Since our articles are written by volunteers and for the most part strictly for the fun of it, many times the authors provide titles which are whimsical in nature and not too informative concerning their substance. Missouri Indexing has attempted to ameliorate this weakness by adding "game", "program" or "review" as subject descriptors where appropriate to otherwise cryptic or frivolous titles. By the way, the system limits title length to approximately 55 characters.

Starting last July, they have indexed over 12,000 articles into 30,000 entries, using three APPLE II's and one TRS-80 for data entry. While Missouri Indexing had access to all WAP newsletters through May 1981, not all articles have been indexed. As is typical of such indexing, each article was assessed as to its probable interest and usefulness, and was included or not according to the reviewer's subjective judgment. The data were then transmitted via the RSTS system to a PDP-11, where they were processed into the index by software written in PDP-11 Basic by Missouri Indexing.

Following this review is a listing of WAP materials which were selected for inclusion and which appear in KWIC format. Thanks, William! This will be especially useful to our newer members. However, by publishing this index I predict that we will be swamped with requests for copies of back issues or specific articles. That is the flip side of this information coin! What about accessibility to the other articles in THE INDEX? Missouri Indexing suggests University Microfilms, 300 North Zeeb Road, Ann Arbor, MI 48106, as providing a reprint service for several sources. They also suggest local libraries, clubs and individual members. Passing the buck, eh! But they do say (if worse comes to worse - my words added) "contact Missouri Indexing and we will attempt to secure an individual copy of articles that are out of print and for which we can obtain reproduction permission from the publisher".

Apart from an occasional omission or typo, which is to be expected in any first issue of such a product, I think THE INDEX should as a minimum be available in every club library for use by its members. Regarding possible extensions, wouldn't it be nice if it also listed materials by organization and by author? Sorry, but this would obviously triple the size (currently 489 pages) of the index. What about having it on-line on the Source or CompuServe? Perhaps an organization such as the International Apple Core might help subsidize it as a service to APPLE users groups (Ken Silverman, are you listening?).

Missouri Indexing plans to come out with a next edition soon and has already identified 40 additional sources of articles. I hope InfoWorld is one of them. Individual copies of THE INDEX are $14.95 and are available by sending a check to Missouri Indexing, Inc., P.O. Box 301, St. Ann, MO 63074, phone (314) 997-6470. Visa and Master Charge are also accepted. Considerable savings are possible through group purchases.

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3SOURCE* STOCK MARKET DATA FROM THE	PILLOFF	WASH PI 1/80
3SPACED FILECABINET 2*	REEDER	WASH PI 10/80
3SPEED* ADJUSTING THE DISK 2	CROSBY	WASH PI 12/79
3SPIRO AN APPLESOFT HI-RES DEMO PROGRAM*	SIMMONS	WASH PI 3/80
3SPIRO PROGRAM* RANDOM	SCHWARTZ	WASH PI 11/79
3STATEMENTS PROGRAM* CREATING DATA	FULLER	WASH PI 3/80
3STATEMENTS* AIDS TO FORMATTING REM	MITCHELL	WASH PI 11/80
3STOCK MARKET DATA FROM THE SOURCE*	PILLOFF	WASH PI 1/80
3STORE A REPRINT* NETWORK LINKS UNITS INCLUDES MASS	STAFF	WASH PI 4/80
3SURVIVAL SIMULATION* ON THE NATURE OF	CROSBY	WASH PI 10/79
3SYSTEM A REVIEW* ELECTRONIC COMMUNICATION	HADLEY	WASH PI 12/80
3SYSTEM A REVIEW* THE PROGRAMMA WORD PROCESSING	ZAKAR	WASH PI 10/80
3SYSTEM* DOS-3.3 AND THE LANGUAGE	LEFKOWITZ	WASH PI 11/80
3SYSTEMS-DESIGN-LAB A REVIEW* MAILING LIST BY	HAUSMAN	WASH PI 10/79
3TAKE THAT WORD PROCESSOR*	STAFF	WASH PI 10/80
3TEMPERATURE MEASUREMENT WITH THE APPLE* REMOTE	FIELD	WASH PI 2/80
3TEST PROGRAM* A QUICK AND DIRTY RAM	KELLY	WASH PI 1/80
3TEST PROGRAM* AWARENESS	MITCHELL	WASH PI 1/80
3TESTING THE 6502 COMPARE INSTRUCTIONS*	GREENFARB	WASH PI 11/80
3TEXT FILE CONVERSION* APPLE WRITER TO	SAND	WASH PI 6/80
3TIGER CONNECTION* BLAISE AWAY THE PASCAL TO PAPER	WO	WASH PI 5/80
3TIME CLOCK* SOFTWARE FOR THE EXPERIMENTER@S REAL	FIELD	WASH PI 6/80
3TIMER* INTERRUPT YOUR APPLE %FOR THE	FIELD	WASH PI 5/80
3TINY LETTER WRITING PROGRAM*	MITCHELL	WASH PI 10/80
3TINY-PASCAL REVIEW*	GREENFARB	WASH PI 1/80
3TOOLKIT ASSEMBLER* A BUG IN THE	WURZEL	WASH PI 12/80
3TRAFFIC CONTROLLER A REVIEW* AIR	SCHULTHEIS	WASH PI 10/80
3TUESDAY NIGHT FOOTBALL A REVIEW*	SCHULTHEIS	WASH PI 10/80
3UNITS INCLUDES MASS STORE A REPRINT* NETWORK LINKS	STAFF	WASH PI 4/80
3UPDATE FOR D.C.-HAYES MICROMODEM OWNERS*	JONES	WASH PI 3/80
3UTILITY* THE SOURCE AN INFORMATION	REINBRECHT	WASH PI 3/80
3VIDEO INTERFACE SMARTERM* INTELLIGENT 80-COLUMN	LEFKOWITZ	WASH PI 11/80
3VIEW* PERSONAL INFORMATION NETWORKS A USER@S	REINBRECHT	WASH PI 5/80
3VISICALC* COMMENTS ON	FRANCIS	WASH PI 12/80
3WHAT@S WHERE IN THE APPLE*	LUEBBERT	WASH PI 12/79
3WHERE IN THE APPLE* WHAT@S	LUEBBERT	WASH PI 12/79
3WISHING WELL CODER*	MITCHELL	WASH PI 11/80
3WORD PROCESSING SYSTEM A REVIEW* THE PROGRAMMA	ZAKAR	WASH PI 10/80
3WORD PROCESSOR USER GUIDE*	MOON	WASH PI 7/80
3WORD PROCESSOR* TAKE THAT	STAFF	WASH PI 10/80
3WORD PROCESSOR* WRITING A	MOON	WASH PI 7/80
3WRITER TO TEXT FILE CONVERSION* APPLE	SAND	WASH PI 6/80
3WRITING A WORD PROCESSOR*	MOON	WASH PI 7/80
3WRITING INTERACTIVE PROGRAMS*	SAND	WASH PI 8/80
3WRITING PROGRAM* TINY LETTER	MITCHELL	WASH PI 10/80
3WRITING* APPLE	WRIGHT	WASH PI 2/80
380-COLUMN VIDEO INTERFACE SMARTERM* INTELLIGENT	LEFKOWITZ	WASH PI 11/80

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USING PADDLE POTS OF ANY VALUE by Tom Riley

In "Changing the Value of Linear Pots", Volume 3, No. 11 of this journal, John DeMarco told how to change the value of a potentiometer by mechanical means to suit the 150K ohms needed by an APPLE. But wait a minute - there is a much easier way to do this. Let me tell you how.

The paddle reading is controlled by the paddle potentiometer and a capacitor within the APPLE. Now for the good news - almost any value of potentiometer can be used if the capacitor value is adjusted accordingly. Extra caps can be placed in the paddle with no changes in the APPLE!

First, let's get a few terms straight. Potentiometers (pots) are measured in K ohms (thousands of ohms), and the value given is the maximum value. Capacitors (caps) are measured in microfarads (10 to the -6 farads). A farad is about the size of a bathtub, so the necessity for expression in microfarads is evident.

The APPLE reads the paddle by resetting a timer, then trying to count to 255 before time is up. The length of time allowed is set by a resistor, in this case the pot in the paddle (wired as a variable resistor) and by a .022 microfarad cap inside the APPLE. The timer used in the APPLE is a 558-H13, which is four 555 timers on one chip. The 555 is the most common electronic timer in the world.

To use a different value for the pot we need only keep the product of the resistor and the cap constant. This product is 150K * .022 E-6 = .0333. (The units of this product, oddly enough, are seconds.) As an example of this procedure, consider a common joy-stick pot at 46K ohms. Take .0333 divided by 46K = .072 microfarads. Subtract the existing .022 and get .05 microfarads to be added.

The accompanying drawing is a general purpose, easy-to-adapt schematic for any APPLE paddle. It shows you where to add the caps. If the exact value of cap needed is not available, several smaller ones may be paralleled. (Cap values add in parallel.)

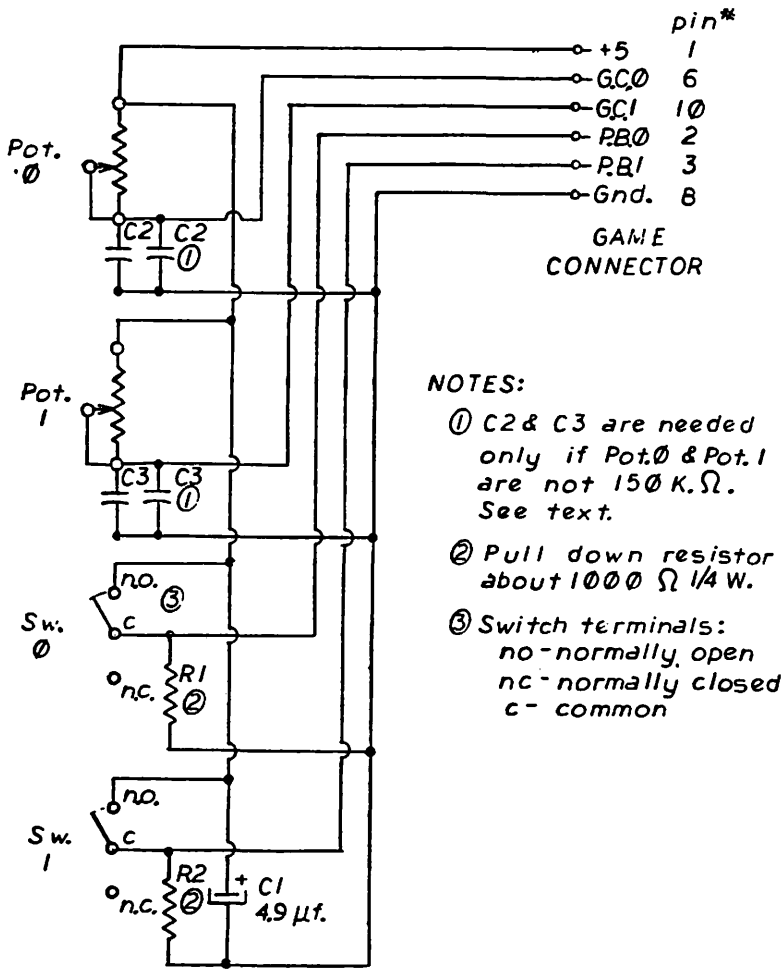
You might more easily just buy a sack of cheap caps from Radio Shack or Poly Paks and obtain the right value by trial and error. This is not particularly difficult and it allows very precise adjustment.

If you are buying a separate pot, try to get military specification ones. They have a MS or MIL # in their description and are substantially more linear than cheap pots. Linear here means uniform from one end to the other. Jameco Electronics sells this type for $2.95.

If your pot is above 150K, adding caps does not work because you need to reduce the cap, not increase it. For values of the pot below 7K, the values of the caps needed get rather large, although good electrolytic caps should work down to about 1K.

I am currently preparing plans for home-built special purpose paddles. The first plans will be for a spaceship stick, an airplane wheel, and a sketch pad. I would like to know if readers of this journal would be interested in such plans, and also what other outlandish purposes and shapes users would like to have in paddles. Please give me a call if you care to comment. Phone: (301) 340-9432.

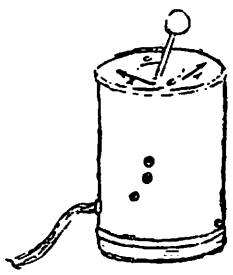
SCHEMATIC OF A GAME PADDLE



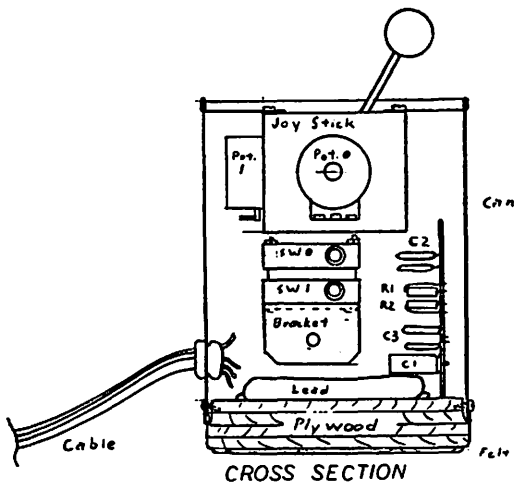
Riley 8/12/81

contd.

FIG JOY STICK IN A TIN CAN

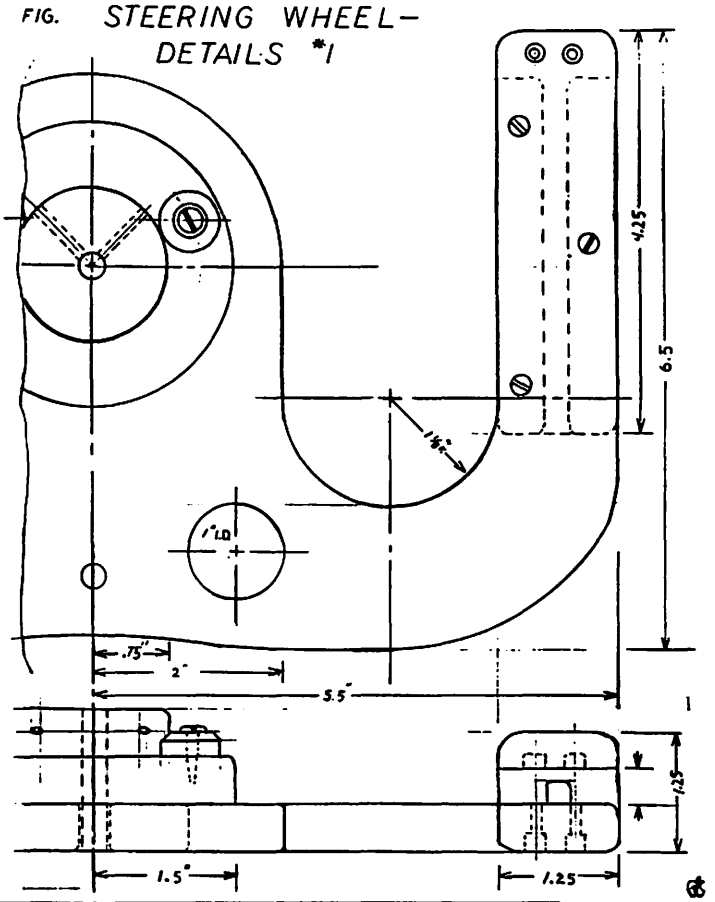


SKETCH



CROSS SECTION

FIG. STEERING WHEEL— DETAILS *1



PERPETUAL JULIAN CALENDAR

by Jill Giboney

In my work at an IBM computer installation, I often need to know the Julian date (day # 1 to 365), since this is the form the computer uses in much of its output. It can also be a useful and easy way to manipulate dates in programs. Since Julian calendars are usually hard to find, I modified the Perpetual Calendar program that was contributed by Donald E. Kahler in the January, 1981 issue of the Washington Apple Pi Newsletter, so that it would print not only the Gregorian date, but also the number of the day of the year.

In modifying the program, I had to reformat the output from 40-columns to 80-columns to allow room for the three-digit dates. It no longer outputs nicely to the screen (unless you have an 80-column board). It is set up now to print directly to a printer (in my case an APPLE Silentype). Line 220 can be modified to output to the screen, or to a different slot. I also did not include the option to print less than a full year, so you will get a 12-month calendar with every run.

The program will be available soon, along with the original Perpetual Calendar, on Wap Disk No. 110 - Personal/Education.

1982

JANUARY

S	M	T	W	T	F	S
					1	2
					001	002
3	4	5	6	7	8	9
003	004	005	006	007	008	009
10	11	12	13	14	15	16
010	011	012	013	014	015	016
17	18	19	20	21	22	23
017	018	019	020	021	022	023
24	25	26	27	28	29	30
024	025	026	027	028	029	030
31						
031						

FEBRUARY

S	M	T	W	T	F	S
	1	2	3	4	5	6
	032	033	034	035	036	037
7	8	9	10	11	12	13
038	039	040	041	042	043	044
14	15	16	17	18	19	20
045	046	047	048	049	050	051
21	22	23	24	25	26	27
052	053	054	055	056	057	058
28						
059						

MARCH

S	M	T	W	T	F	S
	1	2	3	4	5	6
	060	061	062	063	064	065
7	8	9	10	11	12	13
066	067	068	069	070	071	072
14	15	16	17	18	19	20
073	074	075	076	077	078	079
21	22	23	24	25	26	27
080	081	082	083	084	085	086
28	29	30	31			
087	088	089	090			

APRIL

S	M	T	W	T	F	S
			1	2	3	
			091	092	093	
4	5	6	7	8	9	10
094	095	096	097	098	099	100
11	12	13	14	15	16	17
101	102	103	104	105	106	107
18	19	20	21	22	23	24
108	109	110	111	112	113	114
25	26	27	28	29	30	
115	116	117	118	119	120	

MAY

S	M	T	W	T	F	S
						1
						121
2	3	4	5	6	7	8
122	123	124	125	126	127	128
9	10	11	12	13	14	15
129	130	131	132	133	134	135
16	17	18	19	20	21	22
136	137	138	139	140	141	142
23	24	25	26	27	28	29
143	144	145	146	147	148	149
30	31					
150	151					

JUNE

S	M	T	W	T	F	S
		1	2	3	4	5
		152	153	154	155	156
6	7	8	9	10	11	12
157	158	159	160	161	162	163
13	14	15	16	17	18	19
164	165	166	167	168	169	170
20	21	22	23	24	25	26
171	172	173	174	175	176	177
27	28	29	30			
178	179	180	181			

JULY

S	M	T	W	T	F	S
			1	2	3	
			182	183	184	
4	5	6	7	8	9	10
185	186	187	188	189	190	191
11	12	13	14	15	16	17
192	193	194	195	196	197	198
18	19	20	21	22	23	24
199	200	201	202	203	204	205
25	26	27	28	29	30	31
206	207	208	209	210	211	212

AUGUST

S	M	T	W	T	F	S
1	2	3	4	5	6	7
213	214	215	216	217	218	219
8	9	10	11	12	13	14
220	221	222	223	224	225	226
15	16	17	18	19	20	21
227	228	229	230	231	232	233
22	23	24	25	26	27	28
234	235	236	237	238	239	240
29	30	31				
241	242	243				

SEPTEMBER

S	M	T	W	T	F	S
			1	2	3	4
			244	245	246	247
5	6	7	8	9	10	11
248	249	250	251	252	253	254
12	13	14	15	16	17	18
255	256	257	258	259	260	261
19	20	21	22	23	24	25
262	263	264	265	266	267	268
26	27	28	29	30		
269	270	271	272	273		

contd.

```
]LIST

1  TEXT : HOME
10  REM  ************************
11  REM  PERPETUAL JULIAN CALENDAR
12  REM       BY JILL GIBONEY
13  REM  ************************
14  REM  A MODIFIED VERSION OF
15  REM  THE PERPETUAL CALENDAR
16  REM  CONTRIBUTED BY DONALD
17  REM  E. KAHLER IN THE JAN-
18  REM  UARY, 1981 APPLE PI
19  REM  NEWSLETTER.  IT HAS
20  REM  BEEN UPDATED TO PRINT
21  REM  THE NUMBER OF THE DAY
22  REM  OF THE YEAR ALONG WITH
23  REM  THE GREGORIAN DATE
24  REM  ************************
25  REM  NOTE: THE OUTPUT GOES
26  REM  DIRECTLY TO THE
27  REM  PRINTER. IF YOU HAVE
28  REM  AN 80-COLUMN BOARD,
29  REM  YOU CAN MODIFIY LINE
30  REM  220 TO OUTPUT TO THE
31  REM  SCREEN INSTEAD.
32  REM  ************************
100  DIM A(12),R$(12),L1$(7),L2$(7),J1$(7),J2$(7)
110 T1 = 40:T2 = 35:DJ = 1:E$ =  CHR$ (124):B1$ = " ":B2$ = "  ":B3$ = "   ":B4$
 = "    ":M = 1:N = 12
115 Z2$ = " " +  CHR$ (48):Z3$ = " " +  CHR$ (48) +  CHR$ (48)
120  FOR I = 1 TO 12: READ A(I): NEXT I
130  FOR I = 1 TO 12: READ R$(I): NEXT I
135  HTAB 3: PRINT "**********************************"
140  HTAB 3: PRINT "*   PERPETUAL JULIAN CALENDAR  *"
145  HTAB 3: PRINT "**********************************"
150  PRINT
155  PRINT
180  HTAB 3: INPUT "ENTER THE YEAR (EG. 1982): ";Y
185  REM  ************************
190  REM  THIS IS THE SET UP FOR
195  REM  THE SILENTYPE PRINTER
200  REM  ************************
220  PR# 1: PRINT : POKE  - 12527,8: POKE  - 12529,255: PRINT : HTAB T2: PRINT Y
: HTAB T2: PRINT "----"
230  REM   **** CONVERT TO ZELLER MONTH & YEAR ********************
240 MZ = M - 2:YZ = Y
260  IF M = 1 THEN MZ = 11:YZ = Y - 1
270  IF M = 2 THEN MZ = 12:YZ = Y - 1
280  REM   **** FIND STARTING DAY-OF-WEEK ***************************
290 CZ =  INT (YZ / 100 + .005):YZ = YZ - 100 * CZ:DM = 1
300 D1 =  INT (2.6 * MZ) + DM + YZ
310 D1 = D1 +  INT (YZ / 4 + .1) +  INT (CZ / 4 + .1) - 2 * CZ
320 DW = D1 - 7 *  INT (D1 / 7 + .01) + 1
330 M = M + 1: IF M > 12.5 THEN M = 1:Y = Y + 1
340 N = N - 1
350 MZ = M - 2:YZ = Y
355  IF M = 1 THEN MZ = 11:YZ = Y - 1
360  IF M = 2 THEN MZ = 12:YZ = Y - 1
370 CZ =  INT (YZ / 100 + .005):YZ = YZ - 100 * CZ:DM = 1
380 D2 =  INT (2.6 * MZ) + DM + YZ
390 D2 = D2 +  INT (YZ / 4 + .1) +  INT (CZ / 4 + .1) - 2 * CZ
400 DX = D2 - 7 *  INT (D2 / 7 + .01) + 1
401  REM  **** CHECK FOR LEAP-YEAR**************************************
```

contd.

```
402 C =  INT (Y / 100 + .005):YC = Y - 100 * C
403 A(2) = 28
404  IF YC = 4 *  INT (YC / 4 + .1) THEN A(2) = 29
405  IF YC < .5 THEN A(2) = 28
406  IF YC < .5 AND C = 4 *  INT (C / 4 + .1) THEN A(2) = 29
410  REM   **** PRINT HEADER ****************************************
415 LU$ = E$ + "------------------------------" + E$
417 LV$ = "------------------------------"
420  PRINT R$(M - 1);: HTAB T1
430  PRINT R$(M)
435  PRINT LV$;: HTAB T1: PRINT LV$
440  PRINT E$ + "   S   M   T   W   T   F   S  " + E$;
450  HTAB T1: PRINT E$ + "   S   M   T   W   T   F   S  " + E$
455  PRINT LU$;: HTAB T1: PRINT LU$
460  REM  ********* BUILD 1ST DATE-LINE AND PRINT *****************
470 D1 = DW - .5:D2 = DX - .5:DI = DJ:EN = 0:EO = 0
485  REM   **** 1ST LINE - ODD MONTHS ******************************
490  FOR I = 1 TO 7
500 DT = I - DW + 1
510  IF I < D1 THEN L1$(I) = B4$:J1$(I) = B4$
520  IF I > D1 THEN L1$(I) = B3$ +  STR$ (DT): IF DT > 9 THEN L1$(I) = B2$ +  ST
R$ (DT)
522  IF I > D1 THEN J1$(I) = B1$ +  STR$ (DJ): IF DJ < 100 THEN J1$(I) = Z2$ +
STR$ (DJ): IF DJ < 10 THEN J1$(I) = Z3$ +  STR$ (DJ)
524  IF I > D1 THEN DJ = DJ + 1
532  NEXT I
533  REM  **** 1ST LINE - EVEN MONTHS ******************************
537 DK = DI + A(M - 1)
538  FOR I = 1 TO 7
540 DU = I - DX + 1
550  IF I < D2 THEN L2$(I) = B4$:J2$(I) = B4$
560  IF I > D2 THEN L2$(I) = B3$ +  STR$ (DU): IF DU > 9 THEN L2$(I) = B2$ +  ST
R$ (DU)
565  IF I > D2 THEN J2$(I) = B1$ +  STR$ (DK): IF DK < 100 THEN J2$(I) = Z2$ +
STR$ (DK): IF DK < 10 THEN J2$(I) = Z3$ +  STR$ (DK)
570  IF I > D2 THEN DK = DK + 1
580  NEXT I
590  GOSUB 900
660  REM   ***** BUILD REMAINING DATE-LINES AND PRINT *************
685  REM  **** NEXT LINES - ODD MONTHS ******************************
690  IF DT >  = A(M - 1) THEN EN = 1
695  FOR I = 1 TO 7
700 DT = DT + 1: IF EN = 1 THEN 758
705  IF DT > A(M - 1) + .5 THEN L1$(I) = B4$:J1$(I) = B4$: IF I = 7 THEN  GOTO 7
58
730  IF DT =  < A(M - 1) THEN L1$(I) = B3$ +  STR$ (DT): IF DT > 9 THEN L1$(I) =
 B2$ +  STR$ (DT)
732  IF DT =  < A(M - 1) THEN J1$(I) = B1$ +  STR$ (DJ): IF DJ < 100 THEN J1$(I)
 = Z2$ +  STR$ (DJ): IF DJ < 10 THEN J1$(I) = Z3$ +  STR$ (DJ)
734  IF DT =  < A(M - 1) THEN DJ = DJ + 1
752  NEXT I
755  REM  **** NEXT LINES - EVEN MONTHS ******************************
758  IF DU >  = A(M) THEN EO = 1
759  FOR I = 1 TO 7: IF EO = 1 THEN 830
760 DU = DU + 1: IF DU > A(M) + .5 THEN L2$(I) = B4$:J2$(I) = B4$: IF I = 7 THEN
  GOTO 830
790  IF DU =  < A(M) THEN L2$(I) = B3$ +  STR$ (DU): IF DU > 9 THEN L2$(I) = B2$
 +  STR$ (DU)
792  IF DU =  < A(M) THEN J2$(I) = B1$ +  STR$ (DK): IF DK < 100 THEN J2$(I) = Z
2$ +  STR$ (DK): IF DK < 10 THEN J2$(I) = Z3$ +  STR$ (DK)
794  IF DU =  < A(M) THEN DK = DK + 1
820  NEXT I
```

contd.

```
 830  GOSUB 900
 840  IF EN = 0 AND DT < A(M - 1) THEN 690
 845  IF EO = 0 AND DU < A(M) THEN 755
 850  PRINT
 860  REM   ***** DO AGAIN FOR NEXT MONTH ***************************
 870 M = M + 1: IF M > 12.5 THEN M = 1:Y = Y + 1
 880 N = N - 1: IF N > .5 THEN DJ = DK: GOTO 240
 890  TEXT : PR# 0: END
 900  IF EO = 1 AND EN = 1 THEN  PRINT : GOTO 1090
 910  IF EN = 1 THEN 1025
1000   PRINT E$;
1010   FOR I = 1 TO 7: PRINT L1$(I);: NEXT I
1020   PRINT B2$ + E$;
1025   IF EO = 1 THEN  GOTO 1035
1027   HTAB T1: PRINT E$;
1030   FOR I = 1 TO 7: PRINT L2$(I);: NEXT I: PRINT B2$ + E$
1035   IF EN = 1 THEN 1065
1037   IF EO = 1 THEN  PRINT
1040   PRINT E$;
1050   FOR I = 1 TO 7: PRINT J1$(I);: NEXT I
1060   PRINT B2$ + E$;
1065   IF EO = 1 THEN 1072
1067   HTAB T1: PRINT E$;
1070   FOR I = 1 TO 7: PRINT J2$(I);: NEXT I: PRINT B2$ + E$
1072   IF EO = 1 THEN  PRINT
1075   IF EN = 0 THEN  PRINT LU$;: IF EO = 1 THEN  PRINT
1080   IF EO = 0 THEN  HTAB T1: PRINT LU$
1082   IF DT > A(M - 1) + .5 THEN EN = 1
1084   IF DU > A(M) + .5 THEN EO = 1
1090   RETURN
1500   REM  ***** DATA: MONTH LENGTHS AND NAMES
1510   DATA  31,28,31,30,31,30,31,31,30,31,30,31
1570   DATA   +              JANUARY            +
1580   DATA   +             FEBRUARY            +
1590   DATA   +               MARCH             +
1600   DATA   +               APRIL             +
1610   DATA   +                MAY              +
1620   DATA   +                JUNE             +
1630   DATA   +                JULY             +
1640   DATA   +              AUGUST             +
1650   DATA   +           SEPTEMBER             +
1660   DATA   +           OCTOBER               +
1670   DATA   +           NOVEMBER              +
1680   DATA   +           DECEMBER              +
1690   END
```

```
+          OCTOBER          +
|  S  M  T  W  T  F  S  |
|                  1  2  |
|                274 275 |
|  3  4  5  6  7  8  9  |
| 276 277 278 279 280 281 282 |
| 10 11 12 13 14 15 16 |
| 283 284 285 286 287 288 289 |
| 17 18 19 20 21 22 23 |
| 290 291 292 293 294 295 296 |
| 24 25 26 27 28 29 30 |
| 297 298 299 300 301 302 303 |
| 31 |
| 304 |
```

```
+          NOVEMBER         +
|  S  M  T  W  T  F  S  |
|     1  2  3  4  5  6  |
|   305 306 307 308 309 310 |
|  7  8  9 10 11 12 13  |
| 311 312 313 314 315 316 317 |
| 14 15 16 17 18 19 20 |
| 318 319 320 321 322 323 324 |
| 21 22 23 24 25 26 27 |
| 325 326 327 328 329 330 331 |
| 28 29 30 |
| 332 333 334 |
```

```
+          DECEMBER         +
|  S  M  T  W  T  F  S  |
|           1  2  3  4  |
|         335 336 337 338 |
|  5  6  7  8  9 10 11  |
| 339 340 341 342 343 344 345 |
| 12 13 14 15 16 17 18 |
| 346 347 348 349 350 351 352 |
| 19 20 21 22 23 24 25 |
| 353 354 355 356 357 358 359 |
| 26 27 28 29 30 31 |
| 360 361 362 363 364 365 |
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Apple Computer Tries to Ban Mail Business, Drawing Angry Charges of Trade Restraint

By MARILYN CHASE
Staff Reporter of THE WALL STREET JOURNAL

CUPERTINO, Calif. – Apple Computer Inc. is trying to stop mail-order houses from selling its personal computers. But with millions of dollars at stake, the company's right to change its policy is being challenged in court on antitrust grounds.

As of today, Apple says it won't allow telephone or mail-order sales of its products. The company says it's making the change because it needs to emphasize personal service if it is to continue dominating the burgeoning market for home computers that it pioneered.

Companies that sell by mail, however, claim the personal-service question is merely a pretext. They say Apple wants to shut them out because of pressure from retailers who don't like being undercut in price by the mail-order houses.

And some mail-order houses say they plan to keep operating as they have—until Apple cuts them off. The new policy, they say, amounts to restraint of trade. "It stinks," says Joseph Sidney, manager of Micro Business World in Tarzana, Calif.

Ready for Lawsuits

Exactly how Apple will enforce the policy is still unclear. Even Apple and its largest retail distributor, the 182-store ComputerLand Corp., disagree in their interpretations of the policy. Apple says exceptions won't be made—but ComputerLand says it will mail to longstanding or geographically remote customers.

Although Apple Chairman Steven Jobs maintains that the company's effort to eliminate mail-order sales is both legal and proper, he indicates that Apple is ready for litigation. "What we're doing is the state of the art in antitrust law," he says. "We could go all the way to the Supreme Court."

Apple's chief antagonist will probably be a voluble French expatriate named Francis Ravel who owns Olympic Sales Co. in Los Angeles and describes himself as one of the most aggressive "wheeler-dealers" in the Apple market.

In the early 1970s, Mr. Ravel mounted an antitrust challenge to Toshiba of Japan and won what his attorney, Willard Horwich, calls a "favorable" out-of-court settlement.

In federal court in Los Angeles yesterday, Messrs. Ravel and Horwich asked for a temporary restraining order to block Apple from enforcing its new policy on the grounds that it constitutes restraint of trade. This is an interim step, Mr. Horwich says, until he can obtain a formal hearing of the issues and seek a preliminary injunction.

"There are about 150 black sheep like us," Mr. Ravel says of his mail-order confreres. "All we want is to buy and sell and be left alone. Fair-trade laws have been abolished. They can't tell us not to ship from our store. Hewlett-Packard wouldn't dare do that."

Apple disputes Mr. Ravel's estimate of the number of mail-order operations; it says there are 75. The company termed yesterday's court action "completely without merit," but declined further comment.

The flap started last month when Apple asked its 1,100 retail dealers in the U.S. and Canada to sign amended contracts promising not to engage in telephone or mail-order sales. Apple spokesman Fred Hoar says the company has received an "excellent response" from dealers.

In a letter accompanying the new contract, Apple vice president of sales Gene Carter explained the change this way: "Mail-order sales are neither suited to providing the consumer education that emerging markets require, nor are they structured to provide the consumer satisfaction that has become associated with the Apple name."

"What we're doing is the state of the art in antitrust law," says Apple Chairman Steven Jobs, referring to the ban on mail-order sales. "We could go all the way to the Supreme Court."

The mail-order houses say they already provide adequate service and consumer education by mail. Apple's action, Mr. Sidney says, isn't an attempt to improve service, but is "an outright effort to fix prices."

Lack of a Smile

Apple denies that the change has anything to do with prices; the company says it can't and won't attempt to curb discounting by its distributors. "It's not discounting that bothers us," says Apple's Mr. Jobs. "It's the smile—or rather, the lack of it—on our customer's face when service isn't adequate."

Apple's policy change has cheered its network of full-service dealers. "We're encouraged by the program," says ComputerLand president Edward E. Faber.

Mr. Faber says it costs $150,000 to open a store with the service centers, test equipment and technicians that Apple requires. "If the dealer makes that kind of investment, he must get a return on the sale of the product," he says, and that becomes difficult "if the retail pricing is being watered down" by mail-order discounting.

"It's discouraging to do all the presale education and support of a prospective customer, and then have him buy the equipment somewhere else," Mr. Faber says.

Customers will still be able to shop around for the best price, however, because there is much variation from list prices, and some mail-order outlets have storefronts where they sell at substantial discounts.

The Apple III, for example, in quantities of four or more, is sold to dealers for $2,325. One at a time, it is sold to dealers for $2,430.

ComputerLand of San Francisco sells the Apple III for the suggested list price of $3,495. But at Olympic, Mr. Ravel says, the price for the Apple III has been reduced to about $2,800, which is about 20% less than list price.

Does the policy mean, though, that all customers--even those living on, say, remote ranches—need to go to a retail store to buy an Apple? It's not clear.

Mr. Faber of ComputerLand says exceptions will be made. He says the policy change means stores won't be able to advertise nationally for mail orders. ComputerLand franchisees encourage customers to come in, he says, but if the customer can't, or if the customer is a previous Apple purchaser, "they'll ship," Mr. Faber says. "Anyone who tried to abridge that would be stumbling into an area of law that would be untenable."

Hurting Market Share?

Apple, though, maintains that "there will be no exceptions" to its policy. "A mail sale is no sale," says Mr. Hoar. "You can't service a computer by mail. It's inherently unsupported."

However, when pressed to comment on Mr. Faber's statement, Mr. Hoar says Apple's intent is to go after big-volume mail-order houses. "Individual scenarios," he adds, "will be clarified later with the dealers in Applesource," the company's dealer newsletter.

For high-volume mail operations, though, Apple's move could be the end. Joseph Monroe, co-owner of Consumer Computers of San Diego, says about 75% of his company's $6 million in annual sales comes from mail-order sales. If Apple cuts him off, he says, "we'll go out of business."

Even if Apple cuts off its authorized dealers who sell by mail, it mightn't be able to stop unauthorized dealers from operating as they please. One such store, 47th Street Photo Inc. in New York, expects to sell about 3,000 Apples this year, according to Jacob Honig, who manages computer sales for the store.

When asked where, if not from Apple, he obtains his supply of Apple computers, Mr. Honig says only: "somewhere else." A source familiar with unauthorized dealerships says they generally get their stock from dealers who order more Apples than they can sell.

And Mr. Sidney, the Tarzana store manager, suggests that Apple, as well as individual dealers, could be hurt by the new policy. "Mail-order sales have increased Apple's market share quite a bit," he says. "They're cutting off their nose to spite their face."

TEXT ON THE HI-RES SCREEN

by Bruce F. Field

This article describes two Applesoft programs; the first program prints text on the Hi-res graphics screen, and the second manipulates numbers into a specified format after which they may be printed on the text or graphics screen. I became interested in these topics as a result of wanting to draw graphs on the Hi-res screen with labels and numbers on the axes.

There are a number of programs available to print text on the Hi-res screen. Some of the best known are the Hi-res character generator in DOS Toolkit, the Aldrichs' Higher Text, or the character generator by Bill Schultheis on WAP disk 31. All of these have their uses. In my case I am interested in being able to exactly position the characters on the screen.

Character array oriented programs (such as those mentioned above) restrict the user to printing the characters in a limited number of locations, often 40 horizontal by 24 vertical the same as the text screen. This means that a character may not exactly line up with some mark on the screen. Additionally the user is usually restricted to keeping the character within a particular size array (say 7 by 8 dots). These penalties are sometimes offset by the speed with which characters can be placed on the screen. If you want to build a word processor using the Hi-res screen this is the way to put characters on the screen. Shape table generated characters on the other hand offer more freedom in designing and placing characters on the screen but at the expense of speed.

Why the two different methods? The answer lies in the way the memory of the Hi-res graphics screen is organized. If you look at the memory map of the Hi-res screen on page 21 of the Apple Reference Manual you will see that each byte of memory controls 7 dots on the screen. These dots appear in a horizontal line, so to control the 280 dots in each line requires 40 bytes. The 6502 microprocessor in the Apple does not have any instructions to directly manipulate single bits within a byte, so to change a single dot we have to get the byte controlling the dot, use several instructions to change only the bit of interest leaving the other 7 alone, and store the byte back to memory. If we have to do this for each dot of the character, printing a character to the screen will be slow. This is in fact how the shape table characters are plotted. If instead we restrict each character so that it occupies exactly one byte horizontally and some N bytes (usually 8) vertically we can simply take a stored "picture" (Boolean array) of the character and copy it to the screen memory. No character occupies bytes that interfere with it's neighbor thus the character can be transferred to the screen very quickly.

Shape tables are more general and allow plotting of a point anywhere on the screen. A "shape" within a shape table is nothing more than a road map; go left 2 dots, up one dot, right 4 dots, etc. As each dot is plotted we must calculate the screen address and change the desired bit in the proper byte. Since we are doing a lot of manipulation for each dot in the character it will take considerably longer to "draw" a character to the screen using a shape table than to "print" it using a character array. But we are free to place the character anywhere on the screen (within one dot position) we wish.

The first part of the program to print text on the screen consists of lines 5000 to 5340 and the shape table listed in Hex. It is designed to be reasonably easy to use. To load the shape table and set the appropriate pointers and program values put the DOS file name of the shape table in string CTABLE$ and GOSUB 5270. The table will be loaded above Hi-res page 2. Variable CLD contains the table starting address; if a different address is desired set CLD to the address and GOSUB 5280. If you forget to load the shape table (or are lazy like me and don't bother) the first time you try to "print" to the screen the table will be loaded automatically.

contd.

Several different shape tables could be loaded consecutively into memory to provide different character fonts. To switch between different tables put the starting address of the desired table in variable CLD and GOSUB 5310. Variable CT controls the spacing between the characters, and is set for a default of 7 dots. That is the left side of each character is 7 dots from the left side of the preceeding one. Since the characters in the table are mostly 5 dots wide, this gives a 2 dot spacing between characters the same as on the normal Text screen.

The shape table consists of 96 shapes which includes all the printable characters generated by the Apple keyboard, lower case characters, and a few extra symbols. The table is not organized exactly in the order of the ASCII character codes. The shape numbers of upper case letters, numbers, and most symbols correspond to their ASCII code. For example the code for the letter 'A' is 65 (decimal) and the 65th shape in the table is the letter 'A'. This makes is easy to "print" characters from Applesoft, all you have to do is use the ASC function to determine the shape number of a character. i.e. DRAW ASC("A") at X,Y to print "A" at screen position X,Y.

For reasons I can't exactly explain I decided to store lower case letters below the upper case letters in the shape table. This is contrary to ASCII where the lower case letters have higher numbers than upper case. Whatever, the lower case letters (and a few additional symbols) occupy shapes 1 through 31 in the table. To access these, 64 (decimal) must be subtracted from the ASCII code for the equivalent upper case letter. For example, suppose we wanted a lower case "a", the shape number is ASC("A")-64.
All the character shapes are defined starting in the lower left corner of the character so that they all line up properly when drawn on the screen. If you wish to design your own character set it would be a good idea to follow this convention.

Lines 5090 to 5220 in the program do the actual "printing" of text on the Hi-res screen. You need to store the text you want printed in a string (C$) and setup the "tabs", CX the horizontal position (0-279) and CY the vertical position (0-191) before doing a GOSUB 5090. If the shape table has not been previously loaded (the program checks variable CLD to see if it is zero) it is loaded before printing is begun. The "tab" variables CX and CY are incremented as necessary when printing the string and are left pointing to the next character position at the end of the line. The user should be careful that there is enough room on the screen to print the string as the program will NOT wrap text around to the next line.

Each time the subroutine is called printing defaults to upper case. To switch to lower case insert a control-Q character in the string. The control-Q acts like a toggle, the first occurrence puts you in lower case, the next sends you back to upper case, etc.

One advantage of shape tables is the ability to draw shapes with different rotations. In practice, with small character shapes, only the four 90 degree orientations produce recognizable characters. The program is set up to examine the shape rotation value (set by an Applesoft ROT= command) and print the text in one of four directions. The four are:

ROT=0 - left to right
ROT=16 - top to bottom
ROT=32 - right to left (inverted)
ROT=48 - bottom to top

The rotation value is set to a default value of 0 by the part of the program that loads in the shape table. If you want another orientation use the Applesoft ROT= command after loading the shape table and before printing the text.

The second topic of discussion is formatting of numbers. When a number is printed Applesoft will print as many digits as possible or print it in exponential (scientific) notation if necessary. This makes it easy to use but is annoying if you are trying to produce outputs where decimal points line up (for tables) or extraneous decimal digits are to be eliminated, etc. There are several machine language programs to do formatting, however most are designed for business applications and do not support

contd.

exponential notation. The simple Applesoft program presented here handles floating-point notation (numbers with digits after the decimal point), integer notation (whole numbers, no decimal point), and exponential notation (a floating-point number with a power of ten exponent).

The program requires two inputs, the number to be formatted, and a format specification string. It returns the number in a string that may be either printed to the text screen, or using the previous program, printed to the graphics screen. Variable C contains the number, string CF$ contains the format, and C$ is the returned string. The number is formatted according to standard FORTRAN format parameters, i.e. I9, F10.3, or E9.3. After setting C and CF$ GOSUB 5450.

Integer format is indicated by the first letter of the format string being an "I". The number following the I is the field width. The field width is the maximum number of character positions that the number is allowed to occupy. For a format of "I9" the maximum number of characters is 9. If the number were exactly 9 digits long (i.e. 123456789) it would completely fill the field. If it were shorter it would be right justified in the field and padded with blanks to the left. For example, if the number were 3456 (with an I9 format) the returned string would be C$=" 3456". There would be 5 blanks to the left of the number. The length of the returned string is always exactly the specified field width.

Floating-point format is similar except the number of digits after the decimal point must also be specified. This is done by adding another number to the format specification, i.e. F10.3. In this case the field width is 10 and the number of digits after the decimal point is 3. Using this format the number 2345.66778 would be returned as C$=" 2345.668". The number is rounded properly. With a field width of 10 the range of numbers that can be printed is 999999.999 to -99999.999, because the minus sign occupies one position with negative numbers. If the number to be formatted has more digits than the format specification allows the returned string will be filled with asterisks.

A quirk in the way Applesoft is written (and the way the program works) prohibits printing numbers with more than 11 digits. But, since Applesoft only has 9 significant digits this doesn't seem like much of a limitation.

Exponential or scientific notation is similar to floating-point but is usually used for extremely large or small numbers. The format specification is of the form E9.3, where 9 is the field width and 3 is the number of digits after the decimal point. For exponential notation the number is always normalized to be between 1 and 10 with an appropriate power of 10 exponent. For example, the number 123445303 in E9.3 format would be 1.234E9. A smaller number might be expressed as 4.531E-10. As with the other formats the number is right justified in the field. Using this notation requires slightly more care because the exponent will occupy 2 to 4 character positions and it is easy to run out of room if the field width is not large enough.

These subroutines may be easily modified, and in case you haven't noticed, all the variables begin with the letter C. Some variables (notably CLD and CT) must be preserved between subroutine calls, and generally there will be some variables used in your calling programs that should not be disturbed by the subroutines. If you don't use any variables beginning with the letter C there won't be any conflict.

What I have described is a program to provide elementary formatting of numbers so that they may be printed to the text screen or (along with other text) printed on either of the Hi-res graphics screens. Being written in Applesoft they are not particularly fast however they have served my needs well for labelling graphs.

contd.

```
]LIST

5000  REM  ----------------------
5010  REM  ROUTINE PRINTS STRING
5020  REM  C$ AT CX,CY ON HIRES
5030  REM  CTABLE$ IS FONT NAME
5040  REM  ALL VARIABLES BEGIN
5050  REM  WITH LETTER 'C'
5060  REM  CTRL-Q IS U/L CASE
5070  REM  TOGGLE
5080  REM  ----------------------
5090  IF CLD = 0 THEN  GOSUB 5270
5100  IF  LEN (C$) = 0 THEN 5210
5110 CW = 0:CR =  INT ( PEEK (249))
5120 CI = ((CR = 0) - (CR = 32)) * CT
5130 CJ = ((CR = 16) - (CR = 48)) * CT
5140  FOR C1 = 1 TO  LEN (C$)
5150  IF  MID$ (C$,C1,1) =  CHR$ (17) THEN 5220
5160 CV =  ASC ( MID$ (C$,C1,1)) - CW
5170  IF CV < 1 THEN CV = CV + 64
5180  DRAW CV AT CX,CY
5190 CX = CX + CI:CY = CY + CJ
5200  NEXT C1
5210  RETURN
5220 CW = 64 * (CW = 0): GOTO 5200
5230  REM  ----------------------
5240  REM  ROUTINE TO LOAD FONT
5250  REM  AND INITIALIZE HIRES
5260  REM
5270 CLD = 24576: REM    SHAPE TABLE LOAD ADDRESS
5280 CT = 7: REM  CHARACTER SPACING
5290  SCALE= 1: HCOLOR= 3: ROT= 0
5300  PRINT  CHR$ (4);"BLOAD ";CTABLE$;",A";CLD
5310 C1 =  INT (CLD / 256)
5320 C2 = CLD - 256 * C1
5330  POKE 232,C2: POKE 233,C1
5340  RETURN
5350  REM  ----------------------
5360  REM  FORMATTING ROUTINE FOR
5370  REM  NUMBERS.  ENTER WITH
5380  REM  NUMBER IN C, FORMATTED
5390  REM  STRING C$ RETURNED.
5400  REM  CF$ CONTAINS FORMAT
5410  REM  SPECIFICATION AS PER
5420  REM  STANDARD FORTRAN.
5430  REM   F10.3, E9.2, I5
5440  REM  ----------------------
5450 CG$ =  LEFT$ (CF$,1): REM  GET FORMAT LETTER
5460 C1 =  VAL ( RIGHT$ (CF$, LEN (CF$) - 1))
5470  REM  CS=#DIGITS, CD=#DECIMAL PLACES
5480 CS =  INT (C1):CD =  INT (10 * (C1 - CS) + .4)
5490  IF CG$ = "F" THEN 5560
5500  IF CG$ = "E" THEN 5690
5510  IF CG$ = "I" THEN 5800
5520 C$ = "F-ERR": RETURN
5530  REM  ----------------------
5540  REM  FLOATING POINT
5550  REM
5560 C =  INT (.5 + C * (10^ CD))
5570  IF C >  = 1E11 THEN 5890: REM  OVERFLOW
5580 CG$ =  STR$ (C)                                          contd.
```

```
5590  IF CG$ = "0" THEN CG$ =  LEFT$ ("00000000000",CD + 1)
5600  IF CD = 0 THEN 5640
5610  IF  LEN (CG$) = CD THEN CG$ = "0" + CG$
5620 C$ =  LEFT$ (CG$, LEN (CG$) - CD) + "." +  RIGHT$ (CG$,CD)
5630  GOTO 5840: REM  RIGHT JUSTIFY STRING
5640 C$ =  LEFT$ (CG$, LEN (CG$) - CD) + "."
5650  GOTO 5840
5660  REM  --------------------
5670  REM  EXPONENTIAL NOTATION
5680  REM
5690  IF C = 0 THEN CE = 0: GOTO 5710
5700 CE =  INT ( LOG ( ABS (C)) /  LOG (10))
5710 C = C / (10↑ CE): REM  NORMALIZE C
5720 CE$ = "E" +  STR$ (CE): REM  EXPONENT
5730 CS = CS -  LEN (CE$)
5740  GOSUB 5560: REM  DO MANTISSA AS FLOATING POINT
5750 C$ = C$ + CE$: REM  ADD EXPONENT
5760  RETURN
5770  REM  --------------------
5780  REM  INTEGER NOTATION
5790  REM
5800 C$ =  STR$ ( INT (C + .5))
5810  REM  --------------------
5820  REM  RIGHT JUSTIFY STRING C$
5830  REM
5840  IF  LEN (C$) > CS THEN 5890
5850  IF  LEN (C$) = CS THEN 5880
5860 CG$ = "                    "
5870 C$ =  LEFT$ (CG$,CS -  LEN (C$)) + C$
5880  RETURN
5890 C$ =  LEFT$ ("**********",CS)
5900  RETURN
5910  END

]
6000.6467

6000- 60 00 C2 00 CC 00 D8 00  60C0- 60 04 20 64 6D 3E 15 3E  6180- 20 24 4D 31 36 3E 3F 07
6008- E0 00 EC 00 F6 00 FF 00  60C8- 15 1F 3F 00 24 24 24 56  6188- 00 08 E4 6C 09 F6 F6 07
6010- 0C 01 15 01 1C 01 23 01  60D0- 29 0E 36 1E 3F 20 20 00  6190- 00 20 24 4D 31 36 1E 1C
6018- 2F 01 36 01 3F 01 46 01  60D8- 20 64 2D B5 12 3F 3F 00  6198- 1E 07 00 0C 04 E0 4D F1
6020- 4F 01 5A 01 66 01 6D 01  60E0- 20 64 6D 20 16 3E 15 3E  61A0- 1E 0E 0E 06 00 29 2D 20
6028- 77 01 80 01 89 01 91 01  60E8- 15 1F 3F 00 20 64 2D 15  61A8- 24 24 DF 33 36 0E 2D 05
6030- 9B 01 A5 01 B1 01 BB 01  60F0- 3E 3F 16 2D 05 00 09 24  61B0- 00 2D 2D DC 63 0C 0C 3F
6038- C2 01 C8 01 D0 01 D7 01  60F8- 1C 2D 07 20 0C 04 00 29  61B8- 3F 07 00 09 1C E4 0C 64
6040- EA 01 EC 01 F2 01 FA 01  6100- 2D 20 24 24 1E 1C BF 36  61C0- 04 00 09 24 04 20 24 00
6048- 09 02 17 02 23 02 30 02  6108- 0E 2D 28 00 24 24 24 56  61C8- 09 05 20 05 E0 E4 04 00
6050- 37 02 3F 02 47 02 54 02  6110- 2D 15 36 36 00 29 3D 20  61D0- 08 18 0C 2D 0C 04 00 24
6058- 5C 02 5F 02 65 02 68 02  6118- 3C 0C 20 00 A8 2D 20 24  61D8- 24 24 35 36 36 2E 24 24
6060- 6E 02 7C 02 85 02 91 02  6120- 04 20 00 24 24 24 4E 09  61E0- 24 35 36 36 2E 24 24 24
6068- 9C 02 A7 02 B2 02 BE 02  6128- 1E 1E 1E 75 0E 06 00 29  61E8- 04 00 01 00 09 04 20 24
6070- C6 02 D4 02 DF 02 E4 02  6130- 3D 20 24 24 3F 00 24 24  61F0- 24 00 08 08 08 20 FC 36
6078- E8 02 F1 02 FA 02 02 03  6138- AD 36 6E 24 E4 04 00 24  61F8- 06 00 21 24 24 6C 36 B6
6080- 0C 03 19 03 25 03 32 03  6140- 24 2D AD 36 36 00 20 64  6200- 22 2C 04 F8 1F 16 0D 06
6088- 3C 03 47 03 53 03 5C 03  6148- 2D 15 36 1E 3F 07 00 24  6208- 00 28 2D 05 38 38 3F 60
6090- 67 03 73 03 7B 03 83 03  6150- 24 24 0D AD 36 1E 3F 20  6210- 2D FD B0 16 16 06 00 60
6098- 8F 03 98 03 A4 03 B0 03  6158- 20 00 49 21 24 24 FC BF  6218- 0C 0C 0C DF 27 AD 92 0A
60A0- BB 03 C4 03 D0 03 DC 03  6160- 36 0E 2D 20 20 00 24 24  6220- 35 3F 00 20 04 20 0C 15
60A8- E9 03 F1 03 FC 03 08 04  6168- 0E 0C 2D 05 00 2D 2D 38  6228- F6 0E 0D 1E 0E 1F 3F 00
60B0- 14 04 1F 04 28 04 34 04  6170- 38 3F 28 28 2D 05 00 49  6230- 08 08 18 08 24 04 00 09
60B8- 40 04 48 04 54 04 5C 04  6178- 1C 24 1C 2D 07 20 04 00  6238- 1C 1C 24 0C 0C 04 00 09
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contd.

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6240- 0C 0C 24 1C 1C 04 00 60
6248- 2D 15 DE 24 20 24 8D 1E
6250- 1F 07 20 00 09 20 24 6C
6258- 12 FF 3F 00 61 24 00 08
6260- 18 28 2D 2D 00 09 05 00
6268- 60 0C 0C 0C 04 00 20 24
6270- 64 2D 15 36 36 1E 3F 04
6278- 60 0C 05 00 09 2D 07 20
6280- 24 24 17 07 00 2D 2D DF
6288- 03 60 0C 65 E4 3F 17 06
6290- 00 70 2D 05 20 1C 67 0C
6298- 3C 3F 3F 00 49 24 24 24
62A0- 17 17 17 2E 6D 05 00 70
62A8- 2D 05 20 E4 3F 27 2C 2D
62B0- 2D 00 29 2D 20 1C 3F B7
62B8- 24 60 0C 2D 05 00 21 64
62C0- 0C 0C 3C 3F 3F 00 20 04
62C8- 20 0C 2D 15 F6 3F 4D 32
62D0- 1E 3F 07 00 2D 0C 0C 24
62D8- E4 3F 17 76 2D 05 00 08
62E0- 08 04 20 00 61 24 20 00
62E8- 49 1C 1C 1C 0C 0C 0C 04
62F0- 00 08 18 2D 2D 04 38 3F
62F8- 3F 00 61 0C 0C 1C 1C 1C
6300- 04 00 09 04 20 0C 0C 1C
6308- 3F 17 07 00 20 24 64 2D
6310- 15 36 E7 36 AD 3A 3F 07
6318- 00 24 24 0C 0C 15 15 B6
6320- 22 3C 3F 07 00 24 24 24
6328- 2D AD F6 3F 4D 32 1E 3F
6330- 07 00 20 24 64 2D 15 96
6338- F2 3F 07 00 24 24 24 2D
6340- AD 36 36 1E 3F 07 00 24
6348- 24 24 2D 2D 96 3B B7 2A
6350- 2D 05 00 24 24 24 2D 2D
6358- 96 3B 3F 00 20 24 64 2D
6360- B5 D2 35 3E 3F 07 00 24
6368- 24 24 4D 31 36 3F 6F 11
6370- 36 07 00 29 3D 20 24 24
6378- 6F 05 00 A8 2D 05 20 24
6380- 24 04 00 24 24 24 4D F1
6388- 1E 1E 0E 0E 0E 06 00 2D
6390- 2D DF 03 20 24 24 04 00
6398- 24 24 24 15 95 64 0C 36
63A0- 36 36 06 00 24 24 24 56
63A8- 0E 0E 56 24 24 24 04 00
63B0- 20 24 64 2D 15 36 36 1E
63B8- 3F 07 00 24 24 24 2D AD
63C0- F6 3F 07 00 20 24 64 2D
63C8- 15 36 FE 0E 0E 1F 3F 00
63D0- 24 24 24 2D AD F6 3F 15
63D8- 15 15 05 00 A8 2D 05 20
63E0- 1C 3F 07 20 0C 2D 15 06
63E8- 00 09 24 24 24 2D DF 3F
63F0- 00 20 24 24 4D 31 36 36
63F8- 1E 3F 07 00 09 05 28 20
6400- 24 FC 1B 36 36 0E 06 00
6408- 24 24 24 4D 31 36 36 E6
6410- 1C B4 3B 00 64 04 E0 6C
6418- 09 F6 1E 0E 0E 36 00 09
6420- 24 E4 1C 6C 09 F6 06 00
6428- 64 05 60 0C 3C 3F B7 92
6430- 0A 2D 2D 00 24 24 24 2D
6438- 2D DF 32 36 36 2D 2D 00
6440- 49 01 E0 1C 1C 1C 04 00
6448- 2D 2D 24 24 24 3F 3F 4D
6450- 32 36 36 00 08 18 0C 0C
6458- 0E 0E 06 00 2D 2D 05 00
6460- 00 00 00 00 00 00 00 00
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APPLE PIE AND THE USE OF "ESC"

by Jim Graham

Apple Pie is the outstanding word processor previously distributed by Programma, which has been recently acquired by Hayden Computer. Those of us who use Apple Pie with an Epson MX-80 printer have learned from the manual that control characters can be imbedded in text by use of the "Shift-Control M" key sequence. This allows some of the Epson's features to be activated or deactivated while the Apple Pie Format program is running. For many months, however, I had been unable to utilize all the Epson features (commanded from inside the text) because the manual does not explicitly cover the use of the escape command as an imbedded function. I had tried what seemed like every conceivable combination and had even written to Programma. After several months I heard Programma was no longer in business. Eventually, I decided to call Hayden, as the apparent new source of information.

I found out that the "ESC" key is input exactly like the control character; it just is not covered in the manual. In other words, to activate or deactivate any escape commanded printer function, enter "Shift-Control M" followed by "Escape" (which displays an inverse Applesoft-type prompt character), then followed by whichever escape suffix is appropriate. The suffix must be in upper case. When the Format program runs, the printer is commanded by these imbedded functions, exactly as it would be if they were commanded directly from the keyboard.

In addition, I was told that Hayden does indeed plan to support this fine program, and has at least the following upgrades and improvements in the works: a spooling capability so the operator can regain use of the keyboard and computer for input while the printer is printing; a dictionary, or spelling program, designed specifically for Apple Pie; and a new manual, with index (much needed). Each of these will add significantly to an already great word processor, which appears to have a strong future ahead.

subLOGIC GRAPHICS PACKAGE:

A Review by David Morganstein

Two years ago when I bought the A2-3D1 graphics package from Sublogic I was impressed with the capabilities of their software and detail of their manual. The program seemed written for the serious graphics user who wanted to generate 3-D projections with the APPLE. One of the 3-D data bases that came with the package was that of an imagined piece of "flat" terrain with a landing strip in the middle and a Dick Tracy's nose of a mountain range at one end. With a little reading and many trial and errors I was able to create a flight simulator using the pad-dles (this was before the joystick days). The display was not too fast in switching between Hires pages, giving a 1-2 second per frame motion display. After all, my program was written in Integer Basic (calling the trigonometric functions required out of the machine language A2-3D1 package) so it could only move along just so fast.

As many of you know, it wasn't very long before Flight Simulator appeared from Sublogic. (Their version was considerably better than mine...) More recently, Saturn Navigator, another package using these graphics routines, has come on the market, offering a stimulating space flight to our winged neighbor.

The A2-3D1 package is a set of machine language routines for creating and displaying a data base which projects 3-D images onto the APPLE 2-D screen. The relevant characteristics of the creation and display are: the description of the 3-D image (including its location); the position of the viewer; and the angle of view (pitch, bank and heading) of the viewer. The latter two items related to the viewer can be modified and re-poked into the overall data base, causing the appearance of motion of the viewer relative to the object.

The limitations of the original package were: the 3-D image or images were stationary both relative to each other and relative to the co-ordinate system (that is, only the viewer and the viewer's per-spective could be changed); and the creation of the object data bases were done with a fairly crude editor not allowing viewing of the Hires screen while constructing the object. Needless to say, the latest additions to the Sublogic line, A2-3D2, and A2-GE1 solved all that and added some other niceties as well.

Main Features.

The graphics editor works very smoothly, allowing you to see the 3-D image as you construct it. You can now use color in the figures or switch to a super Hires display with twice as many lines as the usual HGR display provides. Both of these enhancements are part of the A2-3D2 additions. The relevant information regarding the cursor's position and the position and angle of the "eye" viewing the objects are displayed at the bottom of the Hires screen, in the text area. The current and previous point in the data base is also shown so that by moving forward and backward through the data base, using left and right arrow keys, you can make modifications to the required data. While you can insert a NOP command to delete parts of the data base, you can not insert something new. Rather, if an addition is needed, the image from that point on must be reconstructed.

Another nice feature in the editing of objects is the placement of text in a fixed position relative to the object. In the example discussed in the manual initials are put at the top of a garage which you create. My only comment on the text feature is that, while three text sizes are provided, a smaller size of letter might be desired.

After creating one or more objects and storing them on a separate DOS 3.3 disk, you can enter the motion programmer. This part of the Graphics Editor allows you to define viewed and independent objects, the latter of which can be given motion. The viewed objects are stationary with respect to your position and viewing angle while the independent objects can be given motion relative to their initial point of origin (actually, an additional basic utility allows you to translate independent objects so that they can move relative to any point in the space.) Again, referring to the example presented in the text, you move a garage door around, hang it on the garage and pivot it open and closed.

Phrases can be appended to the motion program so that educational presentations can be made. The motion is controlled by the keyboard with keys for positive and negative movement of the x,y, and z coordinates and of the pitch, bank and heading of the objects or of the viewer's eye. It takes a little practice to perform a desired motion, but once a sequence has been defined, it can be stored as a motion file and replayed automatically.

Still another nice feature of the package is the generation of a slide show, which can be labelled appropriately. The show can then be played back and each screen viewed.

Ease in Learning to Operate.

Whenever you provide a lot of power, you run a risk of confusing the user. To take advantage of the many features of the Sublogic software will require a fair amount of practice. Fortunately, Sublogic provides a Summary Command Card on heavy stock which you can hang in front of you while learning the system. The various

contd.

features are so numerous that a myriad of key stroke combinations are required. So far, I have not uncovered any simple pattern of mnemonics to begin memorizing the system. For example, shift M switches between eye/cursor manipulation, ctrl R sets Hires mode, shift 4 allows you to save an object file while ctrl I lets you load it back. Other features require only a single key stroke. While I can not suggest a simpler system, this is I believe a weak area for the package.

Another concern I have is the complexity of using some of the features. The motion playback process is performed by a separate Basic program which does not link directly with the Graphics Editor. The program is supplied on the disk, a standard DOS 3.3 disk with its own system, and must be accessed by booting in regular DOS and loading it in to the APPLE. To use several of the features, you must keep a record of object lengths in bytes and merge files of objects and machine code together. While this is all explained carefully, it is done manually by the user and requires a fair amount of study. However, the results are quite impressive and a great deal of graphics power is provided.

Documentation.

The A2-3D2 extension manual is primarily an update to the Command sheets from the A2-3D1 basic system. This is reasonable since the 3D1 package is required and its manual is very thorough, not only in teaching how to use the package but in discussing 3D graphics.

The A2-GE1 takes you by the hand through the process of editing objects, moving objects and playing back stored motion. It contains no technical information regarding the 3D to 2D process since the owner will already have the 3D1 manual. Several good examples are provided including a demonstration of aero-dynamics. The examples must all be entered from the keyboard, a minor inconvenience, which provides "hands on" experience.

COLUMNAR CATALOG LISTINGS

by Bob Crafts

I've owned my APPLE for nearly three years now, having come, unfortunately, to APPLE through a sea of like and, it now seems, lesser computers. I'd had a little prior experience with computers and programming, but it was essentially insignificant.

Over the past few years I've had so much fun with the APPLE that my desire to learn more about programming has taken a back seat. Isolation from the usual clubs and stores has helped to impede my learning rate as well. I mention all of this in the hope it will at least partially explain the inordinate pride I feel in the little subroutine which follows.

Recently, with time to kill, I resolved to attempt to bring order out of the chaos of my diskette collection. To that end, I got out my master catalog program, a commercial version which I believe is quite popular. In fact, on a club disk (WAP #14) there is a modified version. (If this program is actually public domain, I'd be happy to send the club a copy of my version which takes 26 sectors.)

In running through the program, it seemed that a feature which it lacked was the ability to print catalog listings in columnar fashion. Although the experience can be extremely frustrating, modifying a well-written program has been for me one of the best ways of learning Basic. So, I resolved to write a column listing routine.

And write it I did. While it worked, it was the worst kind of brute-force job, and labored when the text file it was processing was large. I was disgusted. My creative writing efforts seem to be of the feed-the-unconscious-and-wait variety. So a day or two after I'd finished my original modification the solution blossomed. I wrote it as a free-standing program in order to validate the idea without confusion. It worked well enough so that when I came to insert it into the catalog program the process went off without a hitch.

I'm sending it for several reasons. Not among them is the idea that it is a noteworthy programming effort. Indeed, amid all this self-applause the idea occurs that it may even contain a flaw, either of logic or syntax. But as I've tested it extensively, the second seems unlikely.

One reason is that it may prove useful in the programs of club members. But the basic reason is that it may demonstrate to other flounderers that persistence is useful, that learning takes place continuously, and that dismembering good programs is a worthwhile practice.

In the following listing I have removed the REM statements and substituted a line number explanation.

```
]1000 DIM NA$(360):N = 333
 1010 FOR I = 0 TO 59:NA$(I) = "FIRST":
      NA$(I + 60) = "SECOND":NA$(I + 120)
      = "THIRD":NA$(I + 180) = "FOURTH":
      NA$(I + 240) = "FIFTH":NA$(I + 300)
      = "SIXTH":NEXT
20000 REM
20020 PTR2 = 60
20040 FOR I = 0 TO N
20050 PRINT LEFT$ (NA$(I),30);"   ";
      LEFT$ (NA$(I + PTR2),30)
20060 IF I = 0 THEN 20110
20070 CASE = (I + 1) / 60
20080 IF CASE = 0 THEN GOSUB 20140
20090 IF CASE - INT (CASE) = 0 THEN
      GOSUB 20140
20110 NEXT
20120 END
20140 I= I + PTR2:RETURN
```

Lines 1000,1010 are not a part of the subroutine but simply set up a sample array.

Line 20020 sets up the pointer spacing as a constant.

Line 20040 loops through the entire array.

Line 20050 prints the leftmost n characters of the first and nth elements in the array. In this case 30 characters of the first and sixtieth elements.

Line 20060 causes the program to skip the end-of-column test on the first pass - when it would succeed.

Lines 20070-80 are simply a counter which moves the base pointer over the array elements printed by pointer 2. They could be combined into one line using an "OR" operator. Very probably there is a better way to do this, but not in my kit.

Line 20120 just keeps the routine from falling into the GOSUB. A nickel for each time this has happened to me would keep me in diskettes for a while!

Line 20140 is the line in which the base pointer is actually moved.

(Ed. Note: Bob, WAP#515, lives on Martha's Vineyard, Edgartown, Mass. Might be nice to have a WAP chapter there in the summer!)

Season's Greetings

WAP TUTORIAL REGISTRATION

The second WAP tutorial will be held on two consecutive Saturdays, February 13 and 20, 1982, from 10:00 AM to 1:00 PM at USUHS on Jones Bridge Road (on the campus of the National Naval Medical Center) in Bethesda, MD. Check the ABBS and club phone for any changes in details. An outline of the two sessions is shown below.

February 13, 1982

9:00 - 11:30 Introduction
- A. Binary/hex number systems
- B. Bits, bytes, and nibbles
- C. RAM, ROM and devices

11:30 - 1:00 Internals
- A. Memory Map: What's really in there
- B. The Monitor: Examine, disassemble
- C. The mini-assembler, step and trace

February 20, 1982

9:00 - 11:30 Applesoft
- A. Basic programming
- B. Commands and applications
- C. Memory usage; HIMEM, LOMEM and variable space

11:30 - 1:00 DOS
- A. The Catalog and VTOC
- B. Reading and writing files
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  2. random access

WAP is requiring a nominal fee for this tutorial to assure the interest of attendees and to gauge the number of interested participants. A maximum of 40 people will be included, half with their own APPLE and half without.

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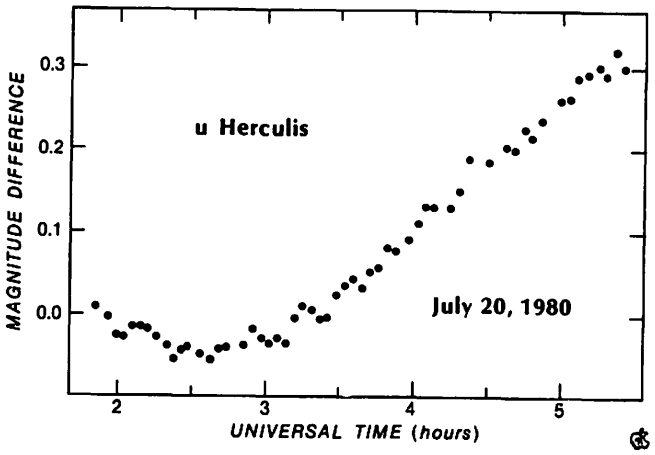
contd. from pg 18

Another eclipsing star observed by computer was u Herculis. This light curve has been processed more fully than that of 44 Bootis. The sky background has been subtracted from all readings, and the signal levels converted to magnitudes, which are plotted as differences here, in the sense comparison minus variable star.



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