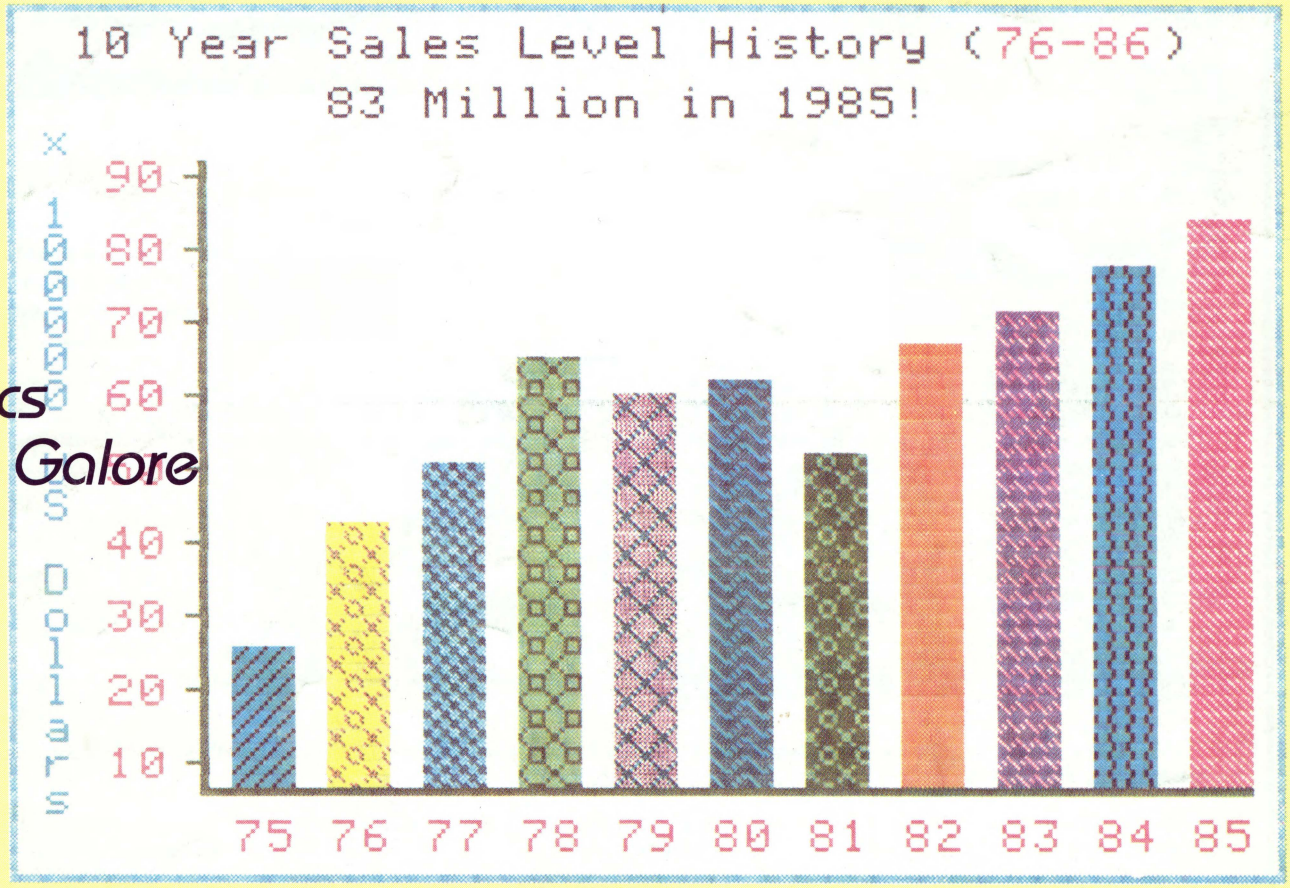
ON THREE®

The Magazine For Apple III Owners and Users

Volume 3 - Number 6

June 1986
$4.00

- **Music, Maestro, Please**
- **Rebirth** . . . What a 512K Upgrade Can Do
- **Printing Graphs**
- **Plus:** *Graphics Letters Galore*



- ***Writing Your First Pascal Program***

ON THREE's Desktop Manager
gives you a choice:

***The Desktop Manager* places all of the utilities you ever wanted... Appointment Calendar...Notepad...Calculator...Disk Utilities ...and more... into every single program you own, just like they were part of it. Instantly available from /// E-Z Pieces, VisiCalc, AppleWriter, BPI, and all other programs, the Desktop Manager will clear your desk pronto.**

"before"

"after"

While word processing, have you ever needed to multiply two numbers? Gotten upset because you have a few thousand dollars worth of computer equipment at your fingertips and still can't multiply two figures when *you* want to? Or, you're entering data in a spreadsheet and can't find either a scratchpad or a pen to jot a note. While you're digging under piles of paperwork, you probably mutter something unprintable under your breath.

Perhaps you are word processing and need to save a file, but aren't sure if the file name you want to save to exists. Too bad the program you're using won't catalog a disk. Similarly, you may need to save a file and discover there is no room left on your current work disk. You have blank disks, but none are formatted, and if you leave the word processor to format a disk with the System Utilities, all of your work will be lost.

Do you see yourself in this picture? How would you like to clear your desk of that old-fashioned calculator, the pens and paper, your appointment calendar and increase your productivity? *ON THREE's Desktop Manager* to the rescue! It will do these things and more. From within any Apple /// program, a keystroke will suspend your current program and display a window into the *Desktop Manager*. You can stop whatever you are doing, instantly go to the *Desktop Manager* and select any of the following:

- An Appointment Calendar. Enter appointment times or other activities at specific times, like "Call Johnson at 10:30 AM," or "5:00 PM Stop at supermarket. Pick up milk." At 10:30 AM that day a window will appear on your screen and display the first message and at 5:00 PM the second message will appear.

- A full feature Calculator (SIN, COS, TAN, EXP, LOG, LN, memory, base conversions and more). Change from decimal to hex to binary and back. A scrolling paper tape will show your last calculations.

- An easy to use, always there Notepad with full editing capability and jam-packed with features. You can jot page after page of notes to yourself and even print them out. You may never need to use a word processor again!

- An optional Disk Utilities module. Use it to Format Disks, List, Unlock, Delete, Rename and Copy Files. Most of the features of the System Utilities, available in a second instead of a minute.

- An optional ASCII Conversion Table which lists, in an easy to understand form, decimal and hexadecimal values for all the ASCII characters. Useful to determine special character sequences to send to your printer, or for programming.

Low Prices!
Desktop Manager.....$129 + $6 shipping
Disk Utilities .....$44.95 + $3 shipping
ASCII Conversion Table.$9.95 + $3 shipping

After noting a forthcoming meeting on the Appointment Calendar, totaling some figures you are working on, making a note to yourself about your upcoming vacation, or copying the files your boss needs, simply press ESCAPE and you are instantly back in your original program and nothing has changed from when you left it a moment ago. Even the cursor is blinking at the same place and you have saved loads of time.

The *Desktop Manager* also lets you use the mouse instead of cursor keys in any program. When you move the mouse around the screen, the cursor will follow, left, right, up and down. Clicking it also acts as an ESCAPE or RETURN key. You can even set up the *Desktop Manager* so that when you press the button, the *Desktop Manager* window will appear on the screen.

The *Desktop Manager* also has a clipboard, so you can transfer text from one screen or application to another. You may be doing calculations and want to transfer the results from the Calculator to a word processor. All you do is cut from the calculator and paste to the word processor file. Likewise, you can move an entire section of text from any file to the notepad or vice-versa.

The *Desktop Manager* was designed to be expandable. Here are some of the modules we will offer in the near future:

- Communications Package
- Spelling Checker (for /// E-Z Pieces)
- Graphics Charting
- Keyboard Macros

Note: The *Desktop Manager* requires 256K memory (512 recommended, since it uses about 40K), an *ON THREE O'Clock*, Apple Clock or compatible Apple /// clock chip.

Note: Clipboard text can not be transferred to Word Juggler documents, as Word Juggler does not use the .CONSOLE driver for reading the keyboard. However, it is possible to transfer text from Word Juggler to the clipboard.

Please call or write for information on the *Desktop Manager Programmers Toolkit*. This package lets you write modules for the Desktop Manager. Full instructions and examples include our routines to put a folder on the screen and move it, our line input routine, the time and date routine and full *Desktop Manager* internal documentation.

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ON THREE®
The Magazine For Apple /// Owners and Users

Volume 3, No. 6 June, 1986

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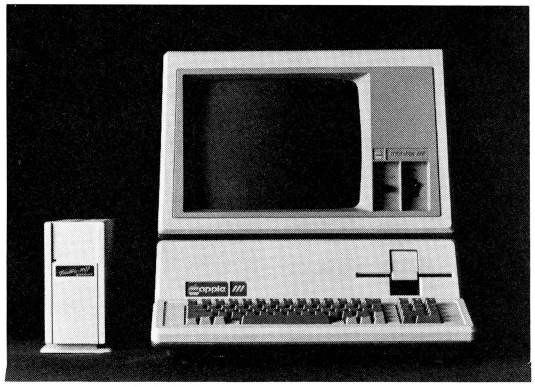
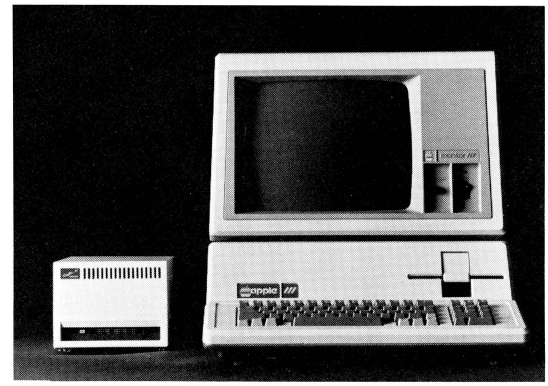
This month's cover demonstrates how easy it is to print color or black and white graphs with Draw ON ///.

ON THREE Presents...
a new line of high capacity Apple /// disk drives



10-20 MegaBytes

or



34 MegaBytes

***ON THREE* has exciting news for you! A brand new line of low-priced hard disk drives for the Apple ///.**

10-, 20- or even 34-MegaBytes (million characters) of very fast hard disk storage can be yours, priced so low you can't pass them up! These drives will allow you to consolidate all your files on a single disk and reduce the time you waste searching through stacks of floppies.

Combined with our **Selector /// Program Switching Utility**, you can place all (see the Selector ad) of your programs on a hard disk and put your floppy disks away forever. Think of how convenient it will be to be able to run any program from your hard disk—in just seconds.

All our hard drives are manufactured by Xebec—A leading manufacturer of hard disks for the Apple][. They come with a full one year parts and labor warranty, another mark of ***ON THREE* quality.**

Sider 10—Sider 20

You may have heard of the Sider 10 and Sider 20 for the Apple][. We have modified these drives to work in the Apple ///. They come complete with interface card, cabling, documentation and driver diskette, ready to run on your Apple ///.

The Sider 10 and 20 are attractively styled hard disk drives with a unique daisy-chain option that allows you to attach a second drive to the back of the first, just in case you ever outgrow the 20808 blocks on the Sider 10 or the 41616 blocks on the Sider 20.

Priced at only $999* for the Sider 10 and $1299* for the Sider 20, these drives are the best hard disk value on the market today!

Added Bonus: How would you like to be able to backup your entire hard disk in a matter of minutes? We will shortly be shipping the ***B-Sider***, a high speed, low cost tape backup to attach to the Sider 10 or Sider 20. Call for pricing and availability.

Xebec 9730 The Xebec 9730 is the Sider's big brother. With a capacity of 69,632 blocks (34-MegaBytes), it is one of the fastest disk drives on the market. If you have very large disk storage needs, the 9730 is the drive for you. Like the Sider drives, the 9730 comes with everything you need to get it running on your Apple ///.

The 9730 is only $1999* and is available right now from ***ON THREE.***

A Note On Large Hard Drives:

Since the Apple /// can only work with disk volumes up to 16-MegaBytes in size, each of our large hard drives (Sider 20 and 9730) have been split into two or more sections. Our 20-MegaByte disk is partitioned into a 16-MegaByte volume and a four-Megabyte volume. The 34-MegaByte disk is partitioned into two 16-MegaByte volumes and one two-MegaByte volume. Partitioning simply means you will have two or three disk volumes in one drive box.

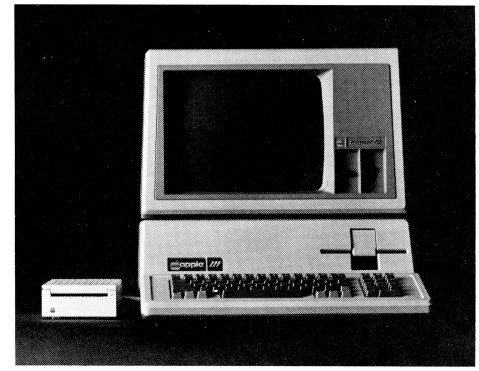
UniDisk ///.5 800K Micro-Floppy

The UniDisk ///.5 is an 800K 3.5 inch disk drive for the Apple ///. If you have a hard disk and hate to do backups, the UniDisk ///.5 is the ideal solution. You can backup an entire ProFile with just seven UniDisk micro-floppies. Faster than a normal disk drive, the UniDisk ///.5 is a great time-saver.

Even if you don't have a hard disk, wouldn't it be great to get rid of your regular floppy disks? The new 3.5 inch disks are great! They fit in purses, briefcases, and even shirt pockets much easier than standard 5¼ inch disks. With a hard plastic shell, they can take far more punishment than the easily destructible 5¼ inch diskettes. You can also use your diskettes on UniDisk-equipped Apple //e and //c computers. Since these same 3.5 inch disks are used on the Macintosh, a utility will be coming soon to transfer files to and from the Mac.

The ***ON THREE UniDisk ///.5*** comes complete and ready to run on an Apple ///, including drive, interface card, cabling, documentation and driver disk. A truly great buy, priced at only $499*.

If you already have a UniDisk for your Apple //e, the driver and diskette are available separately at $50 plus shipping.



Shipping charges extra:** Sider 10, Sider 20 and Xebec 9730: **$35.** UniDisk ///.5: **$10.** UniDisk ///.5 documentation and driver disk: **$3.

To order, call (805) 644-3514 or write:
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We accept Visa, Mastercard, and American Express. There is a 3% surcharge on orders charged to American Express. California residents add 6% sales tax (on products only).

The Editor Dishes it Out:

Apple.Sauce

val j. golding

Pleas, Please

It is disappointing to begin a new column with a pitch or plea covering subjects we've previously discussed, but we have two items that are critical to the ongoing publication of *ON THREE.* We have had virtually no response to our requests for information on the material *you* want to see in *ON THREE.* We are not asking for a full-blown reader survey, but we are looking for guidance. We have available reviews on new and old products, how to do it articles, software and hardware, tutorials, technical information, etc. Our job, of course, is to provide a pot-pourri of what you wish to read. But we can't go it alone; we need a starting point that only *you* can provide. Make no mistake. We love to see those letters that say "Thanks for the great job, etc..." but they tell us only that we're doing *something* right. The question is what.

Secondly, we started this job with a backlog of material of all types, but by producing *ON THREE* on a current and monthly basis, that backlog is rapidly diminishing to a stack of folders labeled "Published xxx 1986." What we are really trying to say is that you, the reader, hold the future of *ON THREE* in your hands. The operative word is *share.* We want to encourage you, as a reader, to become an author. You need not have concerns about the grammar or structure of your material; that is part of our function as editor. Let's digress for a few lines; we'd like to explain again what *ON THREE* is.

ON THREE is a profit-making corporation which publishes a magazine of the same name. *ON THREE* the company is dedicated to keeping the Apple /// from becoming obsolete by constantly developing and producing the finest available software and hardware products. That in itself should be sufficient, but we go far beyond that basic game plan. Long ago, we decided if the /// is continue to be a viable and productive computer, then not only must we provide new and innovative products, we must somehow be able to offer our customers—and all Apple /// users—the support for their machine and the multitude of commercial products available for it that their producers for whatever economic or other reasons have now declined to follow through on.

This is where *ON THREE* magazine enters the picture. As we said earlier, we are a profit-making corporation. What more can we do to not only increase our profitability, but to serve the Apple /// world in general. Aha... the perfect media to ballyhoo our own products—and there's not a thing wrong with that—but to provide a medium where our customers and Apple /// users alike can make inquiries, no matter the subject or the product involved, and obtain not only answers to their questions, but to expand their general knowledge of the Apple ///. This concept is embodied in *ON THREE*, the oldest Apple ///-specific magazine, now entering its third year of publication. We want you to read about and purchase our products. We also want you to read about other Apple /// subjects of interest. And if our goal is to be achieved, it must be through a share concept.

We want *you* to share... your experiences, your hints, the programs you have written to resolve your own needs and for which commercial software was not available. So how about it, guys and gals? Some of you out there must have something you can share with our other readers. We don't pay a small fortune for our published material, but on the other hand, our $25 per page rate will keep you in floppy disks for some time to come, not to mention the benefits of seeing your name in print.

A Bitter Pill

It is a sad state of affairs when two of the three major suppliers of Apple /// products must approach the point of exchanging blows. Because we make the effort, we sincerely believe *ON THREE* products are among the best available for the Apple ///. But we do not take kindly to competitive advertisements which, instead of promoting the advantages of their product, attempt to knock (on a personal and unbusinesslike level) those of a competitor. We put *ON THREE* products on a pedestal and welcome honest comparisons. We would not hesitate for a moment to compare the features of any of our products with those of a competitor, on a yes/no basis. And we know which product would come out on top.

But we cannot handle inuendos and insinuations. With the lack of support and new products for the Apple /// from other manufacturers, there is plenty of room for independent developers such as ourselves to offer sophisticated enhancements for the /// without encountering erroneous adverse publicity. (Readers interested in further pursuing this subject are referred to the article "Controversy on The Desktop," on page 4 of the May *ON THREE).*

While it is true that we have been forced into the position of having to defend our name and reputation, our own feeling is to let bygones be bygones and to wish that the few remaining Apple /// developers can work together in harmony to offer the widest possible range of new and state-of-the-art Apple /// products. Whether you agree or disagree, your comments and input are desired.

Spacing Out

The subhead above is correct; we have run out of space while babbling away. However, we can't leave without, in our one remaining paragraph, pointing you in the general direction of two most interesting articles. In *Music, Maestro, Please,* **Steven E. Jungst** brings two BASIC program to our pages which allow you to capture in DATA statements the seven-octave range of the Apple /// and the .Audio driver, while **John Lomartire** is back on the subject of printers, this time with ideas for *Printing Good Graphs,* all of which brings us down to our very last word: later...

Smart users select the

Selector ///

The smart Program Switching utility

from ON THREE

- **Switch to Selector /// now**
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  - ***Business Basic***
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  - ***/// E-Z Pieces***

  . . .and more

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***Selector ///* is a state-of-the art program switcher.**

A program switcher is a utility that functions as your computerized personal secretary. Its purpose is to make instantly available to you, without rebooting, a wide range of applications programs stored on your hard disk or high capacity floppy (such as UniDisk). Programs such as AppleWriter ///, Quick File /// and more than two dozen others.

Each time you require a different application, just tell your personal secretary, *Selector ///*, with a couple of keystrokes, and it will be there in a couple of seconds. No need to find your way through sub-directories or paw through a stack of floppies.

When you start your system up in the morning, just boot *Selector ///* and that's it for the day. Smart users are switching to and with *Selector ///* now.

Selector /// works with all of these programs:

- ✔ Access ///
- ✔ Access 3270
- ✔ Advanced VisiCalc
- ✔ Apple][Emulation
- ✔ AppleFile ///
- ✔ Apple /// Pascal
- ✔ AppleWriter ///
- ✔ Backup ///
- ✔ BPI
- ✔ Business Basic
- ✔ Business Graphics
- ✔ Cobol
- ✔ Draw ON ///
- ✔ Easyterm
- ✔ Graph'n Calc
- ✔ Haba Merge
- ✔ Keystroke Data Base *
- ✔ Keystroke Report Generator *
- ✔ Lazarus ///
- ✔ Multiplan
- ✔ Nexus
- ✔ PFS: File *
- ✔ PFS: Graph *
- ✔ PFS: Report *
- ✔ Quick File ///
- ✔ Script ///
- ✔ Senior Analyst ///
- ✔ VisiCalc ///
- ✔ /// E-Z Pieces

*Indicates boot disk required in internal drive.

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Magical Melody-Making Programs:

Music, Maestro, Please

steven e. jungst

There has been an Apple /// in the department where I work for several years now, and I have used it extensively. I always knew the thing could beep when I did something wrong (I've almost worn out the beeper at the office), but it wasn't until I bought an Apple /// "for the family" that I discovered the audio driver. I hadn't suspected there was a speaker with a seven octave range lurking in there just waiting to be put to work. Not many other people suspect its presence either, and that may account for some of the fun of being able to use it and demonstrate it to others.

It takes a little time to learn how the system works, but once the principles are understood, it is easy to convert sheet music to "computer music". Within an hour of the time I discovered the driver, my 11 year old daughter had her flute book out and was transposing from notes on the scale to digits in the computer. Our first attempts met with a surprising amount of success, but it wasn't until I got organized that I really began to have fun with the audio system.

It occurred to me that it would be nice to have a program that would allow me to compose and save music, and another program to keep track of my compositions and play them for me whenever I wanted. To that end, I wrote a program I have named MUSICMAKER which allows me to compose a piece of music, listen to it to be sure I have it the way I want it, and then save the composition on disk for later use. I also wrote a second program named MUSICPLAYER which indexes up to 42 compositions and allows me to select the one I want to play. Both programs make use of information which can be found in the Standard Device Drivers Manual, and both use the short program listed there to convert data values for the volume, pitch, and duration of a note to an ASCII string which can be utilized by the audio driver. It is necessary to supply the following information for each note to be played:

1. Mode (There is no choice here, the value must be 128)
2. Volume (Values from 0 to 63 are possible. At 0, there is no sound, and at 63, the tone is loudest.)
3. Count (Or pitch of the note from the manual. The highest possible pitch is 100, and the lowest is 16383.)

```
1   REM****************************************
2   REM*                                      *
3   REM*  MUSIC MAKER  by  Steven E. Jungst   *
4   REM*                                      *
6   REM* This program allows the user to com-
    pose music, play the composition to check
    for errors and then save the music onto a
    disk file for later use with the MUSIC
    PLAYER program.                          *
8   REM*                                      *
9   REM****************************************
19   REM ******* Print first screen
20   HOME
30   PRINT TAB(20)"WELCOME TO MUSIC MAKER"
40   PRINT
50   PRINT"The MUSIC MAKER is a program which
     will allow you to:
60   PRINT TAB(15)"1)  'Compose' music
70   PRINT TAB(15)"2)   Play your composition"
80   PRINT TAB(15)"3)   Save your composition
     on a file for use with
90   PRINT TAB(20)"the MUSIC PLAYER program."
100   PRINT:PRINT:PRINT
110   PRINT"In order to compose music, you wil
     l have to stop this program, and"
120   PRINT"enter the music in the form of dat
     a statements at the end of the"
130   PRINT"program.  You can then rerun the p
     rogram, and elect either to play"
140   PRINT"what you have composed, or save th
     e music for later use."
150   PRINT:PRINT:PRINT
160   PRINT"When you are ready to proceed, Pre
     ss return";
170   INPUT a$
179   REM ******* Print second screen
180   HOME
190   PRINT:PRINT
200   PRINT TAB(20)"Enter the number of the ac
     tivity you want."
210   PRINT
220   PRINT TAB(30)"1.   COMPOSE MUSIC"
230   PRINT
240   PRINT TAB(30)"2.   PLAY COMPOSITION TO C
     HECK FOR ERRORS"
250   PRINT:PRINT TAB(30)"3.   SAVE COMPOSITIO
     N FOR LATER USE"
260   PRINT:PRINT
270   INPUT n
278   REM ******* Branch to Compose Music Sect
     ion, Play Composition
279   REM ******* Section, or Save Composition
      Section
280   ON n GOTO 290,750,880
289   REM ******* Begin Compose Music Section
290   HOME
300   PRINT"Do you want instructions (Y or N);
310   INPUT a$
320   IF a$="N" OR a$="n" THEN GOTO 700
330   HOME
340   PRINT"  In order to compose music, you m
     ust enter numerical data to"
350   PRINT"indicate the pitch and duration of
      each note.  To understand"
360   PRINT"more about that, you should see th
     e Standard Device Drivers"
370   PRINT"manual.  A table of musical notes
     and their associated count"
```

4. Time (Or duration of the note with 0 being the shortest possible duration, and 300 being the longest.)

To cut down on the amount of data that must be entered, Mode and Volume can be specified as constants at the beginning of a program. This leaves pitch and duration as the only two variables that must be entered for each note.

Using The MUSIC MAKER Program

Since I don't have an external disk drive with my system, both programs are designed using only the built in disk drive. The MUSIC MAKER program contains instructions on how to use the program. The user is asked to select from 3 choices:

1 Compose Music
2 Play your composition
3 Save your composition on a file for use with the MUSIC PLAYER Program

If the user elects to compose music, the program will give instructions on the format for the data. All data must be entered beginning in line 2000. That line must contain a partial pathname to be used in saving the data. Additional data lines contain values for pitch and duration for each of the notes in the composition. Once this data has been entered, the program can be rerun. If the user selects item 2 in the menu, the data that has been entered will be played. Once the data has been played, the program returns to the menu to await further instructions. If the user wants to make corrections, they can be made at that time. If the composition sounded the way it was supposed to, the user can select item 3 from the menu, and the data will be saved using the pathname that was supplied in line 2000. Once the data has been saved, the program will display the partial pathname under which the data was saved and indicate that the MUSIC PLAYER program should be updated to include the pathname, and a title for the tune that has been saved. To get budding musicians started, the following data sets have been included. After each data set has been saved, the user should remember to delete lines 2000-9998 in the MUSIC MAKER Program before beginning on another composition.

Shoo Fly

```
2000  data  shoofly
2010  data  1298,10,1636,20,1457,
            10,1298,10,1226,10,
            1457,20,1457,10
2020  data  1733,20,1636,10,1457,
            10,1298,10,1636,20,
            1298,10,1636,20
2030  data  1457,10,1298,10,1226,
            10,1457,20,1092,10,
            1092,10,1092,10
2040  data  1226,10,1298,10,1457,
            10,1636,30,-9,-9
```

Aloha Oe

```
2000  data  aloha
2010  data  2184,15,1946,30,1636,
            30,1226,45,1946,15,
            2184,30,1636,30
2020  data  1298,45,1636,15,1733,
            15,1946,15,1733,15,
            1636,15,1457,15
2030  data  1457,15,1226,15,1226,
            15,1298,60,1636,45,
            2184,15,1946,30
2040  data  1636,30,1226,45,1946,
            15,2184,15,2184,15,
            1636,15,1636,15
2050  data  1298,45,1636,15,1733,
            45,1636,15,1298,15,
            1457,30,1733,15
2060  data  1636,75,-9,-9
```

```
380  PRINT"values for producing the desited n
     otes is shown on page 133."
390  PRINT
400  PRINT"Your composition should begin on l
     ine 2000, and can continue to"
410  PRINT"to line 9998.  Each line must begi
     n with a new line number,"
420  PRINT"and the word data.  That is, the b
     eginning of each line will"
430  PRINT" look like the following line:"
440  PRINT
450  PRINT TAB(20)"#### data       where ####
      indicates a number from"
460  PRINT TAB(36)"2000 to 9998 inclusive."
470  PRINT:PRINT
480  PRINT"Following the word data should be
     the necessary count and"
490  PRINT"time for each note.  All numbers m
     ust be seperated by a comma, and"
500  PRINT"there should be no comma at the en
     d of each data line."
510  PRINT"The computer will provide a prompt
      symbol ) at the beginning"
520  PRINT"of each new line.  When you see th
     e prompt, you can begin"
530  PRINT"composing."
540  PRINT:PRINT"Press return to continue";
550  INPUT a$
560  HOME
570  PRINT"Line number 2000 should contain th
     e file name you will use to"
580  PRINT"save the composition.  For example
     "
590  PRINT
600  PRINT TAB(20)"2000 DATA threekings"
610  PRINT
620  PRINT"could be used if you were composin
     g the song We Three Kings."
630  PRINT:PRINT
640  PRINT"In order to enter a rest in the mu
     sic, you should enter the value"
650  PRINT"0 for the count.  Enter the requir
     ed duration for the time value."
660  PRINT:PRINT
670  PRINT"At the end of the composition, ent
     er -9,-9 in the last data line."
680  PRINT"Press return to proceed."
690  INPUT a$
700  HOME
710  PRINT"You may now begin composing."
720  PRINT"When you have completed your compo
     sition, type run"
730  PRINT"and press return."
738  REM ******* Transfer out of program so c
     omposition data can be
739  REM ******* entered beginning at line nu
     mber 2000
740  GOTO 10000
749  REM **** Begin Play Composition Section
750  mode%=128
760  vol%=63
770  RESTORE
780  READ file$
790  READ pitch%,time%
799  REM ******* Check for end of data
800  IF pitch%=-9 THEN GOTO 180
810  IF pitch%=0 THEN vol%=0
819  REM ******* Open output file to audio
```

Camptown Races

```
2000  data  camptown
2010  data  2597,10,2597,10,3088,
            10,2597,10,2314,10,
            2597,10,3088,20
2020  data  3088,10,3467,30,3088,
            10,3467,30,2597,10,
            2597,10,3088,10
2030  data  2597,10,2314,10,2597,
            10,3088,25,3467,20,
            3088,10,3467,10
2040  data  3891,35,0,10,3891,20,
            3088,10,2597,10,1946,
            30,2314,20
2050  data  1946,10,2314,10,2597,
            30,2597,10,2597,10,
            3088,10,2597,10
2060  data  2314,10,2597,10,3088,
            25,3467,25,3088,10,
            3467,10,3891,45
2070  data  -9,-9
```

We Three Kings of Orient Are

```
2000  data  threekings
2010  data  1298,30,1457,15,1636,
            30,1946,15,1733,15,
            1636,15,1733,15
2020  data  1946,45,1298,30,1457,
            15,1636,30,1946,15,
            1733,15,1636,15
2030  data  1733,15,1946,45,1636,
            30,1636,15,1457,30,
            1457,15,1298,30
2040  data  1298,15,1092,15,1226,
            15,1298,15,1457,15,
            1298,15,1457,15
2050  data  1636,30,1733,15,1946,
            60,-9,-9
```

We Wish You a Merry Christmas

```
2000  data  wewish
2010  data  1457,12,1092,12,1092,6,
            973,6,1092,6,1157,6,
            1298,12
2020  data  1298,12,1298,12,973,12,
            973,6,867,6,973,6,1092,6
2030  data  1157,12,1457,12,1457,12,
            867,12,867,6,818,6,867,6
2040  data  973,6,1092,12,1298,12,
            1457,6,1457,6,1298,12,
            973,12
2050  data  1157,12,1092,24,1457,12,
            1092,12,1092,6,973,6,
            1092,6
2060  data  1157,6,1298,12,1298,12,
            1298,12,973,12,973,6,
            867,6
2070  data  973,6,1092,6,1157,12,
            1457,12,1457,12,867,12,
            867,6
2080  data  818,6,867,6,973,6,1092,
            12,1298,12,1457,6 1457,6
2090  data  1298,12,973,12,1157,12,
            1092,30,-9,-9
```

Oh Little Town of Bethlehem

```
2000  data  bethlehem
2010  data  2314,20,2314,20,2314,20,
            2451,20,2314,20,1946,20,
            2184,20
2020  data  3467,20,2597,20,2915,20,
            3088,10,2915,10,2597,20,
            3891,20
2030  data  2314,60,2314,20,2314,20,
            2314,20,1733,20,1946,20,
            1946,20
2040  data  2184,20,3467,20,2597,20,
            2915,20,3088,10,2915,10,
            2314,20
2050  data  2957,20,2915,60,2314,20,
            2314,20,2314,20,2597,20,
            2915,20
2060  data  3088,40,3088,20,3088,20,
            3467,20,3088,20,2915,20,
            2597,20
2070  data  2314,60,2314,20,2314,20,
            2314,20,2451,20,2314,20,
            1946,20
2080  data  2184,20,3467,20,1733,20,
            1946,20,2915,20,2314,35,
            2597,10
2090  data  2915,60,-9,-9
```

Love Makes the World Go 'Round

```
2000  data  lovemakes
2010  data  2915,45,2314,30,1946,15,
            1733,30,1946,15,2915,45,
            2915,15
2020  data  2314,15,1733,15,1946,30,
            3088,15,1946,75,0,12,
            1544,15
2030  data  1544,7,1457,7,1544,45,
            2184,15,1733,15,1946,60,
            0,15
2040  data  1946,15,1733,15,1544,15,
            1733,30,2184,15,2314,75,
            0,15
2050  data  2915,45,2314,30,1946,15,
            1733,30,1946,15,2915,45,
            2915,15
2060  data  2314,15,1733,15,1946,30,
            3088,15,1946,75,0,12,
            1544,15
2070  data  1544,7,1457,7,1544,45,
            2184,15,1733,15,1946,60,
            0,15
2080  data  1946,15,1544,15,1733,15,
            2184,30,3088,15,2915,75,
            -9,-9
```

```
820   OPEN#1 AS OUTPUT,".audio"
828   REM * Convert data to an ASCII string
      which can be utilized by the speaker.
829   REM ******* by the speaker
830   PRINT#1;CHR$(mode%);CHR$(vol%);
840   PRINT#1;CHR$(pitch%-256*INT(pitch%/256))
      ;CHR$(INT(pitch%/256));
850   PRINT#1;CHR$(time%-256*INT(time%/256));C
      HR$(INT(time%/256));
860   vol%=63
870   GOTO 790
879   REM ****Begin Save Composition Section
880   HOME
890   RESTORE
899   REM ******* Determine name of file where
       data will be saved
900   READ FILE$
909   REM ******* Set computer to work only wi
      th built in disk drive
910   PREFIX$=".d1/"
919   REM ******* Specify name and kind of fil
      e to be created
920   CREATE file$, DATA
930   OPEN#1 AS OUTPUT,file$
939   REM ******* Read composition from data s
      tatements in program
940   READ PITCH,TIME
949   REM ******* Transfer data to disk
950   WRITE#1;pitch,time
960   IF PITCH=-9 THEN GOTO 980
970   GOTO 940
979   REM ******* Print closing screen
980   HOME:CLOSE#1
990   PRINT"Your composition has been saved on
       the music disk, using the"
1000   PRINT"file name '";file$;"'."
1010   PRINT:PRINT
1020   PRINT"You should update your MUSIC PLAY
      ER program by entering the"
1030   PRINT"composition title and file name i
      n the appropriate places."
1031   REM*
1032   REM**************************************
1033   REM*  Enter composition data beginning
       in line 2000.  After a composition has
       been saved on file, be sure to delete
       lines 2000-9998 before beginning a new
       composition.                          *
1036   REM**************************************
1037   REM*
9999   REM ******* Reset prefix so access to B
      asic Language disk is possible
10000   PREFIX$="/basic/"
10010   END
```

```
Somewhere My Love
2000  data  somewhere
2010  data  3088,45,2597,30,1636,15,
            1544,75,0,15,2061,15,
            1733,15
2020  data  1946,15,2597,30,2754,15,
            2915,75,0,15,2915,45,
            2597,30
2030  data  2314,15,2061,75,0,15,
            2314,15,2597,15,2751,15,
            2597,30
2040  data  1457,15,1544,75,3088,45,
            2597,30,1636,15,1544,75,
            0,15
2050  data  2061,15,1733,15,1946,15,
            2597,30,2754,15,2915,75,
            0,15
2060  data  2915,45,2597,30,2314,15,
            2061,75,0,15,2314,15,
            2597,15
2070  data  2751,15,2597,30,1457,15,
            1544,75,2314,45,1946,90,
            1733,15
2080  data  1946,15,2061,15,1946,45,
            2314,45,2597,75,0,15,
            2597,45
2090  data  2184,75,2061,15,1946,15,
            2061,15,1946,15,1733,45,
            1636,45
2090  data  1457,75,0,15,3088,45,
            2597,30,1636,15,1544,75,
            0,15
2100  data  2061,15,1733,15,1946,15,
            2597,30,2751,15,2915,75,
            0,15
2110  data  2915,45,2597,30,2314,15,
            2061,75,0,15,2314,15,
            2597,15
2120  data  2751,15,2597,30,1457,15,
            1544,75,0,15,3088,45,
            2597,30
2130  data  1636,15,1544,75,0,15,
            2061,15,1733,15,1946,15,
            2597,30
2140  data  2751,15,2915,75,0,15,
            2915,45,2597,30,2314,15,
            2061,75
2150  data  0,15,2314,15,2597,15,
            2751,15,2915,90,1733,45,
            1946,75,-9,-9

Release Me
2000  data  release
2010  data  1946,36,2061,12,2184,12,
            2314,12,1946,12,2184,12,
            3467,84
2020  data  3467,12,3088,36,3462,12,
            2891,12,2184,12,2184,12,
            1946,12
2030  data  2314,72,0,12,1946,12,
            1946,36,2061,12,2184,12,
            2314,12
2040  data  1946,12,2184,12,3467,72,
            0,12,1733,12,1946,12,
            2314,24
2050  data  2184,12,2314,12,3891,12,
            3088,12,2597,12,2915,48,
            0,48
2060  data  1946,36,2061,12,2184,12,
            2314,12,1946,12,2184,12,
            3467,84
2070  data  3467,12,3088,36,3462,12,
            3891,12,2184,12,2184,12,
            1946,12
2080  data  2314,72,0,12,1946,12,
            1946,36,2061,12,2184,12,
            2314,12
2090  data  1946,12,2184,12,3467,72,
            0,12,1733,12,1946,12,
            2314,24
2100  data  2184,12,2314,12,3891,12,
            3088,12,2597,12,2915,84,
            -9,-9
```

```
1   REM****************************************
2   REM*                                      *
3   REM*  MUSIC PLAYER  by  Steven E. Jungst  *
5   REM*                                      *
6   REM* This program plays music which has
    been composed and saved using the MUSIC
    MAKER program.                           *
7   REM*                                      *
8   REM****************************************
9   REM
18   REM*** P contains the pitch of each note
19   REM D contains the duration of each note
20   DIM p(1000),d(1000)
29   REM******* Set computer to work only with
     built in disk drive
30   PREFIX$=".d1/"
39   REM******* Print Main Menu
40   HOME
50   PRINT
60   PRINT
70   PRINT TAB(25)"Welcome to MUSIC PLAYER"
80   PRINT:PRINT
90   PRINT"Using this program, you can play an
    y song which has previously been"
100   PRINT"stored on a disk using the MUSIC M
     AKER program."
110   PRINT:PRINT
120   PRINT"You can select from the following
     music categories.  Enter the"
130   PRINT"number of the category you want."
140   PRINT:PRINT
150   PRINT TAB(20)"1.   Familiar tunes"
160   PRINT
170   PRINT TAB(20)"2.   Christmas Favorites"
180   PRINT
190   PRINT TAB(20)"3.   Other melodies"
200   PRINT
210   PRINT TAB(20)"4.   Quit"
220   PRINT:INPUT n
230   ON n GOTO 240,830,1410,2190
238  REM*******  FAMILIAR TUNES SECTION *****
239  REM*******  Print Familiar Tunes Menu
240  HOME
250  PRINT:PRINT
260  PRINT TAB(25)"FAMILIAR TUNES"
270  VPOS=6:PRINT"1.  Shoo Fly"
280  VPOS=8:PRINT"2.  Aloha Oe"
290  VPOS=10:PRINT"3.  Camptown Races"
297  REM* The words "Not Yet Composed" in the
     following lines can be replaced with
     titles as new tunes are composed and
     saved with MUSIC MAKER.
300  VPOS=12:PRINT"4.  Not Yet Composed"
310  VPOS=14:PRINT"5.  Not Yet Composed"
320  VPOS=16:PRINT"6.  Not Yet Composed"
330  VPOS=18:PRINT"7.  Not Yet Composed"
340  VPOS=6:HPOS=45:PRINT"8.  Not Yet Compose
     d"
350  VPOS=8:HPOS=45:PRINT"9.  Not Yet Compose
     d"
360  VPOS=10:HPOS=44:PRINT"10.  Not Yet Compo
     sed"
370  VPOS=12:HPOS=44:PRINT"11.  Not Yet Compo
     sed"
380  VPOS=14:HPOS=44:PRINT"12.  Not Yet Compo
     sed"
390  VPOS=16:HPOS=44:PRINT"13.  Not Yet Compo
     sed"
400  VPOS=18:HPOS=44:PRINT"14.  Not Yet Compo
     sed"
410  VPOS=20:HPOS=22:PRINT"15.  Return to Mai
     n Menu"
420  VPOS=22:PRINT"What is your selection num
     ber";
430  INPUT sel
440  IF sel>7 GOTO 460
450  ON sel GOTO 480,500,520,540,560,580,600
460  sel=sel-7
470  ON sel GOTO 620,640,660,680,700,720,740,
     760
```

Using the MUSIC PLAYER Program

Since the MUSIC PLAYER Program is designed to play music that has already been stored on a disk, it will not work until data has been saved using the MUSIC MAKER Program. Once that has been done, the MUSIC PLAYER Program can be used to select and play any data that has been saved. After booting the BASIC Language disk, the disk containing the program should be placed in the built in disk drive.

The program is initially set up to play the nine tunes for which data has been provided. These tunes are divided into the categories of Familiar Tunes, Christmas Favorites, and Other Melodies. When the program is run, it will ask the user to select from one of these categories. For people whose tastes run more toward Bach or Beethoven, the program could be easily changed to accommodate those preferences.

Once a category is selected, the program will print a menu of available tunes in that category. In addition to the 3 tunes in each category that are provided, there are spaces for 11 additional titles to be added. Therefore, selection numbers 5 through 14 in each category simply say Not Yet Composed.

As new tunes are composed and saved using MUSIC MAKER, the Not Yet Composed notation can be changed to the desired song title. The category and line numbers where song titles can be placed are listed below.

Category	Title line nbrs	pathname line nbrs
Familiar Tunes	270-400	479-740
Christmas Favorites	850-990	1059-1330
Other Melodies	1440-1570	1649-1920

In addition to changing the title in the program, the pathname used to save the data must be entered in the appropriate place. Pathname locations are also shown above. Remark statements in the program will aid in locating the correct line for the change. The line to be changed will contain the letters "nyc" which stands for not yet composed. These letters should be replaced with the path name used to store the tune. Once this is done, the MUSIC PLAYER program will search the data sets stored until it finds the one requested, load the data, and play it. After the data has been played, the program returns the user to the most recently used category for another selection.

The Apple /// audio driver may not produce sounds like the Boston Symphony, but it is fun to use just the same.

```
479   REM ******* Selection 1
480   a$="shoofly"
490   GOTO 770
499   REM ******* Selection 2
500   a$="aloha"
510   GOTO 770
519   REM ******* Selection 3
520   a$="camptown"
530   GOTO 770
537   REM ******* The letters nyc should be
      replaced by the file name used to store
      a tune composed using MUSIC MAKER
539   REM ******* Selection 4
540   a$="nyc"
550   GOTO 770
559   REM ******* Selection 5
560   a$="nyc"
570   GOTO 770
579   REM ******* Selection 6
580   a$="nyc"
590   GOTO 770
599   REM ******* Selection 7
600   a$="nyc"
610   GOTO 770
619   REM ******* Selection 8
620   a$="nyc"
630   GOTO 770
639   REM ******* Selection 9
640   a$="nyc"
650   GOTO 770
659   REM ******* Selection 10
660   a$="nyc"
670   GOTO 770
679   REM ******* Selection 11
680   a$="nyc"
690   GOTO 770
699   REM ******* Selection 12
700   a$="nyc"
710   GOTO 770
719   REM ******* Selection 13
720   a$="nyc"
730   GOTO 770
739   REM ******* Selection 14
740   a$="nyc"
750   GOTO 770
760   GOTO 40
769   REM ******* Prevents attempt to load a
      une that has not been composed
770   IF a$<>"nyc" THEN GOTO 2000
780   VPOS=23:PRINT"THAT SELECTION HAS NOT YET
       BEEN COMPOSED"
790   FOR z=1 TO 1400:NEXT z
800   VPOS=23:PRINT"
                    "
810   VPOS=22:HPOS=31:PRINT"  "
820   GOTO 420
827   REM*******  CHRISTMAS FAVORITES SECTION
829   REM* Print Christmas Favorites Tune Menu
830   HOME
840   PRINT TAB(25)"CHRISTMAS FAVORITES"
850   VPOS=6:PRINT"1.  We Three Kings"
860   VPOS=8:PRINT"2.  Little Town of Bethlehe
      m"
870   VPOS=10:PRINT"3.  We Wish You a Merry Ch
      ristmas"
877   REM* The words "Not Yet Composed" in the
      following lines can be replaced with
      titles as new tunes are composed and
      saved with MUSIC MAKER.
880   VPOS=12:PRINT"4.  Not Yet Composed"
890   VPOS=14:PRINT"5.  Not Yet Composed"
900   VPOS=16:PRINT"6.  Not Yet Composed"
910   VPOS=18::PRINT"7.  Not Yet Composed"
920   VPOS=6:HPOS=45:PRINT"8.  Not Yet Compose
      d"
930   VPOS=8:HPOS=45:PRINT"9.  Not Yet Compose
      d"
940   VPOS=10:HPOS=44:PRINT"10.  Not Yet Compo
      sed"
950   VPOS=12:HPOS=44:PRINT"11.  Not Yet Compo
      sed"
960   VPOS=14:HPOS=44:PRINT"12.  Not Yet Compo
      sed"
970   VPOS=16:HPOS=44:PRINT"13.  Not Yet Compo
      sed"
```

```
980   VPOS=18:HPOS=44:PRINT"14.  Not Yet Compo
      sed"
990   VPOS=20:HPOS=22:PRINT"15.  Return to Mai
      n Menu"
1000   VPOS=22:PRINT"What is your selection nu
      mber";
1010   INPUT sel
1020   IF sel>7 GOTO 1040
1030   ON sel GOTO 1060,1080,1100,1120,1140,11
      60,1180
1040   sel=sel-7
1050   ON sel GOTO 1200,1220,1240,1260,1280,13
      00,1320,1340
1059   REM ******* Selection 1
1060   a$="threekings"
1070   GOTO 1350
1079   REM ******* Selection 2
1080   a$="bethlehem"
1090   GOTO 1350
1099   REM ******* Selection 3
1100   a$="wewish"
1110   GOTO 1350
1117   REM ******* The letters nyc should be
       replaced by the file name used to store
       a tune composed using MUSIC MAKER
1119   REM ******* Selection 4
1120   a$="nyc"
1130   GOTO 1350
1139   REM ******* Selection 5
1140   a$="nyc"
1150   GOTO 1350
1159   REM ******* Selection 6
1160   a$="nyc"
1170   GOTO 1350
1179   REM ******* Selection 7
1180   a$="nyc"
1190   GOTO 1350
1199   REM ******* Selection 8
1200   a$="nyc"
1210   GOTO 1350
1219   REM ******* Selection 9
1220   a$="nyc"
1230   GOTO 1350
1239   REM ******* Selection 10
1240   a$="nyc"
1250   GOTO 1350
1259   REM ******* Selection 11
1260   a$="nyc"
1270   GOTO 1350
1279   REM ******* Selection 12
1280   a$="nyc"
1290   GOTO 1350
1299   REM ******* Selection 13
1300   a$="nyc"
1310   GOTO 1350
1319   REM ******* Selection 14
1320   a$="nyc"
1330   GOTO 1350
1340   GOTO 40
1349   REM ******* Prevents attempt to load a
       tune that has not been composed
1350   IF a$<>"nyc" THEN GOTO 2000
1360   VPOS=23:PRINT"THAT SELECTION HAS NOT YE
       T BEEN COMPOSED"
1370   FOR Z=1 TO 1400:NEXT z
1380   VPOS=23:PRINT"
                     "
1390   VPOS=22:HPOS=31:PRINT"  "
1400   GOTO 1000
1408   REM*******  OTHER MELODIES SECTION ****
1409   REM*******  Print Other Melodies Menu
1410   HOME
1420   PRINT:PRINT
1430   PRINT TAB(25)"OTHER MELODIES"
1440   VPOS=6:PRINT"1.  Somewhere My Love"
1450   VPOS=8:PRINT"2.  Love Makes the World G
       o 'Round"
1460   VPOS=10:PRINT"3.  Release Me"
1467   REM The words "Not Yet Composed" in the
       following lines can be replaced with
       titles as new tunes are composed and
       saved with MUSIC MAKER.
1470   VPOS=12:PRINT"4.  Not Yet Composed"
1480   VPOS=14:PRINT"5.  Not Yet Composed"
1490   VPOS=16:PRINT"6.  Not Yet Composed"
1500   VPOS=18::PRINT"7.  Not Yet Composed"
1510   VPOS=6:HPOS=45:PRINT"8.  Not Yet Compos
       ed"
1520   VPOS=8:HPOS=45:PRINT"9.  Not Yet Compos
       ed"
1530   VPOS=10:HPOS=44:PRINT"10.  Not Yet Comp
       osed"
1540   VPOS=12:HPOS=44:PRINT"11.  Not Yet Comp
       osed"
1550   VPOS=14:HPOS=44:PRINT"12.  Not Yet Comp
       osed"
1560   VPOS=16:HPOS=44:PRINT"13.  Not Yet Comp
       osed"
1570   VPOS=18:HPOS=44:PRINT"14.  Not Yet Comp
       osed"
1580   VPOS=20:HPOS=22:PRINT"15.  Return to Ma
       in Menu"
1590   VPOS=22:PRINT"What is your selection nu
       mber";
1600   INPUT sel
1610   IF sel>7 GOTO 1630
1620   ON sel GOTO 1650,1670,1690,1710,1730,17
       50,1770
1630   sel=sel-7
1640   ON sel GOTO 1790,1810,1830,1850,1870,18
       90,1910,1930
1649   REM ******* Selection 1
1650   a$="somewhere"
1660   GOTO 1940
1669   REM ******* Selection 2
1670   a$="lovemakes"
1680   GOTO 1940
1690   a$="release"
1699   REM ******* Selection 3
1700   GOTO 1940
1707   REM ******* The letters nyc should be
       replaced by the file name used to store
       a tune composed using MUSIC MAKER
1709   REM ******* Selection 4
1710   a$="nyc"
1720   GOTO 1940
1729   REM ******* Selection 5
1730   a$="nyc"
1740   GOTO 1940
1749   REM ******* Selection 6
1750   a$="nyc"
1760   GOTO 1940
1769   REM ******* Selection 7
1770   a$="nyc"
1780   GOTO 1940
1789   REM ******* Selection 8
1790   a$="nyc"
1800   GOTO 1940
1809   REM ******* Selection 9
1810   a$="nyc"
1820   GOTO 1940
1829   REM ******* Selection 10
1830   a$="nyc"
1840   GOTO 1940
1849   REM ******* Selection 11
1850   a$="nyc"
1860   GOTO 1940
1869   REM ******* Selection 12
1870   a$="nyc"
```

```
1880    GOTO 1940
1889    REM ******* Selection 13
1890    a$="nyc"
1900    GOTO 1940
1909    REM ******* Selection 14
1910    a$="nyc"
1920    GOTO 1940
1930    GOTO 40
1939    REM ******* Prevents attempt to load a
        tune that has not been composed
1940    IF a$<>"nyc" THEN GOTO 2000
1950    VPOS=23:PRINT"THAT SELECTION HAS NOT YE
        T BEEN COMPOSED"
1960    FOR z=1 TO 1400:NEXT z
1970    VPOS=23:PRINT"                "
1980    VPOS=22:HPOS=31:PRINT"  "
1990    GOTO 1590
1999    REM ******* Open file 1 for input of mu
        sic data from disk
2000    OPEN#1 AS INPUT,a$
2009    REM ******* Read pitch values and durat
        ion values from requested file
2010    FOR x=1 TO 1000
2020      READ#1;p(x),d(x)
2029      REM ******* Check for end of data
2030      IF p(x)=-9 THEN GOTO 2050
2040      NEXT
2050    mode%=128
2060    vol%=63
2069    REM ******* open output file to audio
2070    OPEN#2 AS OUTPUT,".audio"
2080    FOR x=1 TO 1000
2090      IF p(x)=0 THEN vol%=0
2100      pitch%=p(x)
2110      time%=d(x)
2120      IF pitch%=-9 THEN GOTO 2180
2128      REM ******* Convert file data to an A
          SCII string which can be
2129      REM ******* utilized by the speaker
2130      PRINT#2;CHR$(mode%);CHR$(vol%);
2140      PRINT#2;CHR$(pitch%-256*INT(pitch%/25
          6));CHR$(INT(pitch%/256));
2150      PRINT#2;CHR$(time%-256*INT(time%/256)
          );CHR$(time%/256);
2160      vol%=63
2170      NEXT
2179    REM ******* Return to the most recently
          used menu
2180    ON n GOTO 240,830,1410
2189    REM ******* Print closing screen of pro
        gram
2190    HOME
2200    VPOS=10:HPOS=35
2210    PRINT"GOOD BYE"
2220    VPOS=12:HPOS=20:PRINT"DON'T FORGET TO W
        HISTLE WHILE YOU WORK"
2230    VPOS=0
2239    REM ******* Reset prefix so access to B
        asic Language disk is possible
2240    PREFIX$="/basic/"
2250    END
```


ON THREE Presents . . .

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$29.95
plus $2 shipping and handling

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Your only weapon against the JOBs *is to find the* WOZ *who wanders about the lab peeking in on various projects. For a short time following a meeting of* SANDMAN *and* WOZ *the* JOBS *turn blue and may be exorcised if you can catch them.*

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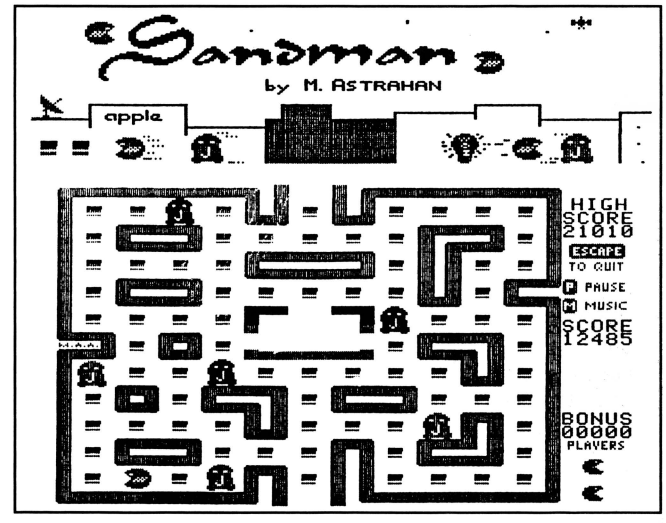

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What is the ultimate time-saver? Why *ON THREE's* Disk of the Month diskettes, of course. Why use your precious time typing in *ON THREE* program listings when they are available on diskette for just $14.95 (plus $2 shipping and handling) each?

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This diskette contains all programs from volume I, nos. 1 and 2 of ON THREE *Magazine*. Included: Disk Pak1 with a program to give your four additional blocks of space on your data disks, and Disk Pak2, something you can't do without if you are a Pascal user, a convenient and easy way to list the files on a Pascal directory. Plus graphics and sound demos and more.

DOM #2—Changing Printer Characters

Here is an amazing program you won't want to miss. With it you can print to the Apple Dot Matrix and compatibles such as Imagewriter or ProWriter the same characters that are shown on your video display. Many special fonts, including fancy gothic characters, can enhance your printed output. And, it comes with complete documentation. Also on DOM #2 are the other programs from issue number 3, more graphic demos plus: a program to list files from an Apple II diskette without needing to enter emulation mode.

DOM #3—Redefining a Keyboard

This disk is jam-packed full with programs that appeared in Volume I, No. 4 of ON THREE, and includes an easy-to-use program that allows you to redefine any or all keys on the Apple /// keyboard. Of particular interest is the ability to reassign the '\' to be the delete key so it can be used on AppleWriter /// and other programs. Also included are all the WPL programs, a disk formatting utility, a graphics sketching tool and still more that we don't have room to list here.

DOM #4—Emulation Patch

Volume II, No. 1 had so many great programs it took two disks, DOM's 4 *and* 5, to hold them all. DOM 4 has all of the Pascal programs and the *Apple II Emulation Patch*, a way to use any Apple /// Font in emulation. Also included is the Pascal startup program for *Access ///* that lets you autodial. Another fine utility is a Pascal program and UNIT to permit calculations from within the Pascal environment. Demos haven't been forgotten either with *Radiate Graphics Demo* and *Beatles Music Demo*. To top things off, we have included a number of *Draw* ON pictures you can view with the program on DOM #5.

DOM #5—Access Draw ON

Here we find the BASIC startup program to autodial from *Access ///*, and *Ben's* SUPER *Slot Machine*, along with all of the VisiCalc and WPL programs, and the *Circling Graphics Demo* which will show some of the fantastic images that *Draw* ON can create, plus still more *Draw* ON pictures, along with the *Draw* ON *///Picture Demo* which you use to view *Draw* ON pictures.

DOM #6—BASIC Lister Plus!

Straight from the pages of Vol. II, No. 2 is a program which will give you perfectly formatted listings of Business Basic programs, and a Pascal program to guide and assist you in selecting noises for animation and game programs. Both the *Pascal Noisemaker* and the BASIC lister come with full documentation. We've also tossed in still more *Draw* ON pictures and some new fonts, as well. You can use the *Draw* ON viewer from DOM 5 to see them.

DOM #7—Heap Good Stuff

From Vol. ///, Nos. 1 and 2 we present a BASIC heap sort routine and demo, IMAGEHELPER, a neat graphics utility to simplify graphic image design, and a menu-driven program to pre-select printer codes and parameters.

DOM #8—Directory Sorting

Here is what you have been waiting for, a complete BASIC and Assembly program to take those old chopped up directories and sort them out in just the order you want. Included also is *Clean.Heads*, a Pascal program which excercises your disk drive at cleaning time *and* writes a program to remind you when you last cleaned heads, and a simple utility to read a text file and find out what the contents are without having to write a program on the spot.

Using the Editor and Compiler:

ON Pascal ///

dennis cohen

Well, we're finally going to write our first Pascal programs (and I'll bet you thought it would never happen). In order to write a Pascal program, we will have to learn how to use both the Editor and the Compiler at least superficially as well as a little bit about the Pascal language and the Apple /// implementation of it.

The Pascal Language

Unlike BASIC, Pascal is a "block-structured" language. This means that programs are built out of blocks of code that are syntactically self-contained. Now that we have the technical definition out of the way, we'll discuss what that means. In BASIC, when you want to execute a number of statements if a condition is true and a different set of statements if it is false, you would would perform a test with a GOTO as the result with one of the statement groups immediately following the test and the other group of statements starting at the branch label. In addition, you would have a GOTO at the end of the first block which branched around the second block. It would look something like the following:

```
100  IF A<B THEN 150
110  A=A+1
120  B=B-1
130  PRINT "A WAS LESS THAN B"
140  GOTO 180
150  A=A-1
160  B=B+1
170  PRINT "A WAS GREATER THAN
     OR EQUAL TO B"
180  ...
```

In Pascal, it would look like the following:

```
IF a<b THEN BEGIN
  a := a+1;
  b := b-1;
  WriteLn('A was less than B');
END ELSE BEGIN
  a := a-1;
  b := b+1;
  WriteLn('A was greater than or equal
  to B');
END;
```

Now, I'm not going to say anything to the effect that either is more efficient than the other—anybody can see that they both do the same thing. However, I am going to say that the Pascal method is clearer to the reader. When you look at the Pascal code you know from the ... ELSE... that the statements following it are executed only when some conditional test evaluated false. Further, the BEGIN ... END pairs signal the start and conclusion of a logically grouped set of program statements. Other advantages to the Pascal language are that you don't have to worry about program statement numbers or the number of characters in an identifier.

Both compiled and interpreted language implementations have advantages. Compiled languages run faster while interpreted languages give more immediate feedback to the programmer and may be modified more quickly. Apple /// Pascal (and all other UCSD derivative Pascals) also allows much larger programs than does Business Basic.

In Pascal, all identifiers (variables) must be explicitly declared and given a type. For people who started out in BASIC or FORTRAN (like me), this is a bit of a nuisance at first; however, I think that you will find that this nuisance pays dividends in the long run. The single most obvious advantage is that it allows the compiler to catch many inadvertent programming errors (typographic mistakes). If, in BASIC you have a variable, call it X, and you inadvertently type a Z at some point where you meant to type an X, the BASIC interpreter will go merrily along its way sticking some random value in and throwing your calculations off. This could take you quite a while to track down, especially in a large program. With Pascal, if you had not declared the variable Z, the compiler would tell you right away that you had an undeclared identifier. If you had declared Z, but it was of the wrong type, the compiler would also warn you. The only time you do not get warned is if both identifiers are declared of the same type. This is probably a good time to put in a plug for long, descriptive variable names. There is no runtime penalty for this in Pascal since the identifier name is not relevant at runtime with a compiled language—all that is there is an offset into the data space.

You will notice in the above example that where BASIC uses an equal sign (=) as the assignment operator, Pascal uses a two-character operator (:=). Most Pascal programmers that I know refer to this as "gets" or "receives". You'll also notice that a colon or a carriage return separates statements in BASIC, whereas a semicolon performs that function in Pascal.

The first program that we're going to see is the standard "Hello, world" example. In BASIC, it would look something like:

```
10 PRINT "Hello, world"
20 END
```

In Pascal, it would look like:

```
PROGRAM Hello;

BEGIN
  WriteLn('Hello, world');
END.
```

You'll see that for very short programs such as this, BASIC has some distinct advantages—there is less typing to do and no real difference in clarity. However, when we get to more realistic examples this will no longer hold true. The first thing you'll notice in a Pascal program is a line that says that it is a PROGRAM and what the name of that program is. Following the

PROGRAM statement you will find declarations of global labels, constants, types, variables and procedures/functions (subroutines and functions). Unless you are running version 2.0 of the Apple /// Pascal compiler (or Lisa/SVS Pascal or a similar extended implementation), these (optional) groups must appear in the order indicated. Very few Pascal programs will have any labels declared. A label designates some integer between 1 and 9999 (inclusive) as being the destination of a GOTO statement. I've written over 250,000 lines of Apple /// Pascal and have yet to come across a situation where I needed a GOTO.

Almost any real Pascal program will have some constants declared. Actually, almost any well-written BASIC program will also. Constants give you the opportunity to give symbolic names to your literals. The difference is that in Pascal a constant is just that—constant and unchangable in the code; however, in BASIC it is merely an initialized variable that you may intentionally or accidentally assign a new value. I find it very difficult to read programs that have constants such as 10.0, 64, and 97 peppered throughout. Constants such as atSign and littleA are far more obvious to the reader.

Similarly, most Pascal programs will define some private data types such as records and arrays. We'll discuss arrays in this article, but records will be covered later in the series.

Next, every real program uses some variables. In Pascal, one declares the variable name followed by a colon and then the type.

Finally, every program of any consequence has some subroutines and/or functions. In Pascal, these subroutines (called PROCEDURES) and functions are little mini-programs in their own right as they may also declare local labels, constants, types, variables, procedures and functions.

These features of the language introduce the concept of scope. A little later in this series I'll give a definition of identifier scope in Pascal and demonstrate how this allows you a great deal of flexibility and power in your programming.

After all the procedures and functions, variables, types, constants, and labels you finally come to a line that says BEGIN. This marks the beginning of the main program's statements. There will follow a number of executable statements and then the word END followed by a period. This marks the end of the program.

Our First Program

The first program we will enter is one which has become somewhat (in)famous. It is the well-known "Sieve of Eratosthenes" benchmark (see listing 1). This program actually doesn't test much of anything that will be time-critical in programs like editors or telecommunication programs; however, it was one of the first published benchmarks and has achieved a great deal of notoriety. In addition, it does a good job of benchmarking simple arithmetic computations, array manipulation, and looping operations. The Sieve computes a set of integers called prime numbers. A prime number has no factors (divisors) other than 1 and itself. The first five prime numbers are 1, 2, 3, 5, and 7. Note that even numbers other than 2 itself can never be prime since they are (by definition) divisible by 2.

The program uses a large array of flag variables representing the odd integers starting at 3. The program operates by removing multiples of the prime numbers, starting with the first element. After all the multiples are removed, the numbers which remain are the primes.

It's time for us to enter this program, so boot up your Apple /// Pascal system so that you see the main command line. Now, type E to invoke the Editor (you do have it online somewhere, don't you?). You should now be looking at the prompt line asking for the name of the file to edit.

```
PROGRAM  benchbyte;

CONST
   arraySize  =  8190;
   iterations  =  10;

VAR
    i,prime,k,count,iter  :  INTEGER;
   flags  :  ARRAY  [0..arraySize]  OF  BOOLEAN;

BEGIN
    WriteLn('Starting...');
  FOR  iter  :=  1  TO  iterations  DO  BEGIN
    count  :=  0;
    FOR  i  :=  0  TO  arraySize  DO
       flags[i]  :=  True;
    FOR  i  :=  0  TO  arraySize  DO
       IF  flags[i]  THEN  BEGIN
         prime  :=  i+i+3;
         k  :=  i  +  prime;
          WHILE  k  <=  arraySize  DO  BEGIN
             flags[k]  :=  False;
            k  :=  k  +  prime;
          END;
          count  :=  count  +  1;
       END;
   END;
    WRITELN('Done');
END.
```

Figure 1: Sieve of Eratosthenes

Just type a carriage return (this tells the editor that you're going to create a new file). You will now be greeted by a promptline that looks like figure 1. Type I to put yourself into "input mode" and then start typing in the program in listing 1. You don't have to worry about the number of spaces that you indent, only the non-blank characters are significant. When you've reached the end of the program, type a control-c. With the Apple /// Pascal system, a control-c is the default Editor Accept character (and Escape is the "throw away what I've started" character).

A(djst	Move lines left/right, accept with Ctl-C abort with Esc. You may adjust to line up with the left margin, the right margin, or center the lines as well as move a few spaces.
C(py	Copy the buffer, a file, or the text between two markers to the current position.
D(lete	Remove the text selected by moving through the file - puts deleted text in the buffer.
F(nd	Find the specified string. May be "token" (whole word) or "literal". Default is case-sensitive, precede string with U for uncase otherwise.
I(nsrt	Allows you to insert new text into your document. If you backspace in insert mode, you will delete the last character entered, if you type Ctl-X, you will delete back to the last carriage-return. Accept the insert with Ctl-C, abort insert with Esc.
J(mp	Allows you to move to the Beginning of the file, the End of the file, to a set Marker or to the current Point*.
M(rgin	Mostly used with Document Mode (non-programs). Allows you to remargin a paragraph (a block of text surrounded by blank lines or the beginning/ end of file).
Q(uit	Takes you out of Edit Mode. Allows you to save & quit, save & continue, exit, or change to a different file.
R(plce	Similar to find, except that you find the first string and replace it with the second string.
Set	Environment variables, markers, or the current point*.
X(chng	Type-over mode for the current line only. Accept with Ctl-C, abort with Esc.
Zap	Remove all text between the cursor and the current Point*.

Figure 2: Editor Command Line Options

* The current point is the first character of the last insertion, replacement, find, or Set Point command.

During the course of entering the program, the left-arrow key is a destructive backspace and is the only functional cursor key. When you are not in the input mode, all of the cursor keys will move you around the screen. In addition, a "p" will move you one screen in the current direction. "What is the current direction?" you ask. Well, it defaults to forward; however, you can change it to backwards by typing either a "<" or ",". You can then toggle it back by typing either a ">" or "." when the main editor prompt line is visible. The current direction is shown on the Editor command line by a greater-than or less-than sign in brackets after the word Editor. The current direction affects the following commands: P(age, F(ind, R(eplace, and D(elete. Please refer to figure 2 for a complete list of Pascal Editor commands.

While Pascal identifier names may be almost any length you wish, only the first eight characters are significant to the Apple /// Pascal compiler. You may use the underscore character as part of the name (but not the first or last character), but it is not counted as one of the eight by the Apple /// Pascal System—in Lisa Pascal and MacPascal it is significant. You should make sure that your variable names differ in the first eight characters (procedure and function names are also identifiers).

Certain identifiers are reserved words to the Pascal compiler and may not be used as identifiers (see figure 3). Other identifiers are predefined and you may override them with your own identifiers, but until you become more experienced and really know what you are doing, you should avoid this (these predefined identifiers and their meanings are listed in figure 4).

You'll notice that we have declared two constants, arraySize and iterations. Their names are indicative of their purpose. There are also six global variables declared. The first five are all Integers and don't bear much discussion. The last variable shows how you declare an array in Pascal and introduces the predefined type, Boolean, which only has two possible values, False and True.

AND	FUNCTION	PROGRAM
ARRAY	GOTO	RECORD
BEGIN	IF	REPEAT
CASE	IN	SEGMENT*
CONST	LABEL	SEPARATE*
DIV	MOD	SET
DO	NIL	THEN
DOWNTO	NOT	TO
ELSE	OF	TYPE
END	OR	UNIT*
FILE	OTHERWISE*	UNTIL
FOR	PACKED	VAR
FORWARD	PROCEDURE	WHILE
		WITH

Figure 3: Apple /// Pascal Reserved Words

Those marked with an asterisk are Apple/UCSD Specific

The first executable statement in the program, "WriteLn('Starting...');" is a signal to the user to start their stopwatch. The next fifteen lines are an example of a "compound statement." This means that it is a single logical entity made up of separate statements. This FOR loop says that the statements between the BEGIN and its matching END will be executed ten times. The first statement in this block is an initialization statement for the variable, count. The next statement, "FOR i := 0 TO arraySize DO flags[i] := True;" initializes the entire array of possible primes.

Internally, Pascal stores a zero for false and a one for true. Apple /// Pascal has a number of non-standard intrinsic (built-in) routines that perform certain operations very quickly. The statement in the program will perform the following sequence of steps:

1) Set i to zero
2) IF i > 8190, then exit the loop (step 6)
3) store a one in memory location i+(address of the flags array)
4) add one to i
5) go back to step 2
6) ...

This can be done with the FillChar intrinsic much more quickly as follows:

"FillChar(flags, arraySize, Chr(1));"

FillChar is a high-speed block move command. and is described on page 219 the Pascal Programmer's Manual (volume 1). We'll learn more later about optimizing our code, right now we just want to learn how to write code that works. A very fine programmer with whom I've had the pleasure of working has the following motto: "It's easier to make a working product efficient than to make an efficient product work."

The next statement is actually the start of a nested compound statement, the elimination loop. Its first statement is yet another nested compound statement, a conditional which calculates a prime value, calculates the first multiple, and then loops through eliminating the multiples. You'll note that the loop used in this case differs from the FOR loops we've seen so far. There is yet a third type of loop in Pascal, the REPEAT loop, that we will be discussing in a later article. Next we increment the count variable. You'll notice that none of these statements are executed if flags[i] was false.

Finally, we've exited all the nested statements and printed out the message, "Done". WriteLn is the Pascal equivalent of BASIC's PRINT command. It prints its argument list, terminated by a carriage-return. If you don't want the carriage-return, use Write instead of WriteLn. In both of the WriteLn statements in this program, we have used literal strings. In Pascal, strings are surrounded by single quote marks. If you wish to embed a single quote in the middle of a string, you do so by placing two consecutive single quotes in the string. For example, WriteLn('I' 'm Dennis'); would cause the message, "I'm Dennis," to be printed (followed by a carriage return).

We're now ready to compile the program and try to run it. The first thing we need to do is exit the Editor, saving our work. With the Editor command line showing, type "q" for quit. You will now be presented with a number of choices. The one you should select is "w" for Write to a file. You will be prompted for a filename. Using standard SOS filename conventions, save the program as SIEVE on one of your available volumes. The Editor will save the program as SIEVE.TEXT. Now,

(Cont'd on page 18)

ABS	GOTOXY*	PACK	STR*
ATAN	IDSEARCH*	PAGE	SUCC
BLOCKREAD*	INPUT	POS*	TAN
BLOCKWRITE*	INSERT*	PRED	TEXT
CHR	IORESULT*	PURGE*	TIME*
CLOSE*	LENGTH*	PUT	TREESEARCH*
CONCAT*	LN	PWROFTEN*	TRUE
COPY*	LOCK*	READ	TRUNC
COS	MARK*	READLN	UNITBUSY*
CRUNCH*	MAXINT	RELEASE*	UNITCLEAR*
DELETE*	MEMAVAIL*	RESET	UNITREAD*
DISPOSE	MOVELEFT*	REWRITE	UNITWAIT*
EOF	MOVERIGHT*	ROUND	UNITWRITE*
EOLN	NEW	SEEK*	UNPACK
EXIT*	NORMAL*	SIN	WRITE
EXP	ODD	SIZEOF*	WRITELN
FALSE	ORD	SQR	
GET	OUTPUT	SQRT	

Figure 4: Apple /// Pascal Predefined Identifiers

Those marked with an asterisk are specific to UCSD/Apple Pascal

Double Hires Graphics—Memory Organization Pt. II:

Graphically Speaking

melvin a. astrahan, ph.d.

Introduction

In the first part of this series I presented the concepts of bit-mapped monochrome graphics, raster scan-lines, display buffers, and their physical representation in memory. I chose the Apple ///'s graphics mode 0 (280 by 192 monochrome, 8K memory) as the example since it is the simplest and is compatible with the Apple][hi-res mode about which many other articles and books have been written. Now it is time to press on to the other native Apple /// modes.

What's My Line

All Apple /// (and Apple][) graphics modes have a couple of things in common. The first, as pointed out previously, is that there are exactly 192 horizontal scan-lines displayed on the screen. Scan-line 0 is the top-most line on the video screen, and scan-line 191 is the bottom-most. The second is that the memory offset of the first byte of each scan-line relative to the base address of the selected display buffer is the same in all graphics modes! Make note of this fact since it is important. You may recall that there are only three possible base addresses:

$2000 (all modes, display buffer 1)
$4000 (mode 0, buffer 2)
$6000 (modes 1,2 and 3, buffer 2)

In the 8K mode 0, each scan line is stored as 40 contiguous bytes of memory, and one only needs to calculate the address of the first byte of any scan-line in order to access any of the data in that line. If we were to simply increase the representation of a line to 80 contiguous bytes, we would violate the requirement that the beginning of a scan line is at the same offset position relative to the buffer base address regardless of mode. Ah, the price we pay for compatibility with obsolete machines ... So, where does the other 8K of memory reside?

It's Only $2000

The big difference between the 8K mode 0 and the 16K modes is that the memory addresses which contain the scan-line data are no longer contiguous. It turns out that the 16K modes store the data in two 8K segments, offset from each other by exactly $2000 bytes. Each segment is laid out identically to the mode 0 format in terms of scan-line offset from the base address. The lower segment may have base address $2000 (buffer 1) or $6000 (buffer 2). The upper segment has base address $4000 (buffer 1) or $8000 (buffer 2). Half of the scan line data is stored in the lower segment just as if it were mode 0 data. The other half of the data is stored exactly $2000 bytes away in the upper segment. Unfortunately, it doesn't end there folks... to make matters even more complicated, the bytes of the lower and upper segments are alternately interlaced onto the video scan-line!

The following organizational diagram of the 42 leftmost pixels of scan-line 0, display buffer 1, mode 2 (560 by 192 double hi-res monochrome, 16K) may help illustrate the effect. Remember that bits set to 1 are *on* or white. Bits set to 0 are *off* or black, and only the lower seven bits of each byte are used. The eighth bit is a don't care in Apple /// native modes 0,2, and 3 and is represented below by the ? symbol (mode 1 does use the eighth bit, but only from the upper segment as we'll see later.):

Address	8 bit value	pixels
	Lower 8K segment	
$2000	?0101011	0-6
$2001	?0000000	14-20
$2002	?0001110	28-34
	Upper 8K segment	
$4000	?1110000	7-13
$4001	?1111111	21-27
$4002	?1110101	35-41
	etc...	

Scan-line 0 would look like this on the top left corner of the screen:

pixels 0..41:	1101010	0000111
byte boundaries:		
memory addresses:	$2000	$4000

0000000	1111111	0111000	1010111
$2001	$4001	$2002	$4002

etc...

...where the bytes from the lower and upper segments are alternately displayed across the scan-line, and the bits within each byte are bit-wise reversed so that the lowest order bit is the leftmost pixel represented by that byte.

In this way, 192 lines of 560 pixels may be displayed. Also, in the same way that 512 bytes of "screen holes" are wasted in the 8K mode 0 due to the peculiarities of the video hardware (discussed in the previous article), now 1024 (1K) bytes of memory are wasted!!! It would be a relatively simple matter to compact FOTO files on the disk by modifying the load/store programs to skip the screen holes and thereby save two disk blocks per file! The trade-off (there's always a trade-off) is increased load/store time due to the extra processing required and incompatibility with other programs. For those of you familiar with *Draw ON* ///, it, in fact, uses such a compaction scheme to store pseudo display buffer 3 elsewhere in RAM, thus freeing up 1K RAM for other applications. Display buffer 3 is swapped into the normal display buffer 1 memory addresses ($2000 - $5FFF) when it is in use.

(Cont'd on page 18)

Products & Services Available for the Apple ///

Current ON THREE Price List

Product	Price	S/H
12-issue subscription to ON THREE	$40.00	
Back issues of ON THREE	$5.00 ea	
Disk Of the Month (DOM)	$14.95 ea	$2.00
Order 2 or more for only	$12.50 ea	$4.00
Desktop Manager-ON THREE O'Clock Combination	$173.95	$8.00
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Desktop Manager Disk Utilities	$44.95	$3.00
Desktop Manager ASCII Conversion Table	$9.95	$3.00
ON THREE O'Clock	$49.95	$3.00
Lazarus /// Version 2.0	$49.95	$2.00
Draw ON ///	$179.00	$5.00
Apple /// Fortran	$99.00	$5.00
Selector /// Program Switching Utility	$99.00	$7.00
Unprotect Driver	$19.95	$2.00
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The Apple /// Fruit Machine (Slot Machine Game)	$19.95	$2.00
The Apple /// Card Machine (Blackjack Game)	$24.95	$2.00
Fruit-Card Game Combo	$39.95	$3.00
Sandman (game)	$29.95	$2.00
Game Card ///	$59.95	$2.00
3M DS, DD Disks (10) for A143	$39.95	$3.00
Apple /// Unidisk 3.5 (800K disk) with interface card, Apple /// software & documentation	$499.00	$10.00
Unidisk documentation & disk only	$50.00	$3.00
Sider 10 (10 MegaBytes)	$999.00	35.00
Sider 20 (20 MegaBytes) (Siders can be daisy-chained	$1299.00	$35.00
Xebec 9730 (34 MegaBytes)	$1999.00	$35.00
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256K Memory Upgrade (128K to 256K)	$200.00	$10.00
256K or 512K upgrade installation by ON THREE (appt. only)	$50.00	
512K Reconditioned Apple ///	$1148.00†	$50.00
Apple //e Mouse and interface card (can be used with Draw ON /// or Desktop Manager)	$150.00	$5.00
Dust Cover for Apple /// with Monitor ///	$11.95	$2.00
Dust Cover for Apple /// with ProFile & Monitor ///	$12.95	$2.00
I ♥ MY APPLE /// T-Shirts Sm, Med, Lrg, X-Lrg (Color choices: Yellow, beige, white, blue)	$11.95	$3.00
I ♥ MY APPLE /// Sweat Shirts Sm, Med, Lrg, X-Lrg (Color choices: Silver, white, blue, yellow)	$18.95	$3.00
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†available soon

California residents add 6% sales tax.

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Attn: Order Dept.
Post Office Box 3825
Ventura, CA 93006

We accept Visa, Mastercard, and American Express. There is a 3% surcharge on orders charged to American Express.

(Cont'd from page 17)

To /// or Not To //e

It may be of interest to some of you that in the 128K Apple //e with 80-column card, the upper segment of 16K double hi-res screens is stored with the same base address as the lower segment, but in the alternate memory bank, rather than offset $2000 in the same bank as in the Apple ///. The interlace effect is the same, except that the alternate Apple //e bank corresponds to the lower Apple /// segment, and the normal //e memory segment corresponds to the upper Apple /// segment.

Other than where the data physically resides in memory, there is no difference between the //e and /// for either hi-res or double hi-res monochrome graphics. This permits graphics created on one machine to be transported to the other by simply storing them to disk, and reloading them in the proper memory segments with an appropriate program. In my applications, I create monochrome graphics for my //e programs using Draw ON ///, and capture images for my /// programs from a //e video digitizer.

(Cont'd from page 16)

type "E" for exit. You should now be back at the Pascal command line. Type "C" for compile and when asked for the name of the file to compile, enter the name under which you saved the program (omitting the .TEXT extension). The compiler will now prompt for a Listing File and a destination filename, enter a carriage return to each prompt to accept the default choices.

Assuming that you did not make any typographic errors, the compile should be successful and the Pascal command line should again be visible. If you get an error message during the compile, you will be given the option of returning to the Editor. Enter an "E" to do so, and fix your program. From there, Quit, Save (answering "y" to the question about replacing the existing copy), Exit again, and recompile. When you have succeeded in compiling the Sieve and are again at the Pascal command line, type "X" for execute and when prompted for the name of the program to execute, type SIEVE.

Congratulations, you've just entered your first Pascal program. See you next time.

ON THREE Presents . . .

I ♥ My Apple ///

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The Printer is in the Pudding:

Printing Good Graphs

john lomartire

Once upon a time, the only business graphics package available for the Apple /// was the "Apple /// Business Graphics" software from Business and Professional Software. Many "number-crunchers" like me raced to buy this program only to encounter problems that appeared to be without solution. True, the original package was designed to work with a Qume printer, but there was a revival of hope when B & P S announced the availability of a PIK (Printer/Plotter Installation Kit) that would fit the needs of many customers. In my case, the printer involved was a NEC Spinwriter 7720, which was one of the units that the PIK addressed.

Alas, even after my program was upgraded with the PIK, I could not get good graphs from the printer. It was very strange because all of the difficulty seemed to occur in the horizontal axis. All the vertical positionings seemed correct. In attempt after attempt, regardless of the graphing commands that I used, I ended up with a distorted X-axis and the line drawn with the "Draw Line" command failed to hit the plotted points, although it always started on the first plotted point. It was not the software because good graphs were produced on a Qume in the retail store. It was not the printer because good graphs could be printed from some personally developed programs.

No one seemed to be able to solve this dilemma. The staff at B & P S were sympathetic but knew of nothing more to do.

To add more misery to the situation, whenever a graph-printing command was issued, the first sheet in the printer was run out and printing took place on the second sheet. Unfortunately, there was no consistency as to where the printing occurred so that the graph, poor as it was, would often be printed over the paper fold line.

It took a long time to find answers to these two problem areas, but when they were found, they were predictably simple solutions.

In a nutshell, it seems that "Apple /// Business Graphics" has been written with a character spacing of 10 to the inch (10 pitch) in mind. Apparently it will not produce satisfactory graphing at other pitches.

Next, consistency of form feed will result *if the printer's "set top of form" button is activated just before the graph printing command is given!* If this is done, predictable and reproducible positioning (vertically) of the printed graph can be attained.

Finally, after having learned to print good graphs with a system consisting of an Apple /// connected, via modem eliminator, directly to the NEC printer, the system was "improved" by the insertion of an in-line buffer between computer and printer. Although the arrangement worked fine with all my other software, Apple /// Business Graphics would not perform. When the printing commands were given, the customary ejection of the first sheet occurred, then the system "hung," apparently waiting for some signal from the printer that did not come back through the buffer. A call to B & P S resulted in confirmation of this behavior, and no suggestions as to how to overcome the problem. Now, all data to be printed goes through the buffer, but when Business Graphics is involved, the buffer is taken out of the line and the original direct computer-printer connection is used.

Surprisingly, none of these important points was ever found in any literature from B & P S, nor were the first two simple solutions ever brought out in response to letters and phone calls to several of their staff.

What follows are some points, based on the observations mentioned above, that must be adhered to if good graphs are to result with a NEC Spinwriter 7720 - Apple /// combination. (It may also be that other computer-printer pairs will respond in the same way to this software. Certainly the 10 pitch criterion must be important.)

1. Before issuing a "draw axis" or the first "draw points" command:

A) Make sure that the printer is set for 10 characters per inch (or 10 pitch) as the print spacing.

B) Make sure that the printer is set for ETX/ACK protocol.

C) Make sure that there is a driver in .D1/SOS.DRIVER with the name ".RS232".

D) Make sure that a *continuous* supply of paper is feeding the printer. Single sheets are not easily handled by the software program.

E) *Do not set a left margin!* Use the printer with its printing head in the leftmost position.

F) Use the first sheet to mark the desired graph position by proceeding as follows:

Call the sheet that the graph will be printed on the *Graph Page* and call the sheet just before the *Graph Page* the *Indexing Page.*

Pick the point where you want the horizontal axis to fall on the *Graph Page* and measure how many inches above the fold line this point is. Call this measurement GP. Add a quantity X (to be defined later) to GP to get a value IP, that is IP=GP + X. On the *Index Page* measure IP inches from the bottom edge of the sheet (the fold line) and make a mark. Insert paper in the printer and align the mark on the Index Page with the top edge of the printer head's clear card holder.

Press the "set top of form" button on the printer. This is very important! Give the required graph-print command and the graph should fall at about the right spot on the *Graph Page*.

The values of X that worked with my units are shown in this table:

Size of Graph, inches		
Horizontal	Vertical	X, inches
4	4	2
7	10	8

(With other printers these values for X may have to be re-determined.)

Note that with the proper selection on IP values, *two* 4 x 4 graphs can be plotted on the same Graph Page, one above the other.

Other valuable bits of information:

A) It is not necessary to issue the "SET UNIT 8" command followed by "SET DEVICE SPINWRITER (M) (XYY)." The same result is obtained by typing only the latter ("SET DEVICE SPINWRITER (M) (XYY)").

B) If the software is booted, and "EDIT" is used to enter data, the data can be listed on a printer with the command "LIST POINTS .PRINTER". You can also use "LIST STAT .PRINTER" or "LIST SETTINGS .PRINTER," etc. However, once either the "SET UNIT 8" or "SET DEVICE SPINWRITER (M) (XYY)" command is given, "LIST POINTS .PRINTER" or "LIST STAT .PRINTER," etc. will not work. (You get an error message #67—"invalid reference number.") Use "LIST POINTS .RS232" or "LIST STAT .RS232," etc. instead. The only way to get back to the original situation is to re-boot.

C) The error message: I/O ERROR ON UNIT 8
Program interrupted by user S#20 P#5 I#83
can arise if there is no driver named ".RS232" in the SOS. DRIVER configuration.

D) Good graphs can be produced with either ETX/ACK or Hardware Handshake printing protocols. If the ETX/ACK protocol is to be used, be sure that the printer switch is set of ETX/ACK and that the RS232 Device Configuration Block is set for ETX/ACK. The XON/XOFF protocol can also be used if the system is properly configured.

E) In some situations, the printer shuts down so quickly at the end of data transmission that a character or two can be lost. To be on the safe side, set a 5 character delay after a return and a 5 character delay after a line feed in the printer and RS232 Device Configuration Blocks. (See Apple /// Standard Device Drivers Manual, pp 107-117.)

F) You can enter the desired data using "EDIT," then type in "SET TITLE [title]," and/or "SET HORIZONTAL TITLE [title]," and/or "SET VERTICAL TITLE [title] in the usual fashion, before going to the printer commands. If the printer procedure given above is then used, graphs are produced with all specified titles in place.

G) Floating titles are not printed.

H) You can set horizontal and vertical ranges as stated in the Business Graphics manual, but in order to produce a graph, *data must be entered* using the "Edit" procedure. Two sets of points will suffice. Without this, you get a "No data" error message.

I) It is also possible to SET CURVES (that is, enter curves of your choosing. See manual, page 151) and print out graphs showing these selected curves if item H above is observed. By giving the "DRAW AXIS" command followed by "DRAW CURVE," the graphs will not show any points entered in the "Edit" step.

J) It is possible to print graphs showing the calculated best fit curves by first finding the curve then printing with "DRAW AXIS" and "DRAW CURVE" (or "DRAW AXIS," "DRAW POINTS," and "DRAW CURVE" if the points are to be printed also).

3. Printing a graph on a single sheet

As stated earlier, when a graph-print command is given, the initial thing that happens is that the first sheet of paper is ejected, then the second sheet is positioned for graphing. Under these conditions, continuous paper supply is a must. Single sheets of paper will not work.

However where there is a will there is a way. By using a little guile, and just a bit of extra effort, single sheet graphing *is* possible. This ability relies on the fact that there is a momentary pause between the ejecting of the first sheet and the start of positioning of the second sheet. At precisely this point, transmission to the printer is stopped. With the NEC Spinwriter 7720 this is done conveniently by raising a plastic silencer hood (the one with the red scales printed on it), and reinserting the paper. When the silencer hood is reseated, the paper is positioned and the graph is produced.

Maybe someone knows of another way to print graphs on a single sheet with this hardware-software system.

Conclusions

Despite some early difficulties that seemed to prevent printing of good graphs with the Apple /// Business Graphics and a NEC Spinwriter printer, it has been found that some undisclosed, simple procedural steps would overcome certain problem areas. This is not to say that the software is without shortcomings, but it can be used to produce some very good dot, line, bar, and pie graphs.

New Consorti
Consortium

The editor and staff of ON THREE hope our readers will join with us in offering congratulations and best wishes to Publisher Bob Consorti and Eileen Pyle who were interfaced in marriage on May 11th.

Congratulations and may your troubles all come in ///s.

Exploring Expanded Memory:

Rebirth

murray c. johnson

The early Apple /// advertising proudly promised that "bank switching could expand the memory capacity to a theoretical maximum of 512K" and that "SOS efficiently manages that memory". However, until the *ON THREE 512K Upgrade* became available that promise remained unfulfilled.

That extra memory is reason enough to go to 512K, but there are several other convincing arguments on the accompanying software diskettes. If you would be content with about "only" 280K of free memory for your BASIC programs then effectively you can have a free disk drive. In a 128K Apple ///system you would have about 65K free, so you probably could live with a four-fold increase in memory and a 140K RAM disk as your free disk drive. This RAM drive emulates a 140K floppy disk except for the sharp increase in speed, lack of noise and of course the inability to accept a 5¼ inch floppy diskette. The RAM drive is a part of memory and the contents disappear upon rebooting or loss of power, so files you wish to preserve must be transported to a non-volatile storage medium (e.g., a floppy disk, hard disk or printer etc.) before rebooting or turning off the machine.

Thus, if you have planned to buy another external disk drive it might make sense instead to increase memory to 512K and use 140 or 280K of it as RAM drives. The speed is incredible. Hires graphics pictures load and display in about 5.5 seconds. Complete floppy disks can be copied to the .RAM device using the UTILITIES software, in the same general way you make a duplicate copy of a floppy diskette. You will be pleased with the RAM disk drives (.RAM1 and .RAM2 if desired), which may cinch your decision to proceed.

The *Upgrade.to.512K* software diskette has an interesting format. It boots and displays a *Selector* /// menu of several different interpreters. Each interpreter is a SYSTEM file that is loaded as the working interpreter upon your selection from the *Selector* /// Menu. No, I didn't say that you have a complete copy of *ON THREE's* new *Selector* /// program, but it will make you want to order one. The functional programs give you an insight into what an interpreter switcher can do. You can go from BASIC to utilities to messages to updating disks or anything else on the Main Menu in any order; without rebooting. I've dreamed of that one for years; and maybe we could store several interpreters in our free RAM drive.

The RAM.test diskette checks the 512K of memory for bad chips and addressing problems. Don't discard your Apple supplied Confidence disk (which can only check 256K of RAM) because it contains disk checking routines and other system checks that aren't on the RAM.test diskette.

Everyone is permitted one slight digression. The memory board location of bad chips in 128K and 256K Apple ///'s could be pinpointed by using the memory diagnostic routine in the monitor. Just press [open-apple control-reset] all at once and then type F6E6G [return]. Eight rows of dots (numbered 0 to 7 horizontally) and eight columns (numbered 0 to 7 vertically) appear in the upper right part of the screen. It takes 10 to 15 seconds for checking, then a beep sounds and an inverse 1 at any position indicates a bad RAM chip. The position of the inverse 1 (eg. row 3 column 5 ie. row 3 and c5) on the screen dot grid is used to pinpoint the defective memory board chip. *Note this procedure is applicable only to 128K machines.*

Of course I didn't have any bad chips with my new 512K upgrade and thus don't know if this routine works with 512K, but it is worth remembering this little program that has cured all my Apple /// problems in the past.

Now we come to the physical changes necessary to perform our miracles. Not everything can be done with software!

The rebirth of a 128K Apple /// (post-serial #14000) takes less than an hour (including reading and following instructions) and should be somewhat less for a 256K machine. I write this article based on the first time practical experience of upgrading my 128K machine, serial #17030. That dates me as one of the oldest owners since my original Apple /// serial #2038 was recalled along with the other early machines in one of Apple's few magnanimous moves. Those old recalled and very early production serial numbers are important as we'll see later. The steps to follow are:

ON THREE Presents . . .

LAZARUS /// **$49.95**

File Recovery System plus $2 s/h

- **A *wrong keystroke can lose hours of work***
- **The *correct keystroke with* Lazarus */// can undelete those lost files.* Need *we say more?***
- **Not *copy-protected*—Installs *easily on* Selector ///, Catalyst**

STEP (1) if your Apple /// has 256K of memory, regardless of serial number it is simply a board and chip swap. No soldering needed. GOTO Step 3

STEP (2) if you have an old 128K Apple /// *don't panic yet.* There are two kinds of old.

(a) if your serial number is greater than #14000, then it will cost you a drop of solder and ⅛ inch of wire but you get to keep a slightly shorter resistor and the complete old memory board with all its expensive 32K MK4332 chips etc. GOTO Step 3 and be happy.

(b) no upgrade is possible if your serial number is pre #14000. Most of us are not this unlucky as they were recalled in 1981. If you are left here with an old recalled Apple /// then buy another 128K with a post #14000 serial number. The price is reasonable and you can upgrade it to 512K *Sorry!* Continue with 128K. END

STEP (3) order an *ON THREE 512K Upgrade*, complete with RAM disk, RAM test software, utilities and instruction manual, etc.

STEP (4) read and follow the instructions carefully. The conversion involves removal of the old memory board and three PROM's (chips) and putting the 512K memory board, integrated circuits sockets and new PROM's in their place. The instructions assume you have a 256K machine and are complete except for a few omissions regarding doing the 128K upgrade yourself. The instructions don't mention that the C-11 PROM Chip in a 128K Apple /// is likely numbered 331-0044; chip C-12 is 341-0056 and C-13 is likely 341-0042. Regardless, the chips are in the proper sockets on the board. There is an additional step for those who ended in (2)(a) above (ie. post serial #14000 128K Apple ///'s). It is detailed below.

STEP (5) Update your boot diskettes to enable use of all the extra memory. Otherwise memory above 256K is not recognized. The Upgrade.to.512K software converts BASIC and Pascal disks in a second, and separate options are provided for several copy protected Apple software programs.

STEP (6) Enjoy forever.

This section is only for the post-serial #14000 Apple ///'s with a 128K memory board installed. You have to remove resistor R58 and solder bridge a circuit trace. The rules of common sense and electronic circuit board soldering prevail; ie. rosin core solder (preferably multicore 60-40), a 25 watt soldering iron, diagonal and needle nose pliers, a bit of tinned fine copper wire; be careful; don't strain circuit boards or traces and follow the instructions.

The resistor (R58) is removed by clipping the leads close to the top of the circuit board. This also breaks one lead from a circuit board trace. You get to keep the old resistor. Use small diagonal clippers.

The solder bridge is performed across two existing solder pads that are exposed when you remove the resistor. The solder pads are the ends of two circuit traces and are separated by less than 1/32 inch. As explained, these pads are under where the body of the resistor was (*not* the resistor leads). Use a well tinned soldering iron to quickly heat a short piece of fine tinned wire placed across the solder pads. It takes a fraction of a second. Then trim the excess wire. You should have used about ⅛ inch of wire. If you are not completely comfortable with this step, it would be best to get help from someone with the correct tools and experience.

If you make an appointment, *ON THREE* charges $50.00 for a guaranteed installation, with a one day turnaround time. However, if you are a half a continent away there are some logical reasons to have the Upgrade to 512K done locally or by yourself. Canadian Customs and Canada Post will guarantee a ten day delay both ways, hassles, high cost of transportation and insurance and possible loss of your Apple ///. I've also heard that the US Postal Service isn't perfect either. Based on my experience, downtime should be minimized to the point of inconsequence if you can handle the task. It's easy. Even the IC extractor is provided. It's in the same class of difficulty as installing a working clock; another project I highly recommend. (See the *Apple Orchard* article in Nov. 1983 or order an *ON THREE O'Clock* which I trust is explained as well as the Upgrade to 512K kit.)

With maximum memory and a working clock you'll have the Apple /// envisioned by the early owners of 1980 and the 100,000 who have since purchased our under rated machine. I truly believe that Apple ///'s would be in production today if the extra memory and a working clock had been offered when the Apple /// had its technological lead in the early 1980's.

We Apple /// owners haven't had too many chances to cheer our under rated machines, but this product (like the clock chip and my ordered Selector ///) has made my day.

ON THREE Presents...

• Disk of the Month

- **No need to spend your precious hours typing in long and complex program listings**
- **Complete BASIC programs, assembler source and object files from each issue of ON THREE**

$14.95 each plus $2 s/h

two for **$12.50** each plus $4 s/h

- **Volumes 7 & 8 now available**

Vol 7. Contains IMAGEHELPER, a BASIC program to aid in designing graphics images, a heap sorting routine, and a program to preset printer codes.

Vol 8. Contains BASIC and Assembly programs to sort directories, a Pascal program to clean drive heads, and a text file reader.

Three Questions (and some answers):

One, Two, /// Forum

Selecting a Hard Disk

To the /// forum:

I saw a program in your magazine about cleaning the disk drives. Why not have a disk available at a nominal charge or make it part of your disk of the month package. I am a user, not a programmer, and when I see this stuff in magazines I skip right over it. I have tried to list programs in the past and it is very frustrating when you spend all this time listing [typing] and the thing still doesn't work and you have no idea why or where to begin to debug it or how.

You advertise hard disk systems and the switcher program *[Selector ///]* but no one has ever hit on how a hard disk system works in relation to how a program that is too large for [floppy] disk drives gets loaded onto a hard disk.

Thank you for your support for a still great machine.

James Fair
Citrus Heights, CA

Strange that you should ask . . . Actually, every program published in ON THREE *is (or will soon be) available on one of our Disks of the Month. The program you referred to, Clean.Heads, is on DOM 8. Descriptions and pricing information can be found elsewhere in this issue.*

As a non-programming user, you are not alone. There is a lot of company out there for you, and that is why ON THREE *tries to provide as wide a variety of articles as possible.*

You had asked how large applications programs are stored on hard disks, so let's start with a little background. A hard disk is simply magnetic storage media, just like a floppy disk, except they are normally built as self-contained, sealed units and have a capacity far greater than a floppy. A standard 5¼ inch floppy has a capacity of about 143 thousand bytes or characters. Hard disk capacity is measured in MegaBytes (MB) with one MegaByte being equal to one million bytes. Many hard drives (such as the Sider 10) can hold ten MegaBytes of data. It would take about 70 floppies to handle the same data. With a computer like the Apple ///, the directory structure is so flexible you could set it up to look exactly like the 70 floppies it replaced, with separate subdirectories, or you might have just a few huge data files or, more likely, a combination of the two.

There are at least two distinct advantages in having a hard drive. You can keep all of your programs on one easily accessible disk without fear of misplacing any floppies and, with a program such as our Selector /// *you can switch from one application to another in seconds. In addition, because the drive motor of a hard disk is always running, and at a higher speed, you have much faster disk access, perhaps on a ratio of 20:1. But to answer your original question, some large applications programs may require two or even three standard floppy drives to function efficiently. However, no applications program is actually larger than the capacity of the disk it is stored on. And when you copy it to a hard disk, the floppies are simply copied one at a time. Once transferred, all subsequent disk accesses are from the hard drive with vastly improved performance.*

Using Lazarus with Catalyst

Gentlemen,

I just received a copy of *Lazarus ///* (version 2.0) with enclosed instructions for installing it on Catalyst using the instructions for "Installing Simple Pascal Programs" on page 2-14 of the Catalyst User's Manual. I have an Apple ProFile hard disk.

When I attempt to list files or delete files I keep getting a stack overflow error. I have checked and the options menu of Pascal is set at OK of memory for the graphics screen. If I use the program through .D1 it works fine, but accessing it by Catalyst continually gives me the stack overflow error. Could you help with this problem?

Frederick B. Bernsee
Houston, TX

The problem appears to be not enough memory available when Catalyst is on line. To gain the extra memory you need, select Option B, "Apple][Disk Routines Resident (Y/N)" and select "No." This may free up the memory you need for Catalyst and Lazarus to be co-resident.

Using A-143 Drivers with Catalyst

Dear ON THREE:

It's good to see you publishing again on a regular schedule. I do miss the original format and approach, where a lot of good information and programs were packed into each (albeit, irregular) issue; but, it *is* important that you now have more stability.

I wish to comment on two things in the March issue. First, it's great to see John Jeppson's name again *(Directories ///)*; he was a great contributor in the early days of the ///. I'd like to point out, however, that the Sort Directory (SORT.DIR.CODE) utility in the Pascal Toolkit does most of the same things quickly and easily. I use it frequently, almost every day; it's a real help. Of course, the Toolkit is hard to find, though it has been appearing in public domain libraries lately, at reasonable cost.

My second point concerns John Sollman's article reviewing Keystroke. He states that the MicroSci A-143 formatting drivers will not dynamically load with Catalyst. My own experience is just the opposite—I dynamically load .FMTD2 and .FMTD3 with System Utilities all the time. It's important to know that these must be assigned with the first four .QUARKCOM UNUSEDx positions; the first four are for Character devices, and the last two are for Block devices. Also, the A-143 manual specifically explains the problem of both .Xx and .Dx being active for the same drive: Pascal is the culprit; it will not distinguish between those two. Thus any Pascal program (Keystroke being one) suffers that same problem.

Just a few tidbits for your consideration. I wish *ON THREE* continued success; the /// community needs you.

Hobart S. Cable, II
Alexandria, VA

We're with you; we would like to see more programs in ON THREE *as well, but we need to call on our readers for help. Surely there are some short applications, utilities, games, etc., out there just waiting to be published. How about it?*

It was nice to see John Jeppson in print again; we offer our thanks to John, and to Margot Comstock (former editor of Softalk*) in allowing us to publish this previously unseen article. Unfortunately, John seems to have abandoned the /// for another Apple product, thus we anticipate no new material from him. The thought does cross our mind, however, of Softalk reprints. We wonder how many of our readers have not seen his published articles on the ///?*

We'll Haba Try at it

Dear Mr. Consorti:

We are a new subscriber to your publication, and from what we have seen, we are very pleased with it. We look forward to each issue.

We have the program /// E-Z Pieces from Haba Systems, Inc. We use the spreadsheet, the data base and word processor continuously. But, we have run into a problem trying to print to a DIF file from a /// E-Z Pieces spreadsheet. When I try to print to a DIF file, it asks the pathname. I put in the appropriate pathname, press return and for a second or two the disk whirrs but then I am asked for a pathname again. If I try to escape from here, a message comes on the screen—SYSTEM FAILURE $06.

I have called the company in Van Nuys, CA, but they tell me it is a bug in the program and no plans are made to update it because not enough copies of the program were sold. Does that mean that those of us who do have the program have to forego that feature? What can we (as owners of this program) do to get an update for this? The manual (yes, I agree it was very poorly written) states that you can "print (or 'save') Data Base and Spreadsheet reports as DIF files for input to other programs." (page 13-4 in the manual.)

Also, below are some questions I have tried to get answered from Haba Systems, Inc. with no success. Maybe you or your readers can help me.

1) Is there a way (and if so, how) to put footnotes at the bottom of the page in the word processor without counting the number of lines to a page?
2) Is there a way to print one page (at the first or the middle) of a multi-page document?
3) In the spreadsheet, is there a way to move the system date to a certain cell on the screen?
4) In the spreadsheet, is it possible to use a "print" command with an if, then condition? For example: If A1 = A10, then print "**" or "these are equal."

When I asked these questions of Haba Systems, on the first three the response was "I don't Know" and on the last one, "no."

I hope you can help with these problems.

Shannon Nosbisch
Effingham-Clay Service Co.
Effingham, IL

We double checked with Haba on your problem of saving a spreadsheet to a DIF file and got essentially the same answer as you, i.e., that it is indeed a bug and that they do not plan an update. However, in our conversation with Greg at Haba, we did turn up a couple of possibilities:

a) It may actually be saving the DIF file following the first time you enter the pathname. Go on the assumption that it has and ignore the second request for a pathname, then check your directory to see if there has been a file save.
b) If there has been no save, then try again, using only a portion of the spreadsheet, or a smaller spreadsheet file. From our conversation, it appears that there may be a happy medium in there someplace. If you will report your findings back to us, then we can pass the information on to our readers.

The answers to your four numbered questions are as follow:

1) No way. You have found one of the limitations of integrated programs. While the word processor is satisfactory, it lacks the features and flexibility of a program devoted solely to word processing. If your need is substantial, you might consider Word Juggler or AppleWriter ///.
2) /// E-Z Pieces will not print a single page directly, but if it does not seem like too much effort, you can work around this limitation by selecting the text you want to print and cutting it. This places it on the clipboard, so that you can then open a new document and paste the clipboard to it. What you have now is a document consisting solely of the page you want to print. Go to it . . .
3) Again we need to resort to subterfuge. With our Desktop Manager, *you can use the text pickup feature to get the current time from the Calendar and then paste in whatever cell you wish on the spreadsheet.*
4) No.

We realize these answers may not be entirely satisfactory, but be aware that the machine we all love is one in which vendor support is at a minimum. This is precisely why ON THREE *continues to thrive, because we break our backs to provide that missing support.*

Hurrah for ON THREE!

ON THREE is America's leading Apple /// support group and independent producer of quality software and hardware products, and ON THREE magazine, America's leading Apple /// magazine is the official publication of ON THREE.

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Printer Protocol Problems

Dear Bob Consorti & Friends:

Before starting with a few of my frustrations, I would like to say I'm glad to see *ON THREE* is alive and well. Thanks for the explicit clock installation instructions. They were great. With a small change, I was able to install the free clock I received from an Apple dealer.

First frustration is the interface between /// E-Z Pieces and my *serial* Okidata 92 printer. It prints as instructed via control commands in Business Basic. When I create my own printer in /// E-Z Pieces, the print control commands are printed in the left margin and not interpreted. I have tried the BASIC CHR$( ) and Pascal CHR( ) formats. Various format modifications were also tried without success. When the default is used, it prints without difficulty. If I had declared the 10 cpi to be CHR$(30), then CHR$(30) would have been printed in the left margin of each line.

Second question is somewhat related to the first. I would like to purchase *Draw ON ///* if I will be able to print what has been created on the screen. I am hesitant ordering because of the /// E-Z Pieces problem. If the answer is 'yes,' my check will be in the mail.

I am in a similar POKE/PEEK situation as Larry Paine and others. Maybe Val Golding could write an article what these POKEs, PEEKs and CALLs are trying to accomplish. We could then rewrite the code accordingly.

Will Titan's "/// plus //e" board permit color graphics or are we still stuck with monochrome. My son's enthusiasm would get a boost, I am sure, with a little color in his life.

Ed Homendy
Fredericksburg, VA

When you are setting up printer control codes in /// E-Z Pieces, the program is asking for actual keystrokes, rather than the CHR$( ) representation that BASIC allows. For example, if your printer manual indicates CHR$(01) for a specific operation, the keystroke equivalent would be [Ctrl-A] (created by pressing the CONTROL key and the "A" key at the same time. In your example of CHR$(30), the keystroke equivalent would be Control-Shift-6 ([Ctrl-^]).

The Okidata is one of the few printers that Draw ON /// *does not yet work with. We expect to have a Draw ON driver for the Okidata at some time in the future, but we pass on trying to predict the date.*

There are thousands of Apple][POKEs, PEEKs, and CALLs. Generally speaking, the majority have no direct relationship to the ///, thus each must be considered on a case-by-case basis.

The Titan /// plus //e board emulates all Apple //e color modes.

Selecting Prefix$

Bob,

I'm overjoyed to see that you guys (and gals) are on a regular publication schedule. I just received my third issue for 1986. I'm also glad to see you're still making products for the ///.

I have *Draw ON ///* and am pleased with its performance. I would like to know if there is an update available for the Apple ImageWriter][color capabilities. If not, I hope one can be developed.

Is there any way to get Micro Courier to work under *Selector ///*. I'm having some difficulties here. Also the cover notes for *Selector ///* does not have an asterisk by Apple /// Business Graphics but the manual explains that the master disk must be in a drive before it will work.

One of my few criticisms of *Selector ///* is in regard to runtime BASIC/Pascal interpreters. I could not get some of the programs to work well with them. For example in BASIC I use partial pathnames which did not work with the interpreter you provided [i.e., if the program is /pro/programs/special/main and I set Prefix$="/pro/programs" I cannot RUN"special/main" as I can with my interpreter without getting a path not found error]. To bypass this I created a HELLO menu and used my own copy of BASIC (1.23) for the interpreter to access all my BASIC programs. My problem no longer exists. With respect to Pascal I have the newest version (I think) with the debug capabilities but could not get this to work with *Selector ///*. Is the SOS.INTERP too big maybe?

Michael R. Schroeder
New Brighton, MN

We have had a lot of questions regarding Draw ON /// *printer interfaces. Currently the only color printer it is compatible with is the IDS Color Prism. Since Draw On was first released a number of newer printers have come out and we do plan eventually to provide additional Draw ON drivers for them. You will read about it first in* ON THREE.

Micro Courier is a special case. However, we do have it running under Selector. We will advise you by mail how to update. BASIC 1.23 handles Prefix$ differently than earlier versions and not always correctly. It also saves BASIC programs in such a manner that they can not be loaded by earlier versions. There are very few differences between 1.2 and 1.23 and we always recommend using the 1.2 version. If you continue to use 1.23, then avoid using Progprefix$ in all applications. You will run into fewer problems with it. There should be no problems with using Pascal with Selector. However, you must be sure that both SYSTEM.PASCAL and SOS.INTERP are version 1.2.

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Calls for technical support and all other matters should be directed to (805) 644-3514. Thanks for your understanding and cooperation.

Non-Existent SOS Version

Dear Val,

I am an Apple /// owner and have a subscription to "The /// Magazine." I recently came across a reference to your magazine and would like to get information on obtaining a subscription. I am also interested in any information you have on *Selector ///*, SOS 1.4b, and any type of software or hardware deals you may have.

John E. Cisar
Des Moines, IA

We are forwarding a sample copy of ON THREE, *along with the other information you requested.*

Selector /// *is a program of the Catalyst type (i.e., permitting instant access to multiple applications programs) without destroying original (copy-protected) floppies as Catalyst does.*

SOS 1.4b was a "beta" version of what is now know as SOS 1.3s. The only difference between SOS 1.3 and 1.3s is that the "s" version has been modified to support, and is supplied with, Selector ///. *In theory, SOS 1.4b does not exist!*

Integrating Applications

Gentlemen:

I have a 256K Apple /// with one exterior floppy disk drive and my wife and I have been quite satisfied with it. We have an Okidata 92 printer that satisfies most of our needs. My wife uses the Quark word processing program and I use /// E-Z pieces for my personal and work-related activities. I often send work to my secretary at JPL using the Access /// communications package through a Hayes Smartmodem 1200. I find the Access /// quite cumbersome to use. I have the Apple /// Business Graphics package but have had little luck in getting it to work with my printer.

The purpose of this letter is to ask your advice on the following:

Are there any products that are available that will allow us to use these programs in a more integrated manner?

Is there a communications package you would recommend that is easier to use?

Is there a graphics package available, or is there something that I can do with mine, to provide a graphics plotting capability?

I hope you will be able to assist me in making more efficient use of my Apple ///.

Jay Schmuecker
La Crescenta, CA

There are very few terminal programs for the Apple /// and we suspect your best bet would be to make do with what you have.

You didn't say if your Okidata was serial or parallel, but it may be if it is parallel, that it requires a PKASO or PKASO/U interface card to handle graphics properly with the Apple /// Business Graphics program. Apple has stubbornly stayed with the idea of providing user interfaces to their own printers only. This or Graph 'N Calc should handle your graphics plotting needs. A program entitled "Graphing Demo," which appeared in the June-July 1983 ON THREE *may also be of interest.*

Selector ///, *with or without our* Desktop Manager *is well suited to allow use of your programs in an integrated manner. However, to make practical use of a Selector type program you should have a high capacity disk such as a MicroSci A-143, UniDisk ///.5, or—preferably—a hard drive.*

How many dollars

have you invested in your Apple ///?

Answer this questionnaire and find out how to extend your computer's life:

- **Do you vacuum your office or home less than twice a day?** ☐YES ☐NO
- **Are there smokers in your office or household?** ☐YES ☐NO
- **Are there children in your household?** ☐YES ☐NO
- **Is the computer located in a family room or other high traffic area?** ☐YES ☐NO

If you answered "yes" to one or more of the above questions, then you need to protect your investment with an *ON THREE* Dust Cover.

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Free Words

Dear Val:

The article "For Free!" by John Lomartire in the March issue brought back a lot of memories. When I bought my first Apple /// in 1981, my initial software investment consisted of Business Basic and VisiCalc ///. I soon learned that VisiCalc could be used as a "poor man's word processor" and used it for correspondence and other word processing for almost a year before I decided to purchase Quark's Word Juggler. I saved a template containing a letterhead and a letter outline that I could use to compose my correspondence, and I had copies of a number of form letters that I would load and "fill in the blanks."

I have a few tips for readers who might wish to use a spreadsheet program for word processing, especially if they have Advanced VisiCalc or a similar spreadsheet with features such as variable column widths, which VisiCalc /// was lacking.

Mr. Lomartire suggests setting column width to the width of the text to be printed, typing it in, and then sending it to the printer. To insert a table, he would recall from disk storage a VisiCalc template with the appropriate information, send that to the printer, and then reload the template containing text to continue the document. Actually this loading and saving of templates can be very time consuming and is completely unnecessary if your spreadsheet has variable column widths. Just set an empty column on the template containing the table(s) to the appropriate width and type in the text; all the printing can be done from the same template.

Is the report or document something you would print frequently with only minor changes or updated figures in the spreadsheet table? If so, you can automate the printing by using the macro keystroke capabilities of the spreadsheet. With Advanced VisiCalc, for instance, you could easily set up the template so the keystrokes "[Ctrl-K] P" would cause part of the text to be printed, then jump to a table and print that, jump to and print more text, then jump to a blank area to move to the end of the page. I use this technique for a number of reports that are updated periodically. Multiple copies can be printed by following the [Ctrl-K] with the number of repetitions needed.

Mr. Lomartire recommends using the spreadsheet as a word processor to avoid rebooting back and forth between separate spreadsheet and word processing programs. This may be handy if you must boot each program from a floppy disk. However, I find that if your programs are stored on a hard disk and run under a program selector such as Catalyst or *Selector ///*, changing programs is so much easier that I usually do this to take advantage of the superior capabilities of the word processor (except for often repeated reports, as described above). Tables from the spreadsheet are "printed" to a text file (much faster than "saving" as a spreadsheet template), and then loaded into the word processing document. Any desired minor editing of the table format can usually be done more easily in the word processor.

For any serious Apple /// user who has not yet added a hard disk and program selector, I highly recommend this investment. I believe that since I made that change (and added a print spooler) the usefulness of my computer has doubled or tripled.

As for the use of the spreadsheet program to do multiple columns and "nesting" of information as described by Mr. Lomartire, this can certainly be accomplished and may be of practical use. Personally, I think that in most cases, the advanced editing features of Word Juggler or another good word processing program, like automatic search and replace, insertion, block moving, and so on, are such an aid to composition that it is not worth worrying about multiple columns. Or, if the document is to be reproduced, you can print narrow columns and physically cut and paste them into columns for running off on a copier much more easily than composing the original in two or three column format on a spreadsheet. Computers are such fun to use; but they are not always the most efficient tool.

Roger T. Harrer
Pocatello, ID

Thanks for the lengthy comment which helps prove that there is always more than one solution to a problem. You said computers are not always the most efficient tools, but we must realize also that a skilled programmer can make more efficient use of what is available in a given system, and that a skilled user can utilize and organize both software and hardware in the most efficient manner. So while as a generality your statement is correct, we as individuals can use our talents to make the computer a more efficient tool.

512 Questions

Dear ON THREE:

Re AppleWriter ///—although Apple upgraded my system from 128K to 256K, my editing size is still limited to 64K. I understand from your ad that with your 512K that this partition is greatly enlarged. If so, what is the partition size? Do you provide a patched AppleWriter ///?

Re Business Basic—is there an XREF program available for cross referencing variable names?

Re Access ///—the version I use is a pre-released one that was available internally within Apple about a year ago, and which uses Command Files for automatic signon, file inquiry, and signoff. What version do you have available, and how do I determine what version I have?

G. Ray Robertson
Irvine, CA

***ON THREE* presents...**

The Unprotect Driver $19.95 plus $2 s/h

ON THREE has not changed its position regarding duplicating copyrighted programs for profit or to give away, but since many Apple /// software products are no longer supported, owners of AppleWriter ///, VisiCalc, and VisiCalc Advanced Version are facing the problem of what to do when a diskette "crashes." After much consideration we decided to proceed with a product to solve that problem. *The Unprotect Driver* will allow you to make back up floppies of the above programs. For the first time, you can put your master disk in a safe place and boot on the duplicate.

Economically priced at only $19.95 plus $2.00 shipping and handling, the *Unprotect Driver* comes with full documentation and will work with *Selector ///* so you will no longer require a "key" diskette. The *Unprotect Driver* is sold for legitimate *Archival* purposes only. *ON THREE does not condone* and will not condone duplicating a disk for any other purpose.

In order for AppleWriter to recognize the extra memory you now have, you must have version 4.0, which is available from us for $10. If you purchase a 512K Upgrade from us, we supply an AppleWriter update. Your available memory in AppleWriter will be about 450K, large enough for almost anything you can think of. There is no additional charge for this update.

D.A. DataSystems supplies a cross reference program for Business Basic.

You can check the version number of Access /// on bootup or from the setup module. It will be displayed on the screen. We do not handle Access ///. Probably Sun Data does.

TWX of the Twade

Dear Bob:

One of the first uses for our original Apple][plus was to drive the tape punch on a TWX machine for a lengthy shortage report sent weekly to one of the manufacturers we represent. 80% of the information was repetitious of the previous week, used File Cabinet which was readily available and additions, updates and deletions could be quickly made. The worked very satisfactorily, although it was a two step process of sending from the Apple to the TWX machine and resending the tape.

Now we are using a Business Basic program written especially for our shortage report which sends to the memory of a model 43 Teletype TWX machine at 1200 baud through the RS232 port. It is still a two step process as we have to then retrieve the memory from the model 43 and send its contents to the factory. I am ready to eliminate the model 43 and access Western Union's TWX circuit direct via the Apple ///.

People servicing our model 43 believe this should work although surprisingly they seem to know little about the baud rate except they think it is 300, parity or the XOFF/XON. Sometimes I think they just don't want to tell me.

My question is, do you have any thoughts on what would be the best communication program and modem for this operation. Sure wish we had a dealer in this area who had a little knowledge of the Apple /// operating system. I have an idea that the first time I try Western Union, all kinds of trouble lights and bells are going to ring on their switchboard.

Appreciate any bit of information/suggestions you might give me regarding the communication program and modem. By the way, we use a Serial Card /// to tie the computer and the Model 43 together.

One more question, altogether different. Do you know if anybody has converted for use with the Apple /// the old assembly language sort program Ampersort II?

E.F. Aymond, Jr.
Dallas, TX

Western Union has a relatively new service called "Easy Link," which was designed expressly for personal computer users and provides a link to WU's Telex and TWX services via your own telephone line. We would assume that as long as your data transmission header is prepared in accordance with the Easy Link manual instructions you should have no problems at all. It is our understanding that Easy Link accepts data at 110, 300, 1200 and 2400 baud.

We suspect any one of a number of modems such as the Hayes Smartmodem 1200 would do. Your choice of terminal programs is pretty much limited to Access ///, although there are others around.

We spoke recently to Cliff Howard, the "H" of S and H Software, producers of AmperSort/Merge, and Cliff told us that an Apple /// version was never produced. It is possible, although not terribly likely, that some enterprising programmer has modified it to run on the ///. If any of our readers have any information on a modified Ampersort for the ///, please clue us in.

512 compliments

Dear ON THREE:

Enclosed please find my work disk copy of /// E-Z Pieces. As I explained [on the phone] when I attempted to configure it for the 512 upgrade, it came up with the message that said the SOS.INTERP is not a /// E-Z Pieces interpreter and it does not perform the upgrade.

I would appreciate it if you would upgrade my enclosed copy.

I find the 512 expansion the best thing that's come along. It was easy to install thanks to the well-written instructions (it worked the first time without a glitch). It has enhanced my AppleWriter into a word processor that as far as I am concerned leaves all the rest in the dust. I can now load 300-page files from other word processors via ACCESS /// onto my MicroSci A-143 and get right to work with AppleWriter /// and edit them without having to waste time breaking a long file into separate files. Also the ability [on AppleWriter 4.0] to change the display column width is a real plus.

If the *Desktop Manager* follows suit, my Apple /// will have increased its longevity well beyond the next several years.

As you no doubt have realized, the copy of /// E-Z Pieces you sent us was a demo, rather than a "working" copy. We assume that by now your problem has been resolved. If not, please feel free to contact us again.

Managing Well

Dear Bob,

I first want to thank you for the excellent demonstration you conducted at our February 18th meeting. I was very impressed. I would like to talk about the *Desktop Manager's* Calculator. I was excited to see sine, cosine and tangent included among the keys, as I do a lot of calculating of triangles. A little icing on the cake can be added by including a double function key such as an "A." An example of this would be "AS" for arc sine or the inverse of the sine. The same would apply for cosine and tangent. I sure hope you consider it.

Something I would like to see in software would be a program to dump spreadsheets sideways to a printer. I understand the Apple][has such a program.

As an indication of my faith in what you are doing, my check for the *Desktop Manager* is enclosed. And a thank you for supporting the ///.

Our plans for Desktop Manager *include a couple of optional calculator modules for those users desiring a task-specific calculator. Your suggestions will certainly be taken into consideration.*

There are a number of Apple][programs that will dump data to the printer in a sideways configuration. We know of none for the ///. However, with a Titan /// plus //e card, a printer program written under ProDOS would be able to read Apple /// data files and do what you require, even though it is sort of a roundabout solution. Readers, do you have anything more on this subject?

Soft Spot for CP/M

Mr. Consorti,

Just got your latest issue of On Three. I don't know why, maybe you still "owe" me from a subscription from long ago. Still helpful though, and I still enjoy it.

I have yet to find anything in the CP/M world that is "incompatible" with a /// running a softcard. Are there any other folks out there running a softcard?? Don't let the silence scare you, I'm used to it.

The problem described is simply a matter of disk format incompatibility, not a matter of softcard incompatibility. The basic problem is that Apple uses a disk encoding format that is totally different from anyone else in the industry, and a /// or a][can't read the CP/M information written by a TRS-80. The problem actually extends to the whole question of 5¼-inch disk formats for CP/M. But, PC-DOS solved all that for "the rest of the world." Solutions?

The traditional "Find a friend with a TRS-80 and hardwire the two together with a Communications package (or PIP) and let 'er rip." Or, Have the supplier send the file to the public access area of Compuserve or another mutually acceptable BBS (using XMODEM). Or, do a modem link between the two individuals (who's paying?).

The softcard does have a communications program available called Micro Link. Damm good one at that. It runs circles around the Access program from Apple except for terminal emulation, and thats really only useful when your going to a mainframe or "something else." Digital Marketing in Walnut Creek, CA. puts it out. (800-826-2222 or 415-947-1000 [in 1983]).

What's the advantage to running CP/M on a /// ?? If you need a database program you can run dBASE II. The Standard by which the rest are judged, and it works identically on a PC.

I don't want to hear about the disadvantages of Wordstar... After all this is being written in Wordstar. Also ignore Spellstar and Mailmerge. WPL maybe "Stronger", but at least I can load all those programs on my hard disk without the hassle of copy protection and freely move between them *as I choose*, and *not* some droid or margin master.

It's also kind of nice to have access to a great library of public domain stuff. (I support your support of Unprotected software... Yes I bought Dbase and Wordstar). How about another feature. I can call in from anywhere, using any PC or terminal with a modem, and have access to most of the files I could possibly want. As long as screen formatting or direct writing is not necessary you would be amazed at what a "plain vanilla softcard" will do.

Well, you could talk about all the interesting things you can do, or have been done with CP/M. Like not having to reinvent the wheel... Or, it's similarity to DOS... Or, the ability to have 12 disk drives and/or hard disks on line... Or, User areas that give you "subdirectories..." Or, built in commands like "type" or "dir..." Or, (GOD forbid, "save")...

As far as I know there are only two people in the whole /// world using softcard CP/M. Me and one other guy... We're not much of a market, but it's amazing what filters through. CP/M ain't dead yet!!!

I can't possibly comment on Mr. Fugere's worldly knowledge of computer dealers service contracts or used car representatives for that matter, but if I were going to spend $2050 on a product such as maintenance agreements I would sure want a warm and fuzzy feeling about who I'm dealing with. Can I speak knowledgeably? I can. Field Service has been my business for 21 years, and yes I offered to provide On-Site service through Sun Data (without response from them), and manage to back it up through a $65M company. (yup, $65 million). Is there a need for on-site service for an Apple ///?

Mr Redfield from my home port in Costa Mesa has a good idea. Does anyone have the Super Serial Card driver 1.12 (experimental)..? Is there another available?

Edward J. Kobs
Marietta, GA

Perhaps the reason you received a recent copy of ON THREE *is because we recently sent a bunch of complimentary copies to non-subscribers. Better check it out... CP/M certainly has a lot of advantages including a wealth of software. We'd really by interested as to the reasons for its lack of popularity on the ///. Is it really so poorly implemented as we have heard or is it merely that people just plain haven't gotten into it?*

Perhaps you noticed on our listing of hot line consultants there are no listings for CP/M. Hint, hint... →

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/// plus //e Apple Works Well

Dear Mr. Consorti:

I purchased the Titan /// plus //e boards from Sun Data in Logan Utah. The first set of boards apparently had a fault as my /// also went blank. Sun Data suggested I send my computer to them and that they would take care of all of it. I found the personnel at Sun Data very helpful and [they] did not give me bad advice just to get me off the phone. They returned my computer in working condition and in the approximate time I expected. I will recommend them any time I have the opportunity to do so.

As I stated, the first set of boards must have been defective as they gave me a new set. In my view, the Titan Users Guide is well documented and to the point. It should be easy to follow by anyone. I purchased AppleWorks and it sure is a big improvement over the Quick File /// I have used in the past. Of course, I purchased my /// over three years ago and was very happy with Quick File. As I work out of my home and have a space problem, these enhancement boards were just what I needed. The only problem that I might have with the /// plus //e is the available K. There is only 55K left in the data base. For now I plan to use the //e system only for short run items and for making templates for others. What I was pleased to find is that AppleWorks is able to read my Quick File /// and AppleWriter /// disk files.

From what I have seen over the last couple of weeks, I recommend this system for anyone who has a use for it.

Al Berens
Redwood City, CA

Thanks for your comments on the new Titan board. The only drawback that we can see from this end is that it requires two slots in the Apple ///. Of course, you are limited to the amount of memory that is normally available to an Apple //e, except that the additional Apple /// memory is used as a bonus RAM disk. In a machine with only four expansion slots, this does present a problem for users with a number of peripherals. However, ON THREE *is giving very strong consideration to producing an expansion box which would alleviate this problem.*

Fooling Around

Dear Mr. Consorti:

Regarding the article "Fooling the Apple Dot Matrix Printer," by Jerry Lewicki in the February 1986 issue, readers may be interested to know that there is a user's manual for the Apple DMP, entitled "Dot Matrix Printer User's Manual." It contains 119 pages, indexed, Apple product #A9L0058. I found out about it by accident. A friend who knows someone inside Apple had obtained it. I had never heard of it before.

Concerning the letter in the same issue from Francis K. Wagschal (page 27) about wiping out protected boot disks when installing them on Catalyst, Pair Software (The /// Magazine), 3201 Murchison Way, Carmichael, CA 95608, has a program called "Fixer" that "repairs Catalyzed disks." I have used it repeatedly and it works just fine. It simply makes the boot disk bootable again. It only costs $10 plus $1 shipping. I have used it on AppleWriter /// and Advanced VisiCalc.

Thanks for the hints. It is typical of Apple that the availability of the DMP manual was never widely made known. Our Unprotect Driver will also allow you to make back-ups of these programs.

Cursors, Foiled Again

Gentlemen:

I purchased a copy of *Draw ON ///* several months ago. I would appreciate help in the following areas:

1. It appears that the program will work much easier if a mouse or joystick is used. Since all four expansion slots in my Apple /// are filled (UPIC, Titan /// plus //e emulation cards, and ProFile card), I cannot add a mouse. I have tried unsuccessfully to locate an Apple /// joystick in the Detroit area. Do you know where one can be purchased?

2. My computer has a wide carriage ImageWriter connected to the RS232 port. So far, I have been unable to figure out how to print screens on it. Help!!!

Michael F. Garms
Farmington Hills, MI

The Cursor /// Joystick is produced and sold by
Creighton Nolte
3557 Keaton St.
San Diego, CA 92110
at $42.95 plus $2.50 shipping and handling. However it is possible it may no longer be available.

To print a picture to ImageWriter or any other graphics-capable printer that is compatible with Draw ON ///, *save the picture as a SOS fotofile, then use the "Print Picture" option from Draw ON's "Program Config" menu.*

Switching Topics

Dear Bob,

In response to your Block_Write column in the March issue, I would probably be interested soon in a slot expansion box for my Apple ///. I am enclosing a copy of an ad which ran in the December "A+" for a "Switch-a-slot." Not sure if this item is still available or will work on the ///.

Other ideas to work on or evaluate—someday: How about a tape backup unit for the /// (trying to find something other than Backup /// is a real joy): Coretape and Irwin Backup Systems work only on IBM, Sider is for the][; any ideas for the /// under SOS or CP/M?)

Any idea where to find a complete listing of SOS errors. I will occasionally find one crossing my CRT which isn't in the SOS manual. Fortunately none of them have been fatal but I would be interested in knowing what this machine is trying to tell me.

Keep up the good work.

Roger F. Suchyta, M.D.
Salt Lake City, UT

An Apple /// version of "Switch-a-Slot" is available from D.A. DataSystems, 3792 Windover Drive, Hamburg, NY 14075. However its usefulness is limited by its inability to handle interrupts and high speed operations, and since the "Switch-a-Slot" is assigned to slot 4, only one external device (switch selectable) may be used at a time. It appears that because we have had such a positive response, we will probably go ahead and produce an external slot expansion box. In addition, we will shortly be announcing a tape drive backup for our Sider line of hard drives. Watch for news in ON THREE.

Although we are not aware of any error code omissions in the SOS manual, you have provided inspiration to write an article listing all the error codes, SOS, BASIC, etc. for the Apple ///. We expect to follow up on that. That is exactly what we mean when we ask our readers for input and ideas. Thanks again.

Call Three: Hot Line/Apple /// User Groups

If you would like to get together with other Apple /// owners and exchange ideas, a user group is for you. Below is a listing of all Apple /// user groups known to us. If you have recently formed a group or know of one we have not listed here, please contact *ON THREE* and let us know so that they may be included. There is no charge for this service.

California

Sacramento Apple /// User Group
1433 Elsdon Circle, Carmichael, CA 95608
(916) 482-6660

Orange County Apple /// User Group
22501 Eloise Ave., El Toro, CA 92630
(714) 951-1231

Los Angeles-South Bay Apple /// Users Group
P.O. Box 432, Redondo Beach, CA 90277
(213) 316-7738

Apple /// Users of Northern California
220 Redwood Highway #184
Mill Valley, CA 94941

International Apple Core Apple /// S.I.G.
908 George Street, Santa Clara, CA 95054
(408) 727-7652

Canada

Apples British Columbia Computer Society
Apple /// S.I.G.
P.O. Box 80569, Burnaby
BC Canada V5H3X9

Canadian Apple /// Users Group
80 Antibes Dr. Suite 2805
Willowdale, Ontario, Canada M2R 3N5
(416) 665-3622

Colorado

Colorado Apple Three User Group
P.O. Box 3155, Englewood, CO 80112

Connecticut

Apple /// Society of Southern Connecticut
34 Burr School Rd.
Westport, CT 06880
(203) 226-4198

Florida

Sarasota Apple /// User Group
c/o Computer Centre
909 S. Tamiami Trail,
Nokomis, FL 33555
(813) 484-0421

Georgia

Atlanta /// Society
385 Saddle Lake Drive, Roswell, GA 30076
(404) 992-3130

Illinois

Third Apple Users c/o Lavona Rann
1113 Wheaton Oaks Dr., Wheaton IL 60187

Kansas

Kansas City Apple /// User Group
5533 Granada, Roeland Park, KS 66205
(913) 262-3355

Maine

So. Maine Apple Users Group
Casco St., Freeport ME 04033
(207) 865-4761, X 2249

Maryland

Apple /// SIG Chairman Washington Apple Pi
8227 Woodmont Av. #201
Bethesda, MD 20814 (301) 654-8060

Minnesota

Minnesota Apple Corp Users Group
P.O. Box 796, Hopkins, MN 55343

New Jersey

North Jersey Apple /// Users Group
c/o Roger T. Richardson
P.O. Box 251, Allamuchy, NJ 07820
(201) 852-7710

North Carolina

North Carolina Apple /// User Group
2609 North Duke St. #103
Durham, NC 27704

Ohio

Cincinnati Apple /// User Group
5242 Horizonvue Drive,
Cincinnati, OH 45239
(513) 542-7146

Apple Dayton - Apple /// S.I.G.
P.O. Box 1666, Fairborn, OH 45324-7666
(513) 879-5895

Oregon

Portland Apple ./// Users Group
1001 SW 5th Av. #200
Portland OR 97204
(503) 225-1623

Overseas

Apple THREE Group International
c/o Maj. H. Joseph Dobrowlski
P.O. Box 913, Langley AFB, VA 23665

Apple /// Users Belgium/Netherlands
c/o H. Van der Straeten, Vestinglaan 49
2580 Sint-Katelijne-Waver, Belgium
(015) 205328

Apple User Group Europe e.V.
Box 11 01 69 D-4200, Oberhausen 11,
West Germany 0049-6195-7 3917

Apple /// User Group Netherlands
c/o J. Woretshofer, Ganzerikweerd 22,
NL-6229 TG Maastricht, The Netherlands
(043) 611704

British Apple Systems User Group (BASUG)
Apple /// S.I.G., P.O. Box 174,
Watford Herts, England WD2 6NF
0727 73390/72728

Le Club Apple
43 Avenue de la Grande-Armee
75116 Paris, France

Texas

Apple Corps of Dallas Apple /// SIG
P.O. Box 5537, Richardson, TX 75080

River City Apple Corps /// S.I.G.
Box 13349, Austin, TX 78711
(512) 454-9962

Houston Area Apple Users Group (Apple /// Division)
P.O. Box 610150, Houston, TX 77063
(713) 480-5690 or 974-5153

Virginia

Charlottsville Apple /// User Group
216 Turkey Ridge Rd., Charlottsville
VA 22901 (804) 642-5655

Greater Tidewater Apple /// User Group
Route 2, Box 216, Hayes, VA 23072
(804) 642-5655 or 898-3500, ext. 2671

The *Call Three: Hot Line* is a service whereby Apple /// users with problems can call an area number to get assistance. The individuals answering the phones are fellow Apple /// users who have volunteered to help others over some of the rough spots. They are not compensated for this service, therefore we owe then a resounding "three cheers."

We would like to expand this service even further, so if you are familiar enough with your machine to be able to aid others and answer questions, please write us, stating your areas of expertise and availability in terms of days and hours. Certainly you can bask in the knowledge that you have been able to help a fellow Apple /// user.

For those of you who have questions, feel free to call our consultants listed below. **Please** observe however, the calling hours shown and before placing a call, double check the time zone so that you don't inadvertantly wake someone up! There are no other restrictions on using the service other than as stated above. Again, **please** remember these people are volunteers, and if we receive information indicating that calling hours are not being observed, we will have no choice but to remove the consultant from the listing or, worse, discontinue the service.

The following is an alphabetical listing of subjects and abbreviations used in the "subjects" column of the consultants listing.

Subject	code	Subject	code
Accounting	AC	Graphics	GR
Agriculture	AG	Micro-Sci	MI
Assembly Lang.	AL	Modems	MD
		Modula-2	MU
Business Basic	BB	Pascal	PA
Catalyst	CT	ProFile	PR
Cobol	CO	Quark	QU
CP/M	CP	SOS	SO
Data Base	DB	Spread-sheets	SS
Education	ED	Telecom.	TC
Financial	FI	Word Proc.	WP
Fortran	FO	Emulation	AE
General	GE	/// E-Z Pieces	EP

Name	Area	Telephone	Days	Hours	Zone	Subjects
Coville Woodburn	NH	(603) 863-5590	M,Tu,Th,F	7-8pm	Eastern	CT, QU
Ken Johnson	MA	(413) 253-2298	Su-Sa	6-9pm	Eastern	BB, PA, MD, WP, MI
Don Loosli	MI	(313) 626-3848	M-F	9am-5pm	Eastern	GE, WP, SS, DB
Richard F. Malley	CT	(203) 232-9505	M,Tu,W,F	6-9pm	Eastern	GE, SO, WP, SS, QU, CT, PR
Harry T. Hanson, Ph.D.	NJ	(201) 467-0712	M-F	6-9pm	Eastern	GE, PA, BB, CT
Edward N. Gooding, Sr.	VA	(804) 747-8751	Su-Sa	6-9pm	Eastern	CO, SS, PR, MD, CT
Jeff Fritz	WV	(606) 353-9493	M-Sa	8-11pm	Eastern	BB, DB, GE, MI, SS, TC, EP
Al Johnston	FL	(904) 739-1600	M-F	9am-6pm	Eastern	GE
Paul Sanchez	FL	(305) 266-5965	Su-Sa	10am-4pm	Eastern	SS, PR, CT
R.B. Thompson	NC	(919) 787-1703	Su-Sa	10am-10pm	Eastern	BB, DB, GE, SS, WP
J. Donald Glenn	NE	(402) 291-9177	Su-Th	7-10am	Central	GE
Jim Ferencak	IL	(312) 599-7505	M-F	10am-5pm	Central	GE, EP, DB
Neil Quellhorst	IL	(217) 434-8727	Su-Sa	7-9pm	Central	AL, BB, GR, PA, SO, TC
Terri Wiles	CO	(303) 850-7472	Su-Sa	10am-6pm	Mountain	PA
William Prince	OR	(503) 254-6465	M-F	9am-4pm	Pacific	GR, TC, Corvus
Karl La Rue	WA	(509) 582-6459	F-Su	6-10pm	Pacific	MD, GE, EP, WP, TC, SS, CP
Pat Holwagner	CA	(415) 433-2323	M-F	10am-6pm	Pacific	GE, SS, WP, CT, DB, SU, AE, EP
Vincent F. Latona	CA	(818) 703-0330	M-F	9am-5pm	Pacific	GE, WP, BB, SS, AE
Wayne Hale	CA	(619) 450-3856	M-F	7-11am	Pacific	BB, GR, CT
Dennis R. Cohen	CA	(818) 956-8559	Su, M-F, Sa	10am-10pm 7-9pm 12n-6pm	Pacific	GE, PA, MU, WP, DB, SO
Kelly C. McGrew	WA	(206) 943-8533	Su-M, Th-Sa	7-9pm	Pacific	DB, GR, SS, PR, MD, CT
H. Van der Straeten	Belgium	(015) 205328	Su-Sa	7-10pm	—	BB, CT, DB, GE, PA, PR, SS

ON THREE Presents...

ON THREE O'Clock

Now is the Time for a real-time clock

$49.95
plus $3.00 shipping and handling

Believe it or not, a lot of folks have plain forgotten (or never knew) that the Apple /// was designed to operate with a built-in clock and that, with a clock chip installed, SOS will automatically time stamp and date all file saves.

When the Apple /// was first released, the supplier of Apple's clock chips could not supply a working clock. As a result, the /// was supplied without a clock of any kind. Now maybe you are wondering when you list a disk directory, how the time and date magically appears.

Not too long ago *ON THREE* developed a clock for the Apple /// which plugs in right where the never-released Apple clock was supposed to go, and for just $49.95 plus $3.00 shipping and handling, this easy to install, SOS-compatible clock can be yours. It comes with comprehensive instructions and *ON THREE*'s limited six-month warranty and does not use any of your precious slots.

With an *ON THREE O'Clock* installed, whenever you save or modify any type of file, the current time and date will be added to the directory listing so you can always tell at a glance which file you last worked on, and when. But that's not all. Business Basic has two reserved variables, DATE$ and TIME$, which return, respectively, the current date and time to your BASIC program. These reserved variables can then be used whenever you want to print the date and/or time in a BASIC program.

Special Combination Offer

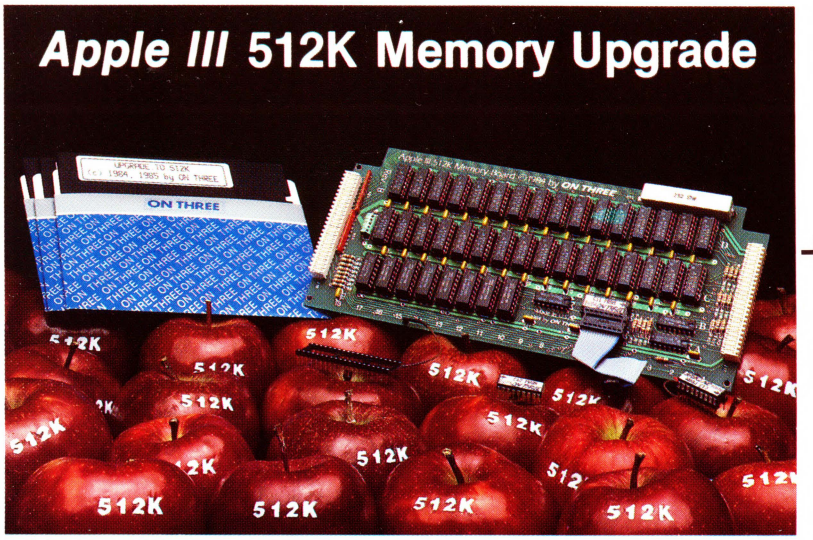
There's a great deal more you can do with *ON THREE's ON THREE O'Clock* if you also have our *Desktop Manager*. Whenever you want, you can display the current date and time on the screen with one keypress. Since this is a background function, you can be word processing with AppleWriter or entering data into VisiCalc, and with one keystroke you can obtain updated time information. In addition, you can use the *Desktop Manager*'s Appointment Calendar to enter items you want to be reminded of and, like magic, when the time comes, no matter what you are doing, a message will appear on your screen to gently chide you via the *Desktop Manager* to make that phone call now, etc.

Now The Appointment Calendar is not the only feature of the Desktop Manager, you can read about the Calculator, the Notepad, and the others elsewhere, but since the *Desktop Manager* requires a clock, we want to offer you a money-saving deal. Purchased together, you can get the *ON THREE O'Clock* and the *Desktop Manager* for only $173.95 plus $8.00 shipping and handling. Now is the time to take advantage of this special offer.

Desktop Manager/ON THREE O'Clock Combo

$173.95 plus $8.00 shipping and handling

Apple III 512K Memory Upgrade



+

= Increased Productivity With a More Powerful 512K *Apple* ///!

ON THREE's 512K Memory Upgrade is the Single Most Exciting Enhancement to the Apple /// Ever!

Specially priced at just for a limited time only $399*

Look forward in 1986 to more file capacity for your applications programs like VisiCalc (regular and advanced versions), /// E-Z Pieces, Selector ///, Business Basic, and others. Imagine having 450K to work with on a spreadsheet model or data base with a 512K Apple ///. Think of the forecasts you could create. Or how would you be able to type PRINT FRE from Business Basic and see 467542 print out on your screen. Wow! The most powerful BASIC around.

The *ON THREE 512K Memory Upgrade* is simple to install by following the directions in the installation manual. Even better, it does not use any of your precious expansion slots and works with all SOS programs. If you ever run out of memory once you have your 512K upgrade in place, you may need a minicomputer!

Another problem the *ON THREE 512K Memory Upgrade* can solve is when you are running a hard disk with *Selector ///* or Catalyst. Certain programs take up a lot of memory and sometimes there is not enough to go around. And if you think the hard disk is fast, wait till you try the *RAMDisk* that comes free with the 512K upgrade. It'll amaze you with its speed. If you were used to making notes, etc. while your drive was working, you can forget it.

You see, with the limitations of a 256K system, programs like *Selector ///* and Catalyst, in conjunction with special purpose utilities like *ONTIME* or the *Calendar Pak* will run on only minimal Selector or Catalyst systems. This means no spooling and a lot of dynamic driver loading. Who needs problems like this? Now you can run, for example, *Draw ON* with Catalyst and see your pictures being printed on the printer while you have already started word processing with AppleWriter /// or Word Juggler.

Read the checklist in the box below to see all the freebies that come with the *ON THREE 512K Memory Upgrade*.

* The full purchase price is $449 plus $10 shipping and handling. (And plus 6% Calif. sales tax for residents.) After installing the *ON THREE 512K Memory Upgrade*, you can return your old 256K board to us for a $50 rebate.

If you have an older 128K machine, the cost is a flat $449 (plus shipping) and *no* rebate. Installation must be performed by *ON THREE* or a dealer.

ON THREE also will install any upgrade for you at just $50. We offer same day turnaround on 256 to 512K upgrades. Call for more information.

The *512K Memory Upgrade* is the single most exciting thing to happen to the Apple /// in a long, long time. Using state-of-the-art 256K memory chips, the board is very simple to install and even easier to use. The *512K Memory Upgrade* will NOT take up an expansion slot as it is a simple board swap-out. Just keep on using your existing programs—you don't have to change them! VisiCalc, Advanced VisiCalc, /// E-Z Pieces, Apple Writer, Business Basic, Pascal, Catalyst, Selector /// and many other programs will automatically have about 450K of memory to work with.

Look!

At no extra charge, *ON THREE's* 512K Memory Upgrade includes:

- ✔ *Complete* 24-page instruction manual.
- ✔ *Ultra-fast RAMDisk Drive* with demonstration programs.
- ✔ *The Upgrade to 512K Utility* disk . . . updates all your disks to work with the expanded memory and the *Updated* version (1.2) of the *System Utilities* program that permits larger SOS DRIVER files.
- ✔ *A copy of the Confidence Memory Program . . .* tests all memory and ensures your *512K Memory* board is working correctly.
- ✔ *ON THREE's* full *90-day warranty.*
- • **and of course, an Apple /// 512K memory board with *state-of-the-art* 256K memory chips.**

ON THREE (805) 644-3514
P.O. Box 3825, Ventura, CA 93006

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†*3% surcharge on American Express orders*

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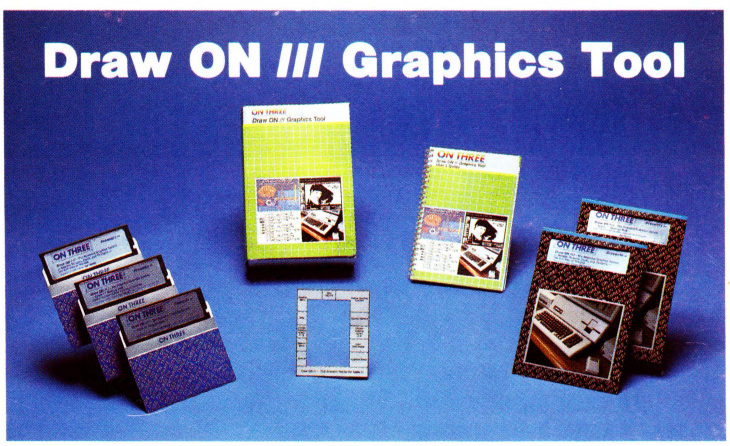
ON THREE Presents . . .

Draw ON /// Graphics Tool



- Use *Draw* ON /// directly with Apple //e mouse and interface, joystick, keyboard, or Apple Graphics Tablet (Graphics Tablet version $50 additional)
- *Draw* ON /// can spruce up dull graphs with its many typefaces or by creating fancy borders and textured images
- *Draw* ON /// comes complete with easy to follow menus, a durable spiral-bound instruction manual and tutorial, keypad overlay, and unprotected diskettes which will install on *Selector* /// or Catalyst
- *Draw* ON /// is compatible with all monochrome monitors as well as NTSC (standard) and RGB (hi-res) color monitors
- Multiple help screens
- User-adjustable grids
- Zoom in for detailed work
- Rubber-banding of lines

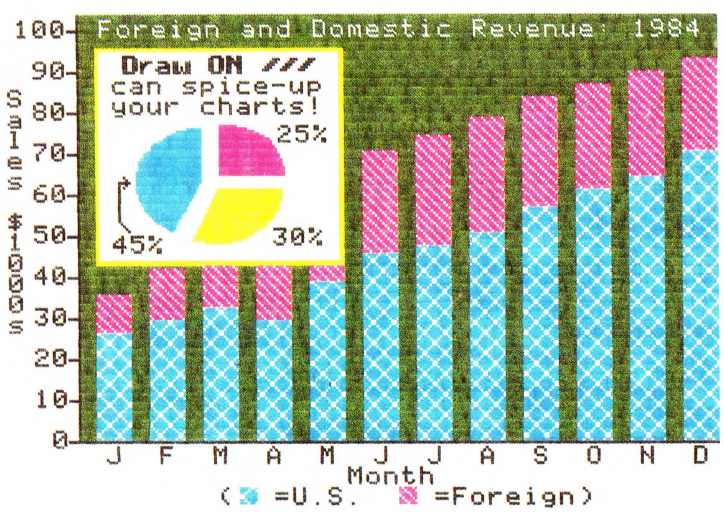
The most versatile Apple /// graphics tool ever designed!

$179 . . .plus $5 shipping and handling

What? A computer graphics program that is powerful and easy to use, has the resources of a complete graphics art studio, creates professional-quality charts and diagrams, complex illustrations and original artwork, letterheads, slides and tables for presentation? Don't you believe it! . . . **unless you're talking about Draw ON ///™, from ON THREE!**

Draw ON /// transforms your Apple /// into a drafting table, easel and sketch pad, all rolled into one, like MacPaint with color. Computer Aided Design (CAD) applications such as circuit layouts and flowcharts are childs play for Draw ON ///.

Draw ON /// comes with a wide selection of text fonts and objects which can be supplemented with those of your own design. Mix and match with drawings and charts, using Draw ON ///'s powerful cut and paste facility. You can use Draw ON ///'s many fonts to label your own drawings as well as those in other applications, and you can pick up objects, expand, shrink, rotate, invert, and texture.



Draw ON /// requires 256K minimum memory

Look!

You can print Draw ON ///screens with all of these popular printers:

- *Apple DMP*
- *Epson FX, MX, RX series*
- *ImageWriter*
- *ProWriter*

plus, with a PKASO/ PKASO-U interface:

- *Centronics*
- *IDS Prism, Color Prism**
- *NEC*
- *Okidata*
- *. . .and others*

**required to print color drawings*

Specify printer and interface when ordering