mini'app'les

apple computer user group newsletter

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NEXT MEETING
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WEDS NOV 21st - THANKSGIVING EVE
wed nov 21st - thanksgiving eve

The Business meeting will start as usual at 7:30pm at the
Minn. Federal Savings and Loan,
9th Avenue South, Hopkins.
Following the Business meeting we will have the beginners Question and Answer session
We will have 3 or 4 competent people who will be available to answer questions.
Tentatively we have devided questions into the following categories:
Graphics both HIRES and LORES
Integer and or Applesoft non graphics questions
DOS
If as a result of questions forthcoming at the meeting, these categories are not suitable, we will of course change them. The main idea of the session is to prevent the session growing into a high level discussion beyond the understanding of you beginners. We will tell people to 'shut-up' if this happens.

WEDS, DECEMBER 19th

Christmas program. Bring your Christmas tree displays in HIRES - In fact if we can generate enough entries, we will have a little competition and prize for the best Christmas program. It must be an original, that is not purchased or one you picked up from a user bank. How about Santa Claus going down the chimney in HIRES with Jingle Bells in the background.
Bring your family too!

WEDS, JANUARY 16th:

Tentative engagement with Bill Schloffer, a dealer representative for Mountain Hardware, of Santa Cruz, California. He will make a presentation to the group about Mountain Hardware products. They make Supertalker, ROM+, Apple Clock, Real World Control, etc. This event was arranged for us by Computerland to whom we are grateful.

WEDS, FEB 20th
Tentative
Business Users Software Night.
We need volunteers to talk about their experiences with packaged software or to give tutorials on available software of interest to Bus'ss Users.

MINI'APP'LES USER BANK STATUS

The library copies are currently circulating at the following distribution points:
Computerland, Morgan Circle, Bloomington
Computerland, Hwy 12, Hopkins
Zim Computer, Brooklyn Center
We still hope to put one of the above sets into mail circulation for out of towners very shortly.
The following programs have been added to the user bank and placed on side 10 of Volume II

Program Name	Contributor
Dice	S.K.Johnson
Page List (*300.388)	S.K.Johnson
.1 Spiral-LORES	Paul Jackson
Bowling Score (J)	S.K.johnson
SK's Color Pattern	S.K.Johnson
Roses-HIRES Patterns	Paul Jackson
Random Color Plot	Jim Bell
Fourth Dimension-graphic	E.Hinrichs
Stained Glass(HIRES)	E.Hinrichs
Omega Lander(HIRES game)	E.Hinrichs
Simon	E.Hinrichs
Crash Cars	E.Hinrichs
Just#5300	B.Buchler
Just#9300	B.Buchler

We are grateful to all of the above. Of the above programs, I am only familiar with the last three. Just is described elsewhere in this newsletter. Crash Cars is an interesting game program using LORES graphics. Several concentric 'tracks' appear on the screen. The object is to avoid the computer controlled car by switching tracks.

We are curently in the process of completing a deal through Brad Smith of Topeka Kansas who is picking up a set of over 500 'new' programs from a Califonian Apple user group. Hopefully these will be added to our bank before the end of the year.

The proliferation of programs on the user bank does present a tremendous logistics problem. We will probably have around 1000 programs available by year end. Admittedly, a large proportion of these are 'junk'. But what is 'junk' to one person, may be an answer to a dream for someone else. Our Librarian and the board are investigating if there is any practical, easy way of better organizing these programs. Remember we all earn our living in other ways than shuffling programs on Apple diskettes! Ideally.

programs would be arranged by type(Game, ed., Math, Business, Utility, etc) and by language (INT, FP, Mon, etc).
There are some tools appearing which should enhance our ability to catalog the programs. In particular, the CALL APPLE Disk Cataloger which appears in the Oct Call Apple issue and works in conjunction with FILE CABINET should be of particular benefit. We are experimenting with it.
Also of consistant annoyance to us has been our inability to screen the programs. Again the volume has been the obstacle.

MINUTES OF OCTOBER 1979 REGULAR MEETING

The minutes of the Sept meeting were approved as printed in Oct newsletter.
It was reported that Mr Kulawske has not received his N.L. since joining many months ago. The treasurer will correct matter.
The President asked for volunteers to put on an Apple demo for a minority kids learning program called Math Bridge.
Discussions on education for MINI'APP'LES members. Mrs Bell, a member, asked about availability of classes in Pascal. A visitor, Jay Richards, who has 20 years computer experience, reported on forthcoming classes that he and his partner plan to teach on Computerland premises. They are not affiliated with Computerland. Classes are planned in Integer Basic, Applesoft, assembly language and eventually PASCAL
Some new Apple dealers in the Twin Cities area were identified including
Personal Business Systems Incorporated
Blumberg Photo Sound
By majority vote it was agreed that the November meeting would be held on Wed Nov 21st as originally scheduled even though following day is Thanksgiving. Similarly the Dec meeting will be held as scheduled on Dec 19th.
Business Users, polled at this meeting, indicated a concurrence with the idea to hold a meeting oriented towards Business Users.
Further discussions on incompatability problems introduced by AUTOSTART ROM and/or LANGUAGE system. A fix is available for the Microchess II problem.
It was pointed out by the President that NL was printed this month over a communication link using a Hayes Modem and a TTY 43.
The President reported that a group entitled Personal Computing Society of NY was soliciting membership, both individual and group. There seemed to be little interest from the floor.
Meeting adjourned at 8.25.

SCANNING THE ISSUES

A number of important articles have appeared recently in the Microcomputer press. Summarized below are some Apple articles in BYTE magazine, MICROCOMPUTING(nee KILOBAUD) and MICRO.

Microcomputing-Nov 79:
Don Lancaster Strikes Again: Lower Case for your Apple (Part 1 or 2). The article describes a hardware mod to the Apple to obtain lowercase letters on the display in Text Mode. This frees up 8k as compared to using a HIRES software technique. The mod requires the addition of several chips and jumpers on the Apple Mother board and makes use of the Apple mask used to select Flash,Inverse, etc. By setting appropriate patterns in the mask one can select upper case, lower case or flashing characters but not inverse. The hardware required costs about $10. Lower case input is still a software job.

MICRO MAGAZINE, NOV 79:
Disassembling the DOS 3.2 by William Reynolds
This is an excellent article and set of tables showing entry points into DOS. There is alot of information in this article which to my knowledge has never been published elsewhere. The map assumes a 48k system and contains about 250 entry points or locations in DOS from $95FF to BFFF. The author states "Documentation of addresses in the B000-BFFF area may be in error because that area got too complex for me to retain my sanity"

CALL APPLE OCT 79
Call Apple has done it again and produced a fantastic issue. Keep up the good work Val! Among the lead articles are:
Auto Number: This program by Gerald Cahill is a machine code routine stored at $300 which provides Autonumbering of Applesoft statements as they are entered. It is used as follows:-
    CALL 770 starts autonumbering at line 100
    CALL 787 restarts at next number
    CTL-x turns off auto-numbering
Different starting Line Numbers can be poked in. Increment is always 10.

FIXES to FILE CABINET:
Code is included to fix a number of bugs and to improve the Apple software bank program.

1980 DUES

Members are reminded that dues for membership in MINI'APP'LES for calendar year 1980 should be paid to the treasurer on or before the Jan 16th meeting. Newsletters will only be mailed to those from whom payment has been received by Jan 1st. $10 will buy 1 years membership, that is thru Dec 31st, 1980.

Repeat - 1980 Dues are payable in December

YOUR DUES ARE TAX DEDUCTIBLE!
Congress this year passed an act called the Technical Corrections Act. Contained within this act is a new law which allows members of any non-profit club to deduct their dues in full. The ruling came about because it was discovered that members of some types of clubs could deduct while others could not.

THANK YOU

MINI'APP'LEs wishes to thank all of you members who brought hardware to the program exchange night. We realize the inconvenience this causes to those involved. Systems and components were supplied by:

Terry Pinotti	Computerland
D.Buchler	C.Thiesfeld
C.and K. Madonna	B.Wheaton
L.Severino of Audio King	

There was another system, but the owner left before he could be identified!

MULTIPLE DISK CATALOG

This is an integer Basic program to read catalogs from a disk and to APPEND that catalog to a File In FILE CABINET. This provides a mechanism to make a complete inventory of your software and we plan to experiment with it for the Mini'App'Les user bank. The inventory is cataloged under VOL, TYPE, SIZE and PROGRAM NAME. You can then use FILE CABINET to sort on any of those fields and produce an updated list of all your software. The program was written by Gary Foote.

APPLESOFT FIRMWARE CARD HIRES MAP

Steve Alex has produced a map of the Hires entry points in the ROM card. The equivalent of all of the entries used in the regular Apple HIRES package stored at C00 to FFF are listed. One could eliminate the C00-FFF software entirely by substituting calls to the ROM!

KEYBOARD MODIFICATION - AN UPDATE

By Keith Madonna

This article apends a previous article in the Mini'App'les August 1979 Newsletter page 7, Dan Paymar's keyboard modification from March 1979 edition of call A.P.P.L.E

The following changes are to be made to allow you to modify older keyboards, even as old as the 300-th computer off the line. The changes are numbered, and the numbers are made to replace existing numbers in the referenced article. You must use the August newsletter Article and this Article to do the keyboard modification on older keyboards

(4). Check continuity with low-voltage ohmmeter (not over 1.5) at the folowing pins. For chip number pin-out pattern refer to Fig 1.

AU5-9 to 36L to 37R
U5-10 to 23L to 24R
U5-30 to 37L
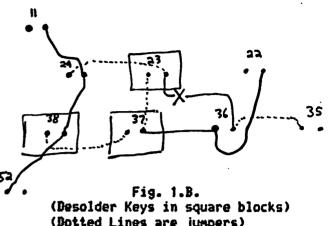U5-31 to 23R to 36R
U5-25 to 24L
U5-26 to 35L
U5-27 to 38L

Check from *

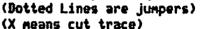FIG 1.A
Looking from Bottom of Keyboard
(for Figs 1A & 1B)

(5)
Desolder pin numbers:
23L, 23R, 36L, 36R, 37L, 37R
Refer to Fig 1.B

Now remove Key/switches K,L,O. Use Fig 1.C and Goto 6 of August Newsletter.

(8) Check that continuity no longer exists between the following pins. 23L to 24L, 23R to 36L, 23R to U5-31, 37L to U5-30

Fig. 1.B.
(Desolder Keys in square blocks)
(Dotted Lines are jumpers)
(X means cut trace)

(9) Use a fine tip grounded soldering iron to add the following jumpers wires on the bottom side of the keyboard. Note, this is after you put back the keyboard switches.
37R to 23L
24L to 23R
35L to 36R
38R to 37L
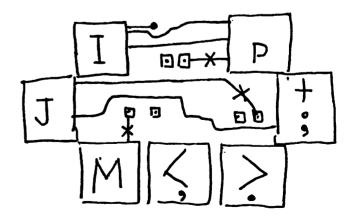This ends the amended material. Now Goto line 10 of August Newsletter.

FIG 1.C.
Looking From Top of Keyboard with three switches out- Cut Traces at X

BUNKER RAMO/VICTOR PRINTER NEWS

The number of BR printers connected to APPLES as of this writing is 18. Notes follow:-

(1) The Apple User bank PHONE LIST program is easily modified to print 32 cols and work with our printer. Dan has a modified copy if anyone wants one.

(2) I've noticed, during checkout of several printers, that there is a tendency to drop the left most character randomly. The problem seems to be precipitated by drag on the printhead slideshaft. A drop of oil and/or cleaning of both the front and rear slide bars usually cures the problem. Same symptons could be caused by slipping head-drive clutch. Try cleaning clutch surface.

(3) Dale Bennett came up with an ingenious way of invoking and turning off the printers. He wrote 3 short programs that created 3 EXEC files called

READY PRINTER	loads the driver
UP PRINTER	sets HIMEM< sets $36/37
DOWN PRINTER	unhooks driver

In his version, he included the setting of $36 & $37 in the driver itself and calls that portion from the EXEC routine. In this way the EXEC routines will work with APPLESOFT or INTEGER BASIC since there are no POKES that must be doubled up on one line. INTEGER BASIC wont allow that. Dan has another version of DALE's EXEC that uses a POKE 54,0:POKE 55,85 For reasons stated above, it will only work with APPLESOFT. Call Dan Buchler or Dale Bennett for details.

(4) Several people have asked how to turn off and on the printer from within a program. You need two subroutines

```
100 POKE 54,0 : POKE 55,85 : CALL 1002:
    RETURN :REM TURN ON PRINTER

200 POKE 54,240 : POKE 55,253 : CALL 1002 :
    RETURN :REM TURN OFF PRINTER
```

Use 149 instead of 85 in 48k systems.

MILE OF PAPER!

Dale Bennett, one of the Bunker Ramo owners decided to break a record. Exactly what record he broke we really are not sure. It seems that there was an article in Interface Age, Oct 79, entitled Micromathematics. Listing 1 in that article shows a BASIC program to calculate Factorials starting at 1 and working upwards. For the non

Mathematically inclined, an example of a factorial is
$$5! = 5 \times 4 \times 3 \times 2 \times 1 = 120$$
Large factorials are very large numbers indeed.
Well to continue with our story, Dale keyed the program in, set it up to output on the BR printer. Approximately 8 hours later it was still running; the printer had run out of paper and the last factorial printed out was approximately 1000!. Dale did output in floating point notation. Good show Dale!!!!!!!!!!!!!!!

DAN ON PRINTERS(and related things)

Startin with last months newsletter, we are using a Teletype 43 to print the masters. As stated in DAN ON PRINTERS , the TTY 43 is one of the better dot matrix printers on the market. It uses a 9 x 5 matrix (not 9 x 7 as erroneously reported previously) out of which are constructed 7 x 5 characters, the characters g,j,p,q and y having descenders or being a 7 x 5 character 2 dots lower than the other characters. The legibility of this system, though not quite as good as a 9 x 7 system, is excellent.

The actual software system we used for printing the newsletter is perhaps of some interest.

The TTY 43 is some 10 miles from the APPLE controlling the printing. A HAYES modem connects the APPLE to the phone line. A conventional acoustic coupler is used at the TTY 43 end.

The newsletter was written and edited in the usual way using DAN'S FULL EDIT (available on user bank). Then a special version of DANS EDIT called PRINT/JUSTIFY48KHAYES was loaded. Note that all of this is done using the TTY 43 as a remote console to the APpLE, just like sitting at your Apple keyboard. Thats one of the nice features of the HAYES modem. PRINT/JUSTIFY48KHAYES makes use of a series of machine code output routines as follows:- Vector locations $36 & $37 pass contol to a special version of the HIRES display subroutine called SUBHIHAYE. This differs from previous versions in that besides displaying upper and lower case letters in HIRES on the CRT, it also passes lower case letters on to the next program without converting them to uppercase first. SUBHIHAYE then passes control to JUST (described elsewhere in this issue). Then control goes to the HAYES.

RIGHT LEFT MARGIN JUSTIFICATION

By B. B. Buchler

Have you ever wondered why newspapers and books usually have several columns of print on a page? There are several reasons. The two most important of those reasons are:
(1) It has been demonstrated that the combination of eye and brain is most effective at reading when the least amount of scanning is required. That is, the amount of eye movement is at a minimum. One school of speed reading teaches you to scan only up and down. Therefore, a narrower column makes it easier to read since it reduces the amount of right-left eye movement required.
(2) The total amount of text that may be included on a page for a given type size and style is increased if one reduces the amount of 'white' space. That may seem obvious, but what is not often realized is that short lines make more efficient use of the available space. For example, line space between the end of one paragraph and the start of the next will be only half as long for 2 columns as compared to 1 column. Or a column header with 2 or 3 words will only take up half of the space.
Well whats all this got to do with justification. The answer is 'alot'. As the column width is reduced, it becomes necessary to 'justify', or line up, both right and left margins. This is because the eye would be distracted by the ragged edge of the right margin and would not be able to scan efficiently. In fact one might have trouble staying in the same column all the time.
One of the major ingredients of a word-processing system is a column justification capability. All word-processing systems on the market offer column justification, but most of them are written in BASIC and are rather slow.
JUST is a machine code column justifier which may be used on any APPLE with any conventional printer or even the display screen itself. It will interface with BASIC, APPLESOFT, etc. The following features are provided:
-Right and Left Margin Justification
-Variable column width
-Additional spaces added to achieve Justification are evenly distributed
-Additional spaces are not insert in same place on succesive lines but ripple across page
-Compatible with all BASICs
-Compatible with most printers and screen

-Suppression of blanks at beginning of line except after RETURN or Initialization
-Recognition of real RETURN($0D) or pseudo return ($5E)
-Does not right justify on line containing RETURN
-Spacing following punctuation is controlled by user to provide maximum flexibility of format
-Fast .   ., microseconds per character.
-SC Assembler source code available
-Less than 2 pages (512 bytes) including buffer. Program is about $150 bytes long without buffer.
-Tables may be printed by ending each line with RETURN and indenting line as required with spaces.

LOADING THE JUSTIFICATION ROUTINE

If you have an Assembler, obtain a copy of the source or key it in from the listing and set the origin to whatever is convenient to your system. If you don't have an assembler, obtain a copy of one of the binary files from the user bank. Two versions are available. one, designed for 32K DOS starts at $5300. The other for 48K DOS starts at $9300. The 32K DOS version is listed with this article and may be keyed in. If you do so, save it as one binary file on the disk.
When you are ready to use the routine, BLOAD it into memory ($5300 or $9300) which is just below DOS any other machine code you might have in memory. Referring to the source listing, you will notice a variable DRIVER. That label DRIVER refers to the entry point into your driver if you have a RAM resident driver. Such a driver might be located at $5500 or $9500. If you are using firmware drivers resident in ROMs, set the value of DRIVER to CN02 where N is the slot number. Example:
If you have a parallel card in slot 2 the value of DRIVER should be C202. This causes the Justification routine to Jump to the firmware driver.
The label LNGT refers to the line length and is set to 1 less than the number of characters desired on the line. Once you have setup DRIVER and LNGT the routine is customized for your configuration and nothing else need be changed.
However, if you want to change the line width at any time after the binary is loaded, the

statement:

POKE 21312, X: REM   For 32K version
or
POKE 27840, X: REM   For 48k version
where X is width-1 will do it.

To enable the justification process, do the
following
POKE 54,justlo : POKE 55,justhi : CALL 1002
where justlo and justhi are the low-order and
high order parts of the starting address of
where you have loaded the Justification
routine. For example, if JUST is loaded at
$9300
justlo = 0 and justhi = 147   (147 is same as
$93). The statement will then be
POKE 54,0: POKE 55,147 : CALL 1002
For 33k systems, the statement is
POKE 54,0:POKE55,83: CALL 1002
For either32K or 48K DOS systems, the
justification may be turned off with
POKE 54,240 : POKE 55, 253 : CALL 1002

Warning:
If you enable JUST and then do an INPUT, you
may be surprised at what happens. On INPUT,
the system displays what is typed in by using
the system output routines. JUST will not
actually output anything until either it has
seen a RETURN, or the number of characters
output are sufficient to fill a complete line
(>LN6T). Therefore on input you will not see
anything on the screen or printed out until
the above conditions are satisfied: i.e a
full line is input or a line ends in a C/R.
HOW DOES IT WORK?

(1) The location $36 & $37   (54 & 55) contain
the address of the start of an output
routine. This is usually the Monitor Display
at $FBF0 or a printer driver in RAM or ROM.
We replace the address in $36 & $37 with the
address of the justification routine. This
causes the Justification routine to get
control each time a character is output.
(2) When the justification routine (JUST)
gets control, it stores the character that
was sent to it in a buffer (called BUFF)
which is located at the end of JUST. JUST
will continue storing characters sequentially
into BUFF, until it has received one more
character than the length of a line. The
following example assumes a line length of 16
(rather a skinny column). Let us assume the
following sentence is being output:

This is an example of how JUST works.

The following portion of the above sentence
will be stored in BUFF

This is an example
              ↗End of BUFF

(3) JUST now shifts out of the 16 character
area any partial word that overlaps the end
of the 16 character area in BUFF. In the
example the partial word 'exampl' will be
shifted out of BUFF:

This is an   exampl
                  End of BUFF

(4) The remaining words in BUFF are now
spread out until they exactly fill the 16
characters of BUFF:

This   is   anexampl
              ↗End of BUFF

(5) All the 16 characters in buff are now
output by sending them one by one to DRIVER.
(6) Any word shifted out of BUFF in (3) above
is moved to beginning of BUFF

exampl
              ↗End of BUFF

and we return to step (2) above storing new
characters from the sentence immediately
after the 'end' word which had been moved to
beginning of BUFF:

example of how JU
              ↗End of BUFF

and the cycle repeats to result in:

This   is   an
example of   how
JUST works.

Note last line ends with carriage return, so
it is not right justified!

JUST DISSASSEMBLER LISTING

```
;TO CONSERVE SPACE
;THE SC ASSEMBLER LISTING
;HAS BEEN OMITTED
;IT IS AVAILABLE ON REQUEST
```

```
5300-   8D 56 54    STA  $5456
5303-   20 4A FF    JSR  $FF4A
5306-   18          CLC
5307-   AD 40 53    LDA  $5340
530A-   69 01       ADC  #$01
530C-   8D 41 53    STA  $5341
530F-   69 01       ADC  #$01
5311-   8D 42 53    STA  $5342
5314-   AE 53 54    LDX  $5453
5317-   A5 45       LDA  $45
5319-   29 7F       AND  #$7F
531B-   C9 0D       CMP  #$0D
531D-   F0 24       BEQ  $5343
531F-   C9 5E       CMP  #$5E
5321-   F0 20       BEQ  $5343
5323-   AC 59 54    LDY  $5459
5326-   D0 04       BNE  $532C
5328-   C9 20       CMP  #$20
532A-   F0 0E       BEQ  $533A
532C-   9D 5B 54    STA  $545B,X
532F-   8D 59 54    STA  $5459
5332-   EC 41 53    CPX  $5341
5335-   F0 26       BEQ  $535D
5337-   EE 53 54    INC  $5453
533A-   20 3F FF    JSR  $FF3F
533D-   60          RTS
533E-   EA          NOP
533F-   EA          NOP
5340-   1F          ???
5341-   00          BRK
5342-   00          BRK
5343-   A9 20       LDA  #$20
5345-   9D 5B 54    STA  $545B,X
5348-   E8          INX
5349-   EC 41 53    CPX  $5341
534C-   30 F7       BMI  $5345
534E-   AD 40 53    LDA  $5340
5351-   8D 53 54    STA  $5453
5354-   8D 59 54    STA  $5459
5357-   20 DD 53    JSR  $53DD
535A-   4C ED 53    JMP  $53ED
535D-   A9 00       LDA  #$00
535F-   8D 57 54    STA  $5457
5362-   BD 5B 54    LDA  $545B,X

5365-   C9 20       CMP  #$20
5367-   D0 0B       BNE  $5374
5369-   A9 00       LDA  #$00
536B-   8D 59 54    STA  $5459
536E-   CE 53 54    DEC  $5453
5371-   20 DD 53    JSR  $53DD
5374-   CA          DEX
5375-   BD 5B 54    LDA  $545B,X
5378-   C9 20       CMP  #$20
537A-   F0 08       BEQ  $5384
537C-   AD 57 54    LDA  $5457
537F-   F0 0B       BEQ  $538C
5381-   4C ED 53    JMP  $53ED
5384-   AD 57 54    LDA  $5457
5387-   D0 03       BNE  $538C
5389-   20 DD 53    JSR  $53DD
538C-   AE 58 54    LDX  $5458
538F-   AC 42 53    LDY  $5342
5392-   BD 5B 54    LDA  $545B,X
5395-   C9 20       CMP  #$20
5397-   F0 11       BEQ  $53AA
5399-   E8          INX
539A-   88          DEY
539B-   F0 0A       BEQ  $53A7
539D-   EC 40 53    CPX  $5340
53A0-   30 F0       BMI  $5392
53A2-   A2 00       LDX  #$00
53A4-   4C 92 53    JMP  $5392
53A7-   4C 32 54    JMP  $5432
53AA-   E8          INX
53AB-   EC 41 53    CPX  $5341
53AE-   F0 F2       BEQ  $53A2
53B0-   88          DEY
53B1-   F0 F4       BEQ  $53A7
53B3-   BD 5B 54    LDA  $545B,X
53B6-   C9 20       CMP  #$20
53B8-   F0 F0       BEQ  $53AA
53BA-   8E 58 54    STX  $5458
53BD-   8E 5A 54    STX  $545A
53C0-   AE 53 54    LDX  $5453
53C3-   EC 40 53    CPX  $5340
53C6-   D0 01       BNE  $53C9
53C8-   CA          DEX
53C9-   20 44 54    JSR  $5444
53CC-   AE 53 54    LDX  $5453
53CF-   EC 40 53    CPX  $5340
53D2-   F0 03       BEQ  $53D7
53D4-   EE 53 54    INC  $5453
53D7-   AE 40 53    LDX  $5340
53DA-   4C 75 53    JMP  $5375
```

```
53DD-  AD 53 54    LDA  $5453
53E0-  8D 54 54    STA  $5454
53E3-  AD 40 53    LDA  $5340
53E6-  8D 53 54    STA  $5453
53E9-  8D 57 54    STA  $5457
53EC-  60          RTS
53ED-  A2 00       LDX  #$00
53EF-  8E 55 54    STX  $5455
53F2-  BD 5B 54    LDA  $545B,X
53F5-  18          CLC
53F6-  69 80       ADC  #$80
53F8-  48          PHA
53F9-  20 3F FF    JSR  $FF3F
53FC-  68          PLA
53FD-  20 F0 FD    JSR  $FDF0
5400-  AD 56 54    LDA  $5456
5403-  20 4A FF    JSR  $FF4A
5406-  AE 55 54    LDX  $5455
5409-  E8          INX
540A-  EC 41 53    CPX  $5341
540D-  D0 E0       BNE  $53EF
540F-  A0 00       LDY  #$00
5411-  CA          DEX
5412-  EC 54 54    CPX  $5454
5415-  F0 0B       BEQ  $5422
5417-  BD 5C 54    LDA  $545C,X
541A-  99 5B 54    STA  $545B,Y
541D-  E8          INX
541E-  C8          INY
541F-  4C 12 54    JMP  $5412
5422-  8A          TXA
5423-  38          SEC
5424-  ED 40 53    SBC  $5340
5427-  8D 53 54    STA  $5453
542A-  20 3F FF    JSR  $FF3F
542D-  A9 8D       LDA  #$8D
542F-  4C F0 FD    JMP  $FDF0
5432-  AD 57 54    LDA  $5457
5435-  D0 B6       BNE  $53ED
5437-  AD 41 53    LDA  $5341
543A-  8D 53 54    STA  $5453
543D-  20 DD 53    JSR  $53DD
5440-  4C ED 53    JMP  $53ED

5443-  CA          DEX
5444-  BD 5B 54    LDA  $545B,X
5447-  9D 5C 54    STA  $545C,X
544A-  EC 5A 54    CPX  $545A
544D-  10 F4       BPL  $5443
544F-  EE 58 54    INC  $5458
5452-  60          RTS
5453-  00
5454-  00
5455-  00
5456-  00
5457-  00
5458-  00
5459-  01 00
545B-
```

```
3300 PTR   .HS 00  POINTER INDEX INTO BUFF
3310 PTR1  .HS 00  LAST CHAR OF END WD
3320 PTR2  .HS 00  INTERMEDIATE INDEX
3330 SAVEA .HS 00  TO KEEP ORIG A FROM BEING CLOBBERED BY DRIVER CALLS TO SAVE
3340 S     .HS 00  SWITCH S
3350 GAP   .HS 00  POINTER TO 1ST CHAR FOLLOWING NEXT AVAIL. BLANK(S)
3360 NOTB  .HS 01  NON BLANK CHAR FOUND SWTCH
3370 LMT   .HS 00  LIMIT OF SHIFT
3380 BUFF  .EQ *
3390       .EN
```

APPLE UPDATE
BY Cheryl Madonna
APPLE:A Bigger byte
Corvus introduces a Hard Disk for microcomputers. It's smaller than a brief case, and comes with an intelligent controller. Two-Binch Platters and personalitymodule (HBOS H=Hard) is supplied with unit. Here's some compar-ison specifications between the mini-floppy and Corvus

Compar-ison chart
APPLE Mini-Floppy/CORVUS Hard Disk

	APPLE Mini-Floppy / CORVUS Hard Disk
Data Transfer Rate bits/sec	156K / 400K
Total Capacity bytes	116K / 11 Megs
User Capacity bytes	102K / 9.5Megs
Access Time m/sec Max	600 / 60
Min	200 / 50
Drives per/Controller	Two / Four
	$595 / $5350

APPLE Microchess Cassettes "will" load on an APPLE II "PLUS" or any APPLE withthe new Auto-start ROM, provided the correct procedure is followed. Don't stop reading now, starting from the rightbracket in Applesoft or Integer, type:CALL-167 to obtain the '*' prompt of the APPLE monitor. Now follow the instructions in the Microchess manual to load the program. The command CALL-151 is notthe equivalant to pressing the reset on an APPLE II plus. Infact if you remember back a few months, the reason for usingthe CALL-151, was to be able to get intothe monitor without killing page 3, which in turn killed DOS.Another Day another DOS

Coming soon - the new 3.2.1 DOS with updated copy routines. This will be free to all owners of system masters with 3.2 (.0) DOS.

Last but not least:
Rumor has it APPLE Computer Inc. willbereleasing a new "slice" the APPLE III in the not to distant future.

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