

# ON THREE

The Magazine For Apple III Owners and Users



Happy Birthday  
ON THREE!

## • Data Plotting with Pkaso



- Assembly: The Pascal Way
- One, Two, /// Forum
- Review ON: Let's Talk



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Desktop Manager is in

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Volume 3 - Number 2

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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? *ONTHREE'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 of *Desktop Manager*. You can instantly



“after”

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- An Appointment Calendar . . . Johnson at 10:30 AM . . . appear . . .

packed with features. You can jot . . . you may never need to use a word processor

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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.

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July, 1986

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**ON: The Cover**

Happy Birthday to us! ON THREE celebrates its first twelve issues with a cover collage.

photographed by:

**David Ojerholm**, H&O Studios, 614 E. Main St., Ventura CA 93001



**ON THREE Presents...**

## **ON THREE O'Clock**

***Now is the Time  
for a real-time clock***

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.



**\$49.95**  
plus \$3.00  
shipping and  
handling

**Desktop Manager/ON THREE O'Clock Combo**

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# Apple.Sauce

val j. golding

## Hot.Sauce

It was a typical and pretty spring day in Ventura. The last vague remnants of early morning fog had nearly burnt away. We felt the gentle breeze wafting in our barely cracked-open window, no doubt provoked by a few arriving fragments of puffy afternoon cumulous drifting across the otherwise clear sky. All in all, a pleasant mood and scene had been set with no indication of what lay just ahead.

The phones had been moderately busy, and from time to time we found ourselves turning away from the word processor to answer an occasional ring. We had just hung the phone up from a support call and were reaching for the keyboard as another call came in.

"On Three, may I help you," we spoke into the beige mouth-piece, almost knocking over a plastic container of coffee in the process. The voice on the other end, barbed and acerbic, bearing just a trace of accent, seemed as if it might belong to an older man, perhaps an Italian. We could almost visualize a somewhat wiry, thin face, topped with shocks of wavy salt and pepper hair.

"You people are thieves," the voice on the other end yelled. "You lie and cheat. Everything Daryl [Anderson] wrote about you is true."

"Wait a minute. Hold on, slow down," we said. "Can you come down from where you're at? I'm really very interested in talking to you."

The voice agreed and went on: "I paid you forty dollars three years ago and what have I got for it? You people are a bunch of thieves. You've had my forty dollars in the bank for three years and are making interest on it without producing anything."

We explained as we have several times before in this space that sure, *ON THREE* had made some mistakes, and while we were developing some new products, the magazine really was neglected, but that was why we were hired, so that the threads of the magazine could be picked up and put back into production again, on a regular and continuing basis.

"I'd certainly like to see if I can help you," we said, thinking perhaps of scribbling a note on our yellow lined pad and then checking subscription records, "Who am I talking to, please?"

But the response was not exactly what we anticipated. Instead of hearing a name, which we were prepared to scrawl on our notepad, we were greeted by a summary click, followed by the distinctive and abortive "bink" sound made by a long distance line as it disconnects.

We sat back in our chair, puzzled, scratched our head and mused to Rob, who was seated across the room from us, "Talk about not understanding women, I plain don't understand this guy. What did he hope to get, spending maybe three or four dollars on a long distance call to tell me about the three or four dollars interest we made off his subscription?"

Actually, since the \$40 rate has been in effect less than a year and a half, he either paid \$30 (the old rate) or his memory was faulty as to when he actually subscribed. No matter, that's not really relevant. And while we don't appreciate the mystery

caller's attitude, we will nevertheless offer, if he can furnish a canceled check or other document, to refund whatever he paid for the subscription. And we'll add four dollars interest to it as well. We would just as soon not have as a subscriber or customer a person who prefers to hide beneath a cloak of anonymity.

And so day passes into night and our thoughts turn to other subjects, forgetting not the day's unsettling adventure, but rather placing it in its proper perspective, stored away with the other events of the day, one more group of mental file folders.

An interesting postscript to this topic occurred just a week later. We received a letter from Texas, obviously well thought out and written, expressing many of the same points and sentiments as our caller of the week before, but in a calm and collected manner. An orderly presentation such as this can be responded to and perhaps learned from. And so we shall, when space permits.

The contrast is stark and real; the difference between a dark and stormy night, and a balmy Ventura day.

## The Plot Thickens

All started harmlessly a couple of months ago with a letter asking for information on graphic plotting. We referred the writer to an early issue of *ON THREE* and then started researching our files. The result was the publication last month of **John Lomartire's** *Printing Good Graphs* and our lead story for this issue: *Data Plotting with Pkaso* by **Ken Johnson**. As an added bonus, Ken's story provides a BASIC program which demonstrates use of the BGRAF.INV invokable module in the form of a useful application which plots your home or business energy usage.

**Mel Astrahan** concludes his three part *Graphically Speaking* sub-series on graphics memory organization with a discourse on color graphics in native mode.

You've no doubt noticed in the last couple of issues that we've mentioned *ON THREE: On Line*, our new BBS for /// users (we can be reached at [805] 644-1055) which operates on Russ Systems' *Let's Talk* system. You can find our review of this enigmatic system on page 13. Those of you interested in starting your own BBS may wish to research a fine two-article series by **Philip Chien** which appeared in *Call -A.P.P.L.E.* in 1983.

We'd like to introduce to the pages of *ON THREE* **David Sparks**, an excellent journalist and programmer in his own right, who has felt the crack of our whip many times in the past. Beginners take note, you'll enjoy David's friendly, flowing style as he persuades you to join the ranks of Apple /// Assembly Language programmers via the Pascal Editor/Assembler route in *Assembly: The Pascal Way*. If you are new to Pascal, then you will also be interested in **Dennis Cohen's** series *ON Pascal ///* which will resume next month.

All of which brings us to the bottom line for July. We suggest you take a look at our popular and expanded *One, Two, ///* *Forum* for still more items of interest and "keep those cards and letters coming!"





## Save more on 512K Upgrades!

Now you can save even more when you purchase the *ON THREE* 512K Upgrade. If you've read our ads, you know the final cost is \$399 plus shipping, etc., but you remit \$449 plus at the time the order is placed and \$50 is rebated when we receive your old board back.

Effective immediately, we are offering our upgrade customers a new money saving option. As before, you may choose to receive a \$50 cash rebate or you may now elect to receive a credit voucher from *ON THREE*, worth \$60 on any future *ON THREE* hardware

or software product purchases! This will effectively make the cost of your upgrade just \$389, saving an additional \$10, making our upgrade even more attractive to you.

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We hope our new policy will be of benefit to you.

# Disk of the Month

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?

Better yet, mix and match. Any two or more for \$12.50 each (plus \$4 total shipping and handling). Best bet: the works.

Now is the time to start your collection of these program-filled diskettes from all issues of *ON THREE Magazine*. Bulk and group purchase rates are also available, call (805) 644-3514 to inquire about these super savers.

### DOM #1—Extra Disk Space Plus!

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 'Y' 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 exercises 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.



# Data Plotting with Pkaso

ken johnson

The purpose of this article is to show a practical application using the BGRAF.INV module of Business Basic and .grafix driver in conjunction with the PKASO /// printer interface to produce, display and print graphic displays of data produced by another computer system. (For those not familiar with the PKASO /// Printer Interface, a product review appeared in the April/May 1983 issue of *ONTHREE*. The PKASO /// specific statements within the listing are identified with appropriate REM statements. The graphics portion of the program is independent and fully usable for display only, if desired.)

The particular example illustrated utilizes energy management data downloaded from a dedicated energy management computer system and recorded using Access ///. It is an actual application, interfacing the Apple /// with another independent computer system to produce what may be referred to as a synergistic result, one which exceeds the capability of either system alone. The Apple /// system used consists of a 128K Apple /// with one additional Disk /// drive, Monitor ///, PKASO /// Printer Interface, and Epson MX-80 Printer with GRAFTRAX+. While it is a somewhat specialized application, many of the the methods and graphics techniques used are general and readily adaptable to other similar tasks.

In order to better understand the data file structure used by this particular program, a brief explanation of how the data files are created is in order. The energy management system, somewhat typical of today's state of the art systems, stores hourly usage data for such parameters as electrical consumption, gas consumption, oil consumption, and outdoor temperature in random access memory for a period of up to seven days in addition to performing its primary

function of load management and control. This information is available via telephone from a remote dialup terminal in the form of a tabulated usage report format and serves as a measure of performance of the system in reducing energy consumption. Using the Apple /// with Access /// as the remote terminal, the report is recorded to a disk file as a standard ASCII text file. Using AppleWriter ///, the text file is edited into individual day files, column headings are removed, and the individual files are stored again to a disk volume named /USAGE.DATA. A sample day's edited data file is shown in figure 1. Directory files for each month are set up on this volume, containing individual files for each day. For example, our sample file of usage data for January 25, 1983 would be stored under the pathname, /USAGE.DATA/JAN.83/DAY.25.

DATA PLOTTING WITH  
BUSINESS BASIC AND PKASO  
by Ken Johnson

Tuesday, January 25, 1983

1	402	0	43	46
2	399	0	42	46
3	401	0	45	45
4	415	0	46	43
5	415	0	50	43
6	445	0	60	41
7	486	0	65	40
8	578	0	67	41
9	623	36	35	42
10	641	117	0	44
11	642	111	0	46
12	644	100	0	47
13	637	102	0	48
14	622	103	0	

figure 1. Edited Data File

This is a good example of how the SOS hierarchical directory structure lends itself to organizing data in a readily accessible and locatable form. It is also a good example of how the advanced text editing features of AppleWriter /// can be used for far more than conventional word process-

ing applications. "Serendipity," I like to call it, the happening upon fortunate discoveries in an unexpected manner.

AppleWriter ///'s ability to set a prefix and to save a portion of a file are used to good advantage in this editing process. Let's say, for example, that we are editing a seven-day usage report, covering the period January 21 to January 27, 1983. The prefix is set to /USAGE.DATA/JAN.83. A unique file marker is placed at the end of each day's data. We'll use the [ character, but any legal character not normally occurring in the file or not used by AppleWriter for some other purpose will do. To save our file for the day January 25, simply place the cursor at the beginning of the data for that day and save it as DAY.25![!. The ! characters are used here as delimiters to define the marker used as the end of the file segment to be saved. Within these files for each day, the data is stored in the form of ASCII strings, one for each hour. Record 0 is a data string giving the day, month, and year. While the procedure may appear complicated, the amount of editing required is quite insignificant and easily performed.

With that background explanation behind us, let's look at just how the program works. The program is saved as the HELLO program file on its own boot disk with the volume name, /ENERGY. That way, all one need know to use it is that they need to insert the disk named /ENERGY into the built-in drive and the one named /USAGE.DATA into a second drive, then boot the system. This method assures that all the proper drivers and files are present and available to SOS when needed. To use PKASO, for example, to dump screen graphics to the printer requires the PKASODMP.INV file and configuration into SOS.DRIVER of a



special printer driver, both provided by Interactive Structures as part of PKASO ///. We also need the SOS.KERNEL, SOS.INTERP and BGRAF.INV files from /BASIC to make /ENERGY a bootable volume.

Now to the program, a listing of which accompanies this text. Since we will be using arrays to store the data, we start out with a DIMension statement, defining the size of the various arrays we are using. "Wait a minute!" you say. "Why the T\$=CHR\$(126) in line 70?" Let me explain. PKASO /// uses the "tilde" character, ASCII 126 [~], as a command lead-in, reading characters that follow as control characters. It is perfectly legal to use the tilde directly in the program listing. It just gets messy if you do at times, particularly when you go to list the program to the printer. Unless you somehow "smuggle" the tilde character into the program listing, be prepared for a good random demonstration of what your printer is capable of at the hands of "Mother PKASO" when you try and list it out! The T\$ "disguise" works just fine to avoid unexpected surprises of this type.

Next follows a statement which tells BASIC how to manage certain errors which may be encountered during execution. The errors we would like to manage stem mainly from having the wrong data disk in drive 2, or from input of the wrong information when specifying which file is desired. The error handling statements deal with errors of this type. Having the computer suggest a remedy to correct the error is certainly preferable to having the program terminate abruptly with a cryptic error message like "FILE NOT FOUND". While you may not feel that you need such aids yourself, routines such as this tend to make your programs much more friendly to others and are just plain good programming practice.

Statement 90 INVOKEs the graphics and the PKASO /// screen dump modules. One of the rules of Business Basic is that all invocable modules must be included in a single INVOKE statement like this unless your intent is to only have one at a time resident in memory. One of the functions that the INVOKE statement performs is to clear other invocable modules

from memory prior to setting up new ones. We'll see later on in the listing how this function is used to free memory space on termination of the program.

The menu is rather straightforward and requires little explanation. You've probably seen the INSTR function used in this manner before in other Business Basic listings. It is a far more concise method of checking for correct input than multiple IF statements as you might find in Applesoft Basic. The use of the variables g, e and o is of interest here too in that these are treated by the program more as Boolean variables than as numeric variables as you will see later. You'll find another example, the variable "same," in the listing as well. It's a nice technique that can do a lot to make your programs more structured and readable.

Now comes the opportunity to enter the date we wish to plot. The variable "same," if its value is other than 0, skips the entry steps and branches execution directly to line 480 where we set up and prepare the grafix driver to plot another parameter. On the first pass through the

```

10 REM *****
20 REM *** ENERGY USAGE PLOTTING PROGRAM ***
30 REM *** by Ken Johnson * Copyright (c) 1986 ON THREE ***
40 REM *** Uses 560 X 192 b & w graphics mode ***
50 REM *****
60 DIM entry$(24),x(24),gas(24),elec(24),oil(24)
70 T$=CHR$(126):REM *** PKASO command lead-in character
80 ON ERR GOTO 1300
90 INVOKE"bgraf.inv","pkasodmp.inv":REM *** pkasodmp.inv is
PKASO module
100 OPEN#1,".grafix"
110 OPEN#3,".printer"
120 HOME:PRINT:error.msg$:PRINT:error.msg$=""
130 PRINT"Enter the quantity you wish to plot:":PRINT
140 PRINT"G - For Plot of Gas Consumption"
150 PRINT"E - For Plot of Electrical Consumption"
160 PRINT"O - For Plot of Oil Consumption"
170 VPOS=9:PRINT"Selection is: ";GET selection$:PRINT selec
tion$
180 IF INSTR("Gg",selection$) THEN g=1:ELSE g=0
190 IF INSTR("Ee",selection$) THEN e=1:ELSE e=0
200 IF INSTR("Oo",selection$) THEN o=1:ELSE o=0
210 IF NOT INSTR("GgEeOo",selection$) THEN PRINT CHR$(7):
GOTO 170
220 IF same THEN 480
230 total.gas=0:total.elec=0:total.oil=0
240 PRINT:PRINT"Enter the date you wish to plot:":PRINT
250 INPUT"Month: ";mon$:INPUT"Day: ";day$:INPUT"Year: ";yr$
260 file$=LEFT$(mon$,3)+". "+RIGHT$(yr$,2)+"/DAY. "+day$
270 OPEN#2 AS INPUT,"/USAGE.DATA/"+file$
280 INPUT#2:data.date$
290 ON EOF#2 GOTO 330
300 REM *** Read the data from the file
310 FOR hour=1 TO 24:INPUT#2;entry$(hour):NEXT hour
320 REM *** Extract, convert and scale the data for plotting
330 FOR hour=1 TO 24
340 x(hour)=VAL(LEFT$(entry$(hour),3))
350 gas(hour)=VAL(MID$(entry$(hour),23,3))
360 total.gas=total.gas+gas(hour)
370 elec(hour)=VAL(MID$(entry$(hour),13,4))
380 total.elec=total.elec+elec(hour)
390 oil(hour)=VAL(MID$(entry$(hour),33,3))
400 total.oil=total.oil+oil(hour)
410 x(hour)=20*x(hour)+12
420 gas(hour)=gas(hour)+10
430 elec(hour)=INT(elec(hour)/10)+10
440 oil(hour)=oil(hour)+10
450 NEXT hour
460 REM *** Set up the .grafix driver and display the graph
ics buffer
470 PERFORM grafixmode(%2,%1)
480 PERFORM fillport
490 PERFORM initgrafix
500 PERFORM grafixon
510 REM *** Draw the vertical axis
520 PERFORM moveto(%20,%10)
530 PERFORM lineto(%20,%160)
540 REM *** Draw the horizontal axis
550 PERFORM moveto(%20,%10)
560 PERFORM lineto(%500,%10)
570 REM *** Label the vertical axis accordingly
580 PERFORM moveto(%0,%170)
590 IF g THEN PRINT#1"GAS CONS.(mcf)"
600 IF e THEN PRINT#1"ELECTRIC CONS.(kwhrX100)"
610 IF o THEN PRINT#1"OIL CONS.(galX100)"
620 REM *** Label the horizontal axis
630 PERFORM moveto(%514,%7)
640 PRINT#1"Hr"
650 GOSUB 980:REM *** Mark scale divisions on axes

```



program, since it has not yet been assigned a value, the condition in line 220 evaluates to false and we are prompted for the date we wish to plot. Because of the way that we use this information to set up the name of the data file, input of the date information does not require precise control of case or form. For example, "january," "January," "JANUARY," "jan," "Jan," or "JAN" would all be acceptable as month entries as would "1983" or "83" for the year entry.

Once the data file is identified, it is opened as a file in line 270. An error in opening the file at this point would cause execution to branch to line 1300, then back to line 120 where an appropriate error message would be displayed and we would be given the opportunity to correct the problem. Assuming that the file was successfully opened, the program proceeds to read the data in the file. The first record is assigned as the value of data.date\$, and the remaining 24 records are read into the string array, entry\$(hour). Date\$ alone may seem a more logical choice than data.date\$ here, but date\$ is a special reserved variable and cannot be used other

than to read and display the date in the system clock. The next series of statements extract and convert the appropriate portions of the strings into values for the variable arrays, gas(hour), elec(hour), and oil(hour). Scale factors are applied as well to these values for convenience in later plotting. Cumulative totals for gas, electricity, and oil are also determined and stored for later use.

Now that we have our values all neatly stored in arrays, we are ready to plot. Each PERFORM statement is actually an assembly language procedure call to the BGRAF.INV module, though you really don't need to know this. (Isn't this better than a lot of mysterious PEEKs and POKEs or CALLs?) The first statement sets up the appropriate graphics mode and graphics buffer, in this case mode 2, which is the 560 by 192, black and white mode, and buffer 1, the primary display buffer. Next, the fillport procedure erases the contents of the graphics buffer. "But we haven't put anything there yet, so why do we have to erase it?" you ask. Actually, if you displayed the contents of the graphics buffer without

first erasing it, you would find that there actually is something there. When SOS set up the graphics buffer, chances are that it had been using the space to store other data. It copied that data elsewhere in memory, keeping track of where, of course, but didn't erase the original version. What you would see if you displayed the contents of the buffer to the screen would be a bitmap of that data, generally not a good background for graphics. Anyway, we erased the buffer with the fillport procedure, so now let's initialize and display the graphics screen with the next two procedures, initgrafix and grafixon.

First, we draw the axes on the screen and label them. "Label them?!" you say in disbelief. "My Apple II wouldn't do that! Not without extra help anyway." Well, with Apple /// graphics, all you have to do is "moveto" the coordinates where you want the text to appear and simply PRINT it to the .grafix driver. It really couldn't be much simpler. In the 560 by 192 graphics mode, the characters look like, and in fact are, the same 80-column text characters that you are used to seeing. Nice,

```

660 REM *** Print the date on the graph
670 PERFORM moveto(%0,%190)
680 PRINT#1;data.date$
690 REM *** Plot the desired graph
700 FOR hour=1 TO 24
710   PERFORM moveto(%x(hour),%11)
720   IF g AND gas(hour)>11 THEN PERFORM lineto(%x(hour),
       %gas(hour))
730   IF o AND oil(hour)>11 THEN PERFORM lineto(%x(hour),
       %oil(hour))
740   IF e AND elec(hour)>11 THEN PERFORM lineto(%x(hour),
       %elec(hour))
750   NEXT hour
760 REM *** Print the cumulative total on the graph
770 PERFORM moveto(%250,%170):PRINT#1"Total: ";
780 IF(g AND total.gas) THEN PRINT#1total.gas;" CU-FT"
790 IF(e AND total.elec) THEN PRINT#1total.elec;" KWHR"
800 IF(o AND total.oil) THEN PRINT#1total.oil;" GAL"
810 REM *** Wait for keypress then proceed
820 GET key$:TEXT:HOME
830 PRINT"Do you want a hard copy printout (Y/N)? ";:
   GET ans$:PRINT ans$
840 IF INSTR("Nn",ans$) THEN GOTO 920:ELSE:PERFORM grafixon:
   REM *** Display the graph while printing
850 REM *** Set up print margins prior to printing
860 PRINT#3;T$;"C";10;" ";79;" ";0;" ";:REM *** PKASD command
870 PRINT#3:PRINT#3:PRINT#3:PRINT#3:PRINT#3
880 REM *** Print the graph to the printer
890 epson$=",printer"
900 PERFORM bpkasodmp(@epson$,%6):REM *** PKASD command
910 PRINT#3T$;"L":REM *** Form feed the printer PKASD command
920 TEXT:HOME:PRINT"Another plot for this date (Y/N)? ";:
   GET ans$:PRINT ans$
930 IF INSTR("Yy",ans$) THEN same=1:GOTO 130:ELSE:same=0

```

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huh? In the other graphics modes, the text appears as 40-column text characters, by the way.

After we go through a subroutine or two to label the axes, we are ready to plot. You were beginning to think we'd never get here, weren't you? I've chosen to plot the data as a single line bar graph out of personal preference. To change it to a line graph would be a simple modification. Notice how the variables g, e, and o have been used almost as Boolean variables to selectively plot and label only the data we selected.

At this point, we have a nice labelled plot of data on the screen. Pressing any key at this point will produce a prompt asking if we want to print a hard copy of the graph. If you don't have the PKASO interface for your printer, you'll have to say no, but I promised to show you just how PKASO does this, so here goes.

```
PRINT#;T$;"C":10;".":79;".":0;".":
```

is a margin command which tells PKASO to set the left margin at 10, the right margin at 79, and the wrap margin at 0 in this instance. This and the series of PRINT#3 statements centers the printed graph on the paper. PERFORM bpkasodmp(@epson\$, %6) calls the assembly language procedure from the PKASODMP.INV module, telling it to print the contents of the current graphics screen to the printer, using mode 6 which happens to be medium size and rotated 90 degrees. This gives a printout like the one shown in figure 2 which is of almost the same proportion as the video display of the graph.

Tuesday, January 25, 1983

ELECTRIC CONS.(kwhrX100)

Total: 12309 KWHR

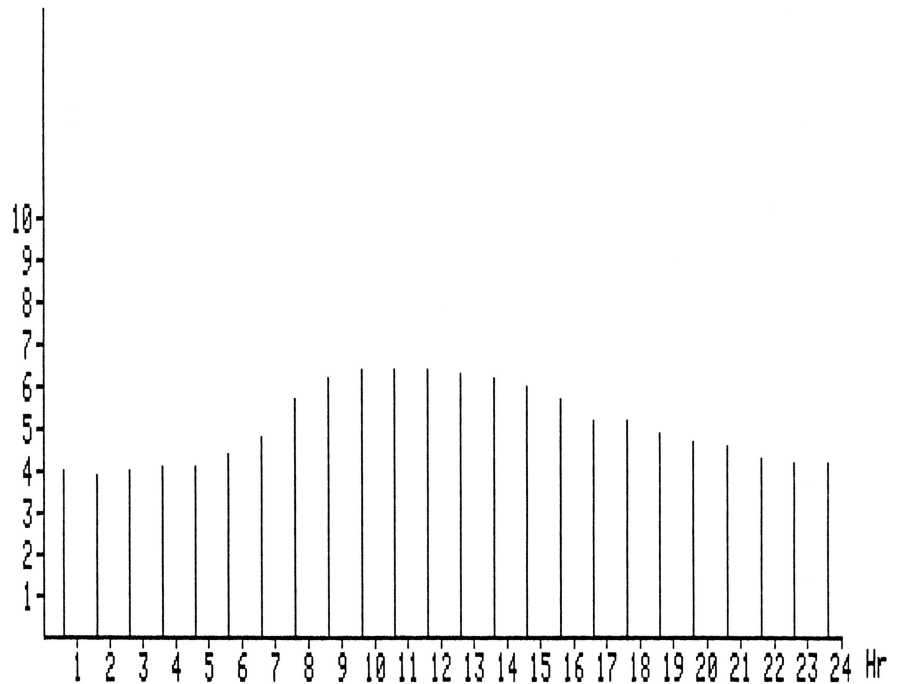


figure 2.

Before we leave the program, let me explain the strange incantation that appears in line 1130. Unlike graphics on the Apple II, when you tell SOS to set up a graphics buffer, it declares that space in memory off limits until you tell it otherwise. PERFORM release does just that. "Well, isn't one enough?" you ask. Each PERFORM release, in this case anyway, reclaims only 8K of memory. The 560 by 192 mode we

have used here uses 16K of memory, so we have to PERFORM release twice to get it all back. The CLOSE simply closes all open files, and INVOKE by itself gives us back the memory that was occupied by the invokable modules.

The result of all this, the printed version of the plot, is shown in figure 2. The actual process of printing, while fairly slow to an unbuffered MX-80 printer, could probably be accelerated to a degree by using a faster printer or by using a printer buffer, such as the Pipeline from Interactive Structures. I have not personally tried this, so I cannot say just how much shorter the process would become. Turning off the video display during screen dump would also speed the process up somewhat. To do this just insert PRINT#1 CHR\$(14), the screen control character to turn off the video display, in place of the PERFORM grafixon in line 840, then PRINT#1 CHR\$(15) at around line 905 to turn it back on.

The program as shown in the listing would require that the sample data file be set up with a data file

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structure as previously described, including the subdirectory. To run it for demonstration purposes without such a file structure, just save the data file as "demofile" to drive .Dx, change line 270 to a REM line and insert a new line as follows:

**275 OPEN#2 AS INPUT,".dx/demofile"**

Other changes required, if you do not have the PKASO Printer Interface configured, would be to change line 90, deleting "pkasodmp.inv". As long as you answer "no" when it asks if you want a hard copy printout, no other changes would be required. Perhaps the safest approach would be to change line 830 to a REM line and insert a GOTO 920 as line 835. Of

course, the .grafix driver must be configured into SOS.DRIVER and bgraf.inv must be present on the boot disk in order for the program to run.

Adapting the basic structure of the program to your own particular application is a relatively easy task. It could be used to plot formatted tables produced by VisiCalc or countless other sources. To produce a formatted table from VisiCalc, for example, just print the VisiCalc worksheet to a file. The result will be a series of formatted string entries, similar to the energy usage data shown here. All you need know is where within each entry string the data for each parameter begins and how many characters long it is in

order to set up the MID\$ function to extract it.

After working with the PKASO /// Printer Interface, I would heartily concur with the findings of the review published in the April/May 1983 issue of *ON THREE*. At the time I was seeking merely an alternative to running my Epson in serial from the built-in RS232 port and having to swap in the plug to my Smartmodem when I wanted to use it. I also wanted to be able to use printer and modem simultaneously. The whole PKASO /// package, at \$205 including parallel cable, cost less than a Universal Parallel Interface Card alone, and does so much more.



```

940 REM *** Restore printer margins to normal
950 PRINT#3;T$;"C";0;"",;79;"",;0;"",;:REM *** PKASO command
960 GOTO 1110
970 REM *** Mark horizontal axis divisions ***
980 x.position=40:y.position=10
990 FOR count=1 TO 24
1000   PERFORM moveto(%x.position,%y.position):PERFORM
      lineto(%x.position,%y.position-2)
1010   x.position=x.position+20
1020   NEXT count
1030 REM *** Mark vertical axis divisions ***
1040 x.position=16:y.position=20
1050 FOR count=1 TO 10
1060   PERFORM moveto(%x.position,%y.position):PERFORM
      lineto(%x.position+4,%y.position)
1070   y.position=y.position+10
1080   NEXT count
1090 GOSUB 1150
1100 RETURN
1110 TEXT:HOME:PRINT"Plot another date (Y/N)?":GET ans$
1120 IF INSTR("Yy",ans$) THEN GOTO 120
1130 PERFORM RELEASE:PERFORM RELEASE:CLOSE:INVOKE:END
1140 REM *** Scale the horizontal axis
1150 x.position=17
1160 FOR x.scale=1 TO 24
1170   x.position=x.position+20
1180   IF x.scale=10 THEN x.position=x.position-4
1190   PERFORM moveto(%x.position,%6):PRINT#1;x.scale
1200   NEXT x.scale
1210 REM *** Scale the vertical axis
1220 y.position=13
1230 x.position=7
1240 FOR y.scale=1 TO 10
1250   y.position=y.position+10
1260   IF y.scale>9 THEN x.position=0
1270   PERFORM moveto(%x.position,%y.position):PRINT#1;
      y.scale
1280   NEXT y.scale
1290 RETURN
1300 REM *** Error handling instructions
1310 REM *** FILE NOT FOUND error ***
1320 IF ERR=30 THEN error.msg$="File for this date not
      available. Try another.":GOTO 120
1330 REM *** PATH NOT FOUND error ***
1340 IF ERR=31 THEN error.msg$="File for this month not
      available. Try another.":GOTO 120

```

```

1350 REM *** VOLUME NOT FOUND error ***
1360 IF ERR=32 THEN error.msg$="Insert disk with
      '/USAGE.DATA' prefix in drive 2 and try again.":GOTO 120
1370 REM *** general error ***
1380 error.msg$="Error number "+STR$(ERR)+" encountered in
      line "+STR$(ERRLIN)+". "
1390 PRINT error.msg$:GOTO 1130

```

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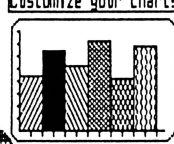
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| ✓ Apple /// Pascal   | ✓ Haba Merge            | ✓ Script ///         |
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| ✓ Backup ///         | ✓ Keystroke Report      | ✓ VisiCalc ///       |
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# Graphically Speaking

*melvin a. astrahan, ph.d.*

## Introduction

In the previous two articles, we've explored the memory organization of the Apple /// hi-res and double hi-res monochrome graphics modes. In this article we push on to the color graphics modes. The Apple /// has two color graphics modes. Mode 1 (280 by 192 16-color hi-res graphics, 16K) which has some peculiar color limitations, the origin of which will become apparent as we study the memory arrangement more closely, and the no-limitations, medium resolution mode 3 (140 by 192 16-colors, 16K).

## Hexachrome

The Apple /// is capable of displaying one palette of 16 unique colors on an NTSC or RGB color monitor (see the first article in the Graphically Speaking series for more about color monitors) or 16 levels of "grey" intensity on a monochrome monitor. These 16 colors have been explicitly defined by Apple and are now common to both the Apple /// and the //e. Each color must be represented in memory by four bits (since 2 to the 4th power is 16) in order for 16 unique colors to be stored. The numerical values associated with these 16 colors are illustrated in Table I:

Color	Apple ///	
	value	bit pattern
Black	0	0000
Magenta	1	0001
Dark blue	2	0010
Violet	3	0011
Dark green	4	0100
Medium grey	5	0101
Medium blue	6	0110
Light blue	7	0111
Brown	8	1000
Orange	9	1001
Light grey	10	1010
Pink	11	1011
Light green	12	1100
Yellow	13	1101
Aqua	14	1110
White	15	1111

## I Musici

Since mode 1 graphics are defined as hi-res, with 280 by 192 pixels, one might expect that  $280 * 192 * 4 = 215040$  bits, or 26880 bytes (about 27K) would be required to store such an image. We know, however, that this is not the case since the image is stored in only 16K. Obviously some form of compaction scheme must be in use. The color limitations we encounter using mode 1 graphics are a direct result of the compaction scheme which those "clever" designers at Apple came up with.

## Blues

Consider the standard mode 0 monochrome hi-res image. It is stored in 192 scan-lines of 40 bytes each (as discussed previously.) Each byte stores seven pixels by bit-mapping video *on* and *off* states as binary 1 or 0. In the previous articles I have equated the *on* and *off* states to the colors white and black. This is *not*, of course, an absolute requirement. The colors which correspond to *on* and *off* states can, in theory, be *any* two colors (or even the same color) rather than simply black and white. Blue and white, for instance would be perfectly legitimate. This is the approach taken in the IBM PC color graphics card in which a register exists to specify which color corresponds to *on*, and which color corresponds to *off*.

Using this approach, only one additional color-pair register byte is required (since two 4-bit color codes will fit in a byte) to select any pair of colors for an 8K image, with the limitation that only two of the 16 colors may be used in any image. The least significant four bits of this color-pair register could store the color corresponding to image bits which are *off* (sometimes referred to as the "background" color), the most significant four bits could store the

color corresponding to image bits which are *on* (or the "foreground" color).

## Jazz

Now, lets go one step beyond the "IBM approach". Rather than having only one color-pair register for the whole image, what if we had a color-pair register for each byte of the bit-mapped image? In terms of memory requirements, this approach would exactly double the amount of memory required to store the image. In return, however, we could use all 16 colors in the image with the lesser limitation that only two colors could be used within the seven pixel regions defined by each byte of the bit-mapped image. In this way, all 16 colors become available in only 16K of memory. This is the compaction scheme used by mode 1 graphics.

The mode 1 color image is, like the double hi-res image, stored in two segments. The lower 8K segment stores the "monochrome" bit-mapped image which is exactly the same as the 8K mode 0 hi-res image (It may, in fact, be displayed in mode 0.) The upper 8K segment stores all of the color-pair registers. For each byte in the lower segment, the color-pair register is stored exactly \$2000 bytes away in the upper segment. Thus, once you have calculated the memory address of a pixel, you can access the color data by simply adding \$2000 to that address. For a mode 1 image in display buffer 1, the bit mapped data occupies sub-buffer 1a (\$2000-\$3FFF), the color-pair registers occupy sub-buffer 1b (\$4000-\$5FFF.) For display buffer 2, the bit-mapped data is in sub-buffer 2a (\$6000-\$7FFF) and the color-pair registers in sub-buffer 2b (\$8000-\$9FFF).

Consider the leftmost 21 pixels of scan-line 0, buffer 1, mode 1 as shown in figure 1:

## Fourplay

Now, if we interpret the double hi-res data as groups of four bits across a scan line, rather than as individual bits, we would have a scan line of 140 groups of four, rather than 560 groups of one. Each four bits could map to a pixel on the scan-line, with all 16 colors possible at any pixel. This is how mode 3 graphics work. You can see this effect very clearly by loading a mode 3 image and then displaying it alternately in mode 3 and mode 2 using a program such as *Draw ON* or a simple Pascal or Business Basic program of your own design.

The memory organization of mode 3 graphics is illustrated below for the first seven pixels of scan-line 0, mode 3, display buffer 1. Note that color data is stored bit-wise reversed within a byte, and that one byte may contain parts of two or three pixels. Note also that in figure 2, seven pixels are stored "cleanly" in four interlaced bytes, where upon the pattern repeats across the scan line. This fact will become useful when I discuss horizontal scrolling in a future article on animation techniques.

In the next series of articles, we'll take a look at how to rapidly manipulate Apple /// graphics data from assembly language for high speed animation and other image manipulation applications.



figure 1					
Lower 8K segment			Upper 8K segment		
Address	8 bit value	pixels	Address	8 bit value	colors
\$2000	?0101011	0-6	\$4000	00011111	magenta/white
\$2001	?1110000	7-13	\$4001	01110011	blue/violet
\$2002	?0001110	14-20	\$4002	10111110	pink/aqua
etc...					
top left corner of screen					
color pattern:	mmwmmw		vvvbbb		appaaa
bit pattern:	1 1 0 1 0 1 0		0000111		0111000
byte boundaries:					
memory addresses:	\$2000		\$2001		\$2002
color-pair register:	\$4000		\$4001		\$4002

You may notice that this is the first time (and in fact the only time) that the eighth bit of the graphics memory has been used for anything in a native /// graphics mode. On the screen, scan-line 0 would look like the lower portion of figure 1:

## Symphony

The 16-color mode 3 graphics are defined as medium-res, with 140 by 192 pixels and no limitations, and occupying 16K of memory. One might expect that  $140 * 192 * 4 = 107520$  bits, or 13440 bytes (about 13K) would be required to store such an image. We know, however, that this not the case since the image is stored in 16K. In this case, some form of bizarre "expansion" scheme must be in use. In reality, the "expansion" is a result of the seven bits per byte business.

The simplest approach to 16-color graphics would be to store two pixels in each byte and map them to the screen. Unfortunately, due to the need to preserve compatibility with the old Apple II hardware and modes, only seven bits are available in each byte of the graphics RAM. If we were to simply store one pixel per byte by using only four of the seven bits we would need 27K, so that doesn't work either. Thus, the bits corresponding to a mode 3 pixel must be distributed in such a way that for some pixels the bits are spread out among more than one byte. There are several possible

methods by which this could be done. The one chosen by Apple goes as follows. The mode 3 image is very similar to the double hi-res mode 2 in the sense that the data is distributed between the upper and lower 8K segments, and the bytes are interlaced onto the scan-line. Scan line data is taken first from an address A in the lower segment, then from the upper segment at A + \$2000. The next data is taken from A + 1, and the next from A + 1 + \$2000, and so on...

figure 2							
Lower 8K segment			Upper 8K segment				
Address	8 bit value	pixels	Address	8 bit value	pixels		
\$2000	?0101011	0-1	\$4000	?0011111	1-2-3		
\$2001	?1110000	3-4-5	\$4001	?1110011	5-6		
etc...							
top left corner of screen							
color pattern:	yellow	grey	white	black	violet	aqua	blue
bit pattern:	1101	0101	1111	0000	0011	1110	0111
pixel boundaries:							
byte boundaries:							
memory addresses:	\$2000		\$4000		\$2001		\$4001



# Let's Talk

val j. golding

Let's Talk  
Russ Systems  
320 Dufour St.  
Santa Cruz, CA 95060  
\$129.95

*Let's Talk* is a rather sophisticated bulletin board/data base program released in separate versions for Apple II and Apple III. Although our review here is essentially that of the Apple III version, we also have on hand the Apple II version and thus can use it as a basis for comparison with respect to enhancements not applied to the III version. As a system operator of another BBS for some years, and as author of two major BBS rewrites, we feel we can speak with at least a modicum of authority on bulletin board systems.

Let's Talk is an enigma, presenting from the user standpoint some of the most desired features in a bulletin board system (hereinafter referred to as BBS) ever, and from the system operator's (hereinafter Sysop) view a difficult to work with, bug-filled, undocumented morass, lacking many essential features. To cope with some of the non-features means resorting to ingenuity. For example, to get a listing of Let's Talk files on disk requires going to Apple III System Utilities, cataloging the appropriate pathname and directing the output to a disk file. However, since System Utilities perversely insists on writing only to a Pascal text file, the next step involves leaving the utilities and going to Pascal, reading the file in and resaving it as an Ascifile, something Let's Talk's otherwise excellent utility module's listing routines could do simply by offering write to disk as a third output choice.

As of this writing, we have gained as co-Sysop (along with Rob) about six week's worth of experience with *ON THREE: On Line*, our version of the Let's Talk system. It is strange,

indeed, that we have never before seen a system with so many extremes of plusses and minuses, yet as you will see at the conclusion, we are going to recommend its purchase if its basic construction meets your particular needs.

First off, as Russ Systems' brochures declare, Let's Talk is far more than a BBS, typical or otherwise. It is a wide-ranging true database with near-unlimited capacity for expansion. Available in both Apple II ProDOS and Apple III versions, it makes maximum use of those systems' hierarchical directory structures in that for each ProDOS or SOS sub-directory created, there is an equivalent user menu or sub-menu, created automatically by the system. The menus are cleverly designed with an E)xpand command which displays either of "Filename XXX is a menu" or the first line of text of an ASCII file. Thus by placing a description of contents as the first line of a text file, users may read a brief of its contents without having to actually view the file.

Provision is made also for the user at any given time to exit to either the next highest menu level or back to the main menu. Individual files may be password-protected at the Sysop's option. Other degrees of protection are available that for example restrict the user from viewing additions to individual files until the Sysop has had the opportunity to review the most recent additions and approve them for viewing. Furthermore, at the discretion of the Sysop, individual files may be designated as "read only," "write only," or a combination thereof. If a file may be written to, after reading, the user is presented with a modifiable "Add Comments (Y/N)" prompt. If a clock is present in the machine, all file

additions are automatically time-stamped. On longer files, the Sysop has the option with a ".SB" command to add prompts which have the effect of providing screen paging for the user. The Apple II version offers a number of additional "dot" commands that are not available on the III version.

The Apple II version has the handy capability of directly reading AppleWorks database files. We have not yet had the opportunity to verify whether the III version has the same capability with respect to III E-Z Pieces. If so, it would greatly simplify our plans to put an *ON THREE* magazine database and index on the system.

From the perspective of the system operator, in terms of maintenance, things are not so rosy. In our experience to date, we have found that the system requires about one hour of daily maintenance. There are generally well conceived Utility and Edit programs for the use of the Sysop that allow these needed functions. Among other things, the Utility program allows setting a prefix string which thereafter overcomes the [unneeded] 64 character pathname limitation of the system and, because of the depth of some of the sub-directories, is absolutely required. Other utility features include creating new directory or ASCII text files, deleting files, changing various write protection elements and copying data from one sub-directory to another. Unfortunately the latter routine has a major and unforgivable bug; you stand an excellent chance of trashing one of the directories involved. One such incident occurred to us and took the better part of a day to repair and the use of a "disk zap" type program, something the average user may not have available.

---

The Sysop's editor is quite easy to use and is patterned generally after the Pascal editor. If you know the Pascal editor's commands, you will be at home here. The editor has one annoying feature of showing the inserted or deleted text with an offset of one character, thus after you accept the edited line with a [Ctrl-C] you may find it does not appear as you anticipated.

One of Let's Talk's best features is its capability to accept upload files. Unfortunately it has placed an unneeded limitation of a 32K length for an upload file, requiring users to break long files into sections. More importantly, it gives the user no indication that this limitation has been reached or exceeded, so that if a user is unaware of the 32K limitation, he/she will leave the system believing a complete upload has been accomplished.

The utilities module has two options for file listing, for all files at a single level, or an extended listing of all files and sub-directory files. Regretably only two output options are allowed: to the console or a printer. A third option which would be most beneficial to the system operator would be to a pathname as is offered in the Apple /// System Utilities disk. This would allow the Sysop to easily create and edit a user file which offered the user a "tour" through the system.

Another unforgivable and unfixed bug occurs in the Utilities System Configuration module, and at certain other prompts requiring a "Y" or "N" response from the Sysop. Use of lower case can create an unrecognized pathname, and in some cases will not be acknowledged in response to a prompt. This bug is not mentioned in the documentation.

The documentation leaves a great deal to be desired. Let's Talk has a number of features that do not appear whatsoever in the documentation, for example: a user may enter a [Ctrl-K] to trash files in his/her mailbox, but nowhere does the documentation cover this. Were it not for our assembly language exploration of the "Nocterminal" code file, and a subsequent conversation with Ed Gooding of ///'s Company BBS (a Let's Talk system), we still would not

be aware of this highly desirable feature.

All files are read from beginning to end by the user, with a [Ctrl-X] sequence to escape from the read. But the documentation should (and does not) suggest to the Sysop that it is of advantage to place (for example in bulletins) the most recent data at the beginning of the file rather than (conventionally) at the end, so that once the user identifies a previously read item, the file read may be aborted with [Ctrl-X].

Russ Systems' promotional material indicates that Let's Talk may be used with a hard disk system (and in fact should be), but not one word of information on how to set this up or how to copy files appears in the documentation. In addition, it is possible to run Let's talk on a hard disk under the supervision of programs such as Catalyst or *Selector ///*, but again you are not told how to install it. Moreover, we attempted to install our system under Selector and failed. At the point at which the modem is initialized, the system would just hang. Only because of assistance from Ed Gooding, and Rob's technical familiarity with the ///and his programming expertise, were we able to get it to run under Catalyst, which was helpful in that it allowed us access to System Utilities and Pascal without rebooting. On one occasion, however, we took the system down to change some drivers, and try as we might we never again were able to get it up under Catalyst.

Russ Systems produces a number of telecommunications products for the Apple II and /// and has a reputation for excellent support, including a 24-hour BBS support line. However, insofar as the Apple /// version of Let's Talk is concerned, apparently no one outside of Steve Russ, the author and owner of Russ Systems has the vaguest idea of how it operates. Our calls for help (to which only Steve could respond) went largely unanswered. We do want to stress, however, that this should not be construed as a reflection on their level of support for other products.

A BBS is a very specialized program and, if as has been suggested to us, that only a very few copies of the Apple /// version of Let's Talk have

been sold, it is understandable that Russ Systems does not wish to devote many development and support dollars to a product for which profit expectations are at best marginal.

A number of "non-features" are present in Let's Talk, which will be reflected in our overall findings. These include no ability to monitor user calls (the screen display remains blank when a user is on line), lack of a "chat" mode (both of these features are available in the II version), there is no provision for a user log or system password. (Certain files may be password protected, but not the overall system.)

A separate "private" main menu, password protected, may be established, but it is of little use unless provision is also made for a password file of users authorized for the subsystem. Such authorization is available, but not on an automatic or semi-automatic basis, i.e., a number of passwords may be established to allow entry to the private system, but establishing them so that an individual user password may be allowed or prohibited is an entirely manual operation for the Sysop and can be handled only as a time-consuming edit of the "private.menu" password file.

There is also no provision for a system logon via password so that the system may be protected from unauthorized users. In addition, if a user who is not yet familiar with the system types a maximum of five invalid characters at any prompt, he/she is unceremoniously kicked off the system without further recourse. In our opinion, this should be a sysop-definable parameter, particularly since on a new system a user logging on for the first time is bound to be unfamiliar with it and is entitled to a good number of keystroke errors.

User help files are provided at the main menu level only, although a h)elp command appears at all levels of sub-menus which, when executed prints the main level help information. We suspect that this is actually a viable option to permit the Sysop to create additional level-specific help files, but since no word of this potentially advantageous feature appears in the documentation, we have been frustrated in any attempt



to create same. If indeed it is not an option, then its addition would prove most valuable. At this point, for example to create specific user information on how to upload files, it has been necessary to create a submenu file titled "Upload.Info."

Notwithstanding complications, installation was not easy, nor did we expect it to be. A complex system such as Let's Talk begets a complex installation. The system is furnished as three diskette sides, a boot disk, a program disk, and a files disk. The files disk contains a complete skeleton system structure including many blank but titled data files and other files containing a few words of text which explain their function. Using the provided utilities module, any and all user files may be deleted or renamed to suit your own needs and new directories and ASCII files may be created as desired.

The installation itself took the better part of a week, but this includes the time we fruitlessly spent attempting to interface it to *Selector III*. In theory, because it works with Catalyst, it should also run under Selector, but such was not the case. Let's Talk uses a number of non-standard drivers and an odd-sized RAMdisk, none of which helped our attempts to install the system. For a normal installation you should plan on at least two days worth of file writing and copying to get the system up and running. This is, however, time well spent, because the extreme flexibility of Let's Talk, which allows you such great freedom in personalizing your files, is at the same time the factor which makes installation so tedious and slow. Like many things, it is a trade-off. If you want the flexibility, you pay the price in time.

Another bugaboo that caught us during installation was the lack of any information in the document as to the required modem switch settings. After a number of trial-and-error failures, this was resolved only by a call to Russ Systems who provided the proper parameters on the spot. But this important omission from the manual nevertheless cost us (or could cost a new purchaser) the price of a long distance phone call.

Comes the bottom line. We cannot recommend Let's Talk to the faint of heart because of the number of problems that present themselves to the Sysop and are not covered in the skimpy documentation. The only competitive product we are aware of is a program called "InfoNet" which we experimented with briefly. While InfoNet does offer some of the features we found lacking in Let's Talk, such as User IDs and Sysop screen display of user activity, it is a conventional BBS and cannot compare with Let's Talk's flexibility.

Nonetheless, Let's Talk meets our needs admirably, and we do not hesitate to recommend it to those who are prepared to put up with its quirks and idiosyncracies. If, in the course of operation, we are able to resolve some of the problems we have described, we will post them on *ON THREE On Line* for the benefit of all Let's Talk users. One other resource is Ed Gooding's *III's* Company BBS at (804) 747-8752. Ed has had his Let's Talk system running for a considerable period of time and appears ready to assist others.

*ON THREE On Line* may be reached at (805) 644-1055 and, in conjunction with Ed's board (located in Virginia), offers users on both coasts the opportunity to see Let's Talk in action. Our partner in grime, Rob Turner, suggests that our review has been too easy on Let's Talk; we disagree. It is, as we indicated above, a matter of weighing the pluses and minuses to arrive at your individual determination of whether Let's Talk is for you. Our last word is thumbs up. Let's Talk!



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Current ON THREE Price List

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Back issues of ON THREE	\$5.00 ea	
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Desktop Manager-ON THREE O'Clock		
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Sider 10 (10 MegaBytes)	\$999.00	\$5.00
Sider 20 (20 MegaBytes)	\$1299.00	\$35.00
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Apple <i>III</i> Mouse and interface card (can be used with Draw ON <i>III</i> or Desktop Manager)	\$150.00	\$5.00
Dust Cover for Apple <i>III</i> with Monitor <i>III</i>	\$11.95	\$2.00
Dust Cover for Apple <i>III</i> with ProFile & Monitor <i>III</i>	\$12.95	\$2.00
I ♥ MY APPLE <i>III</i> T-Shirts Sm, Med, Lrg, X-Lrg (Color choices: Yellow, beige, white, blue)	\$11.95	\$3.00
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I ♥ MY APPLE <i>III</i> Caps	\$5.95	\$2.00

\*Background module for Desktop Manager

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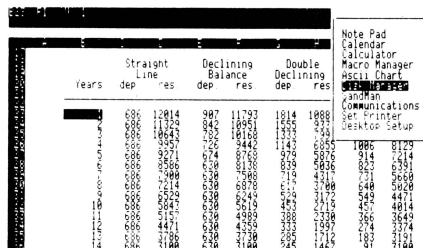
ON THREE Presents . . .

# The Desktop Manager™

by Rob Turner and Bob Consorti

• The most complete and sophisticated desk accessory program ever written!

• For once and for all, unclutter your desk the Desktop Manager way!



Desktop Manager main menu, shown overriding a spreadsheet.

Running in the background, the Desktop Manager places all of the desk accessory utilities you ever wanted . . . Appointment Calendar . . . Notepad . . . Calculator . . . Disk Utilities . . . Macros . . . Graphics . . . Games . . . and more, into each 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.

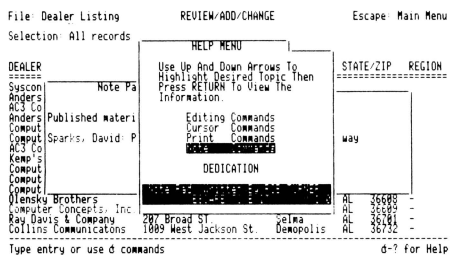
What is "Running in the background?" It is simply a program that, unlike most, "hides" from you. You are never aware of its presence, but when you need it, it is "Johnny on the spot," ready to serve you at the touch of a key. Selector /// is another example of a background program.

While word processing, have you ever needed to multiply two numbers? Perturbed 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 down a note. While you're digging under piles of paperwork, you probably mutter something unprintable under your breath.

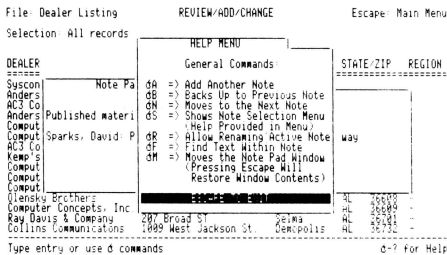
Perhaps you're entering text in a word processor document and decide it's time to do your first file save, but you can't remember if the file name you want to use already exists. Too bad the word processor has no provision to catalog a disk. Similarly, you may need to save a file and discover that you don't have a disk with enough room left on it. You have

plenty of blank, unformatted disks. If you exit the program to use the System Utilities to format a disk, all of your work will be lost.

Does this describe your situation? How about clearing your desk of that old-fashioned calculator, the pens and paper, your appointment calendar and increase your productivity? The Desktop Manager from ON THREE will do these things and a great deal more. From within any program, a keypress will override your current application and display a window into the Desktop Manager. At this point you have the entire facilities of the Desktop Manager at your beck and call. You can pause whatever you are presently doing, and select any of the following modules:

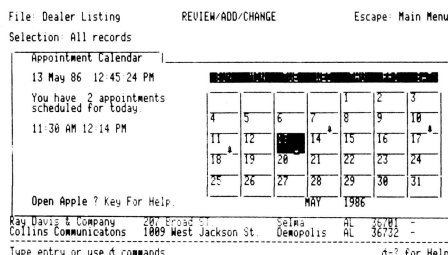


NotePad main help menu, superimposed on a NotePad memo and a database.

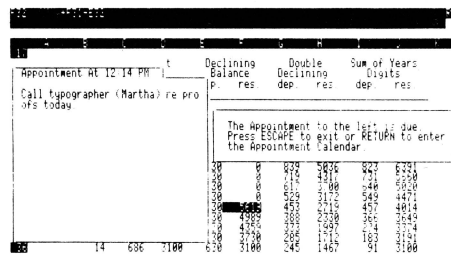


NotePad secondary help menu, superimposed on a NotePad memo and a database.

**The Note Pad:** A powerful and easy to use work processor. It lets you jot down notes for quick reference while you are entering data or for later viewing. No need to type in a file name, The Notepad does it for you, automatically. Multiple pages per note, plus the sophisticated features of word-wrap, automatic repagination, copying and more gives you the power of a word processor—available in an instant—from whatever program you are using. Instant on-line help screens (a feature of all Desktop Manager modules) make The Notepad easier to use than many word processors.



Appointment Calendar primary display.



Appointment Calendar event, showing an appointment that has just come due.

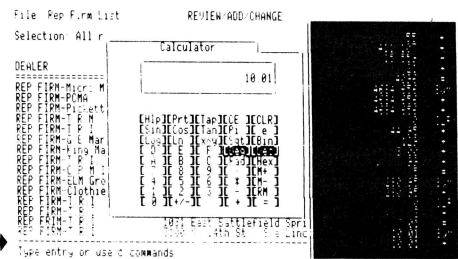
**The Appointment Calendar:** A time scheduling productivity tool that allows you to set multiple appointments for any day through December 31st, 1999. These "Appointment Events" automatically notify you of your next appointment. From within any program, no matter what you are doing, the Appointment Calendar will pop up on your screen and display your next appointment. The day and week at a glance features show the appointments for a single day or an entire week. It also provides an easy way to set your system clock. Full help screens compliment this handy and easy to use perpetual calendar.



## The Calculator:

An extremely powerful electronic workhorse. Full 16-digit accuracy and multiple functions like: SIN, COS, TAN, LOG's, natural LOG's, x to a power, square roots and more. In addition to the basic add, subtract multiply and divide, The Calculator features e, pi, degrees and radians, memory, base conversions from decimal to hex or binary and back again, a simulated scrolling paper tape, hardcopy printing and of course, on-line help screens.

The Calculator, with paper tape showing last calculations.➔



The basic **Desktop Manager** comes complete with all the above features and more! For the first time, **Desktop Manager** lets you use a mouse from within any program, even those not designed for a mouse. You will be able to use the mouse to move the cursor and the mouse button doubles as the ESCAPE or RETURN key. The **Desktop Manager** also offers the ClipBoard for information transfer. With the ClipBoard, you can transfer information from one screen or program to another. Say you are using the Calculator to do some calculations and want to transfer the result into your word processor. You can simply cut from the calculator and paste it into your program. Likewise, you can move an entire section of text from your program to the notepad or vice-versa.

In addition, if you are running with Selector /// or Catalyst, you can also transfer directly from one application to another. After you have used the

ClipBoard to transfer some information, you can return to your previous application by simply pressing Escape, and the cursor will even be exactly where you left it.

With our no-nonsense installation program, a few simple keypresses will quickly install the **Desktop Manager** on all of your application programs. No need to use the System Configuration Program, Desktop Manager does it all for you, and automatically! All **Desktop Manager** Modules have movable windows that can be placed anywhere on the screen that they will fit.

The complete package includes all of the features described above and a 110 page User's Guide that shows clearly how to use each function of the various **Desktop Manager** modules. Priced at only \$129 plus \$6 shipping, the **Desktop Manager** is the best thing to happen to the Apple /// in a long, long time.

## Disk Manager:™

Provides the most frequently used features of the Apple /// System Utilities program. Formatting disks, listing, copying, deleting and renaming files and more are all available, at the touch of a button. Never again will you have to lose data when you need to exit a program to format a blank disk. On-line help screens and standard **Desktop Manager** "Ease of use" makes the \$44.95 (and \$3 shipping) price a steal.

## Optional Desktop Manager Modules Available Now!



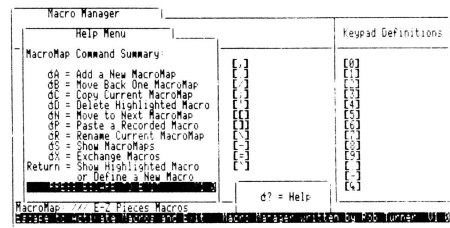
Main menu of the Disk Manager



"Format a Disk" option of the Disk Manager

## Macro Manager:™

Allows you to define a single keypress as a series of keystrokes to be played back at your command. Our innovative Record Macro mode lets you record a series of keystrokes—over 2000, if you want—right while you type them in response to prompts, etc., in an applications program. After you have finished choosing from your applications menu, you can go right back to the Macro Manager and assign the previously recorded keystrokes to a single macro definition. Up to 50 different definitions can be assigned to a single macro set. Each set of macros is called a MacroMap™ and over 200 different MacroMaps, which can be modified with additions and deletions, etc., can be selected from an easy to use menu. The Macro Manager allows you to copy macros from one key to another and to exchange or re-assign macro keystrokes. All of this and more for only \$44.95 plus \$3 shipping.



The Macro Manager's help menu, displayed over a MacroMap™

## ASCII Chart:

Lists, in an easy to understand table, the decimal and hexadecimal values for all ASCII characters. A second screen features a keypress table that shows exactly which keys to press for different ASCII codes. The keypress table can be a lifesaver when you need to know what commands to send to a printer, or to an applications program, to enable different printing modes such as bold, italic, compressed print, etc. Only \$9.95 plus \$3 shipping. As an extra bonus, the source code is included on the disk.

## Mr. SandMan:

A fast-moving, multi-level, full-color arcade game that you can play at any time. As a **Desktop Manager** background module, whenever you need a break from the tedium of entering data into your present application, you can instantly "take five" to team Mr. SandMan up with the wandering WOZ and eat up those nasty JOBs in this challenging and amusing game. For only \$29.95 and \$3 shipping, you will receive both the **Desktop Manager** and stand-alone versions. The stand-alone version allows you to play Mr.SandMan even if you don't have the **Desktop Manager**.

## Coming Soon to a Desktop Near You!

### Grafix Manager:™

Allows you to send graphics images to your printer from within any program. You can combine text and graphics images on the same piece of paper. You can insert a picture in the middle of your word processing document. Features automatic rotation, and image enlarging and/or shrinking. Medical image processing techniques allow scaling changes without loss of clarity in the image. Supports Apple DMP-ImageWriter, Epson, IDS, OkiData, Pkaso, Pkaso/U and many more. Available about July.

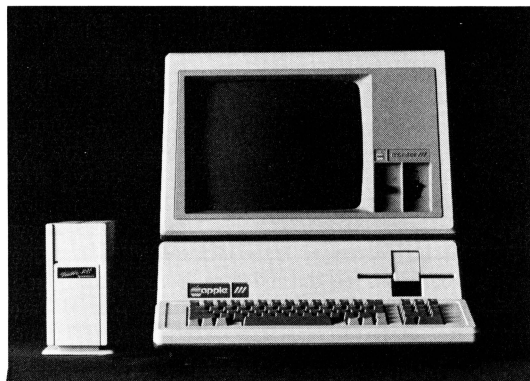
The **Desktop Manager** requires an Apple /// with 256K or 512K of memory and an external disk drive of any type or capacity. The Appointment Event feature requires an **ON THREE O'Clock**, an Apple Clock or compatible Apple /// clock chip. The **Desktop Manager** uses between 32 and 40K of memory.

<b>Desktop Manager</b> .....	<b>\$129.00</b>
	plus \$6 s/h
<b>Disk Manager</b> .....	<b>\$44.95</b>
	plus \$3 s/h
<b>Macro Manager</b> .....	<b>\$44.95</b>
	plus \$3 s/h
<b>ASCII Chart</b> .....	<b>\$ 9.95</b>
	plus \$3 s/h
<b>Mr. Sandman</b> .....	<b>\$29.95</b>
	plus \$3 s/h

Order the main **Desktop Manager** and any two or more modules and get a 10% discount.

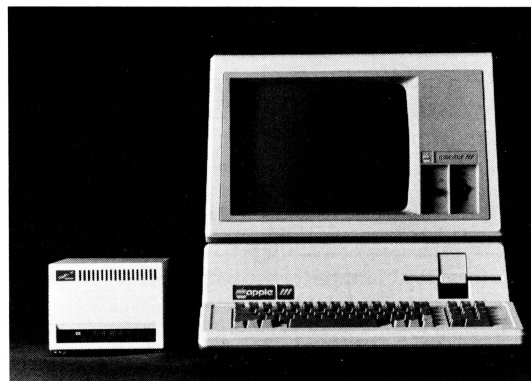
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## a new line of high capacity Apple /// disk drives



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 II. 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 II. 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.

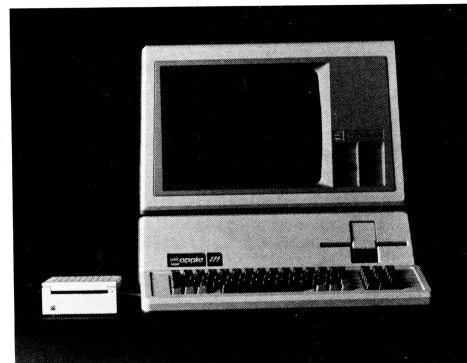
#### UniDisk ///.5 800K Micro-Floppy

**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.

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

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Especially for Beginners:

# Assembly: The Pascal Way

*david g. sparks*

OK, hands in the air everybody who has Apple Pascal sitting around, meaning to get to it someday. Let's see those hands. Uh-huh, just as we suspected. Lots of people have taken a shot or two at Pascal before putting it on the shelf and going back to BASIC.

This will be an attempt to stimulate interest in using the Apple Pascal Assembler, for it turns out to be a surprisingly powerful program development tool. In brief, attaching assembly language modules to Pascal programs is much easier and more understandable than doing the same thing in BASIC.

Yet Pascal on the Apple has a reputation for being hard to use. It should be just the opposite. Once you spend some time with it, and get used to the operating system, it becomes no more difficult to navigate from task to task. And the strictness of the Compiler helps pinpoint many kinds of errors quickly, which (let's be honest, now) can take lots of time to find when BASIC programs crash.

Pascal programs are built of procedures and functions. An assembly language routine will become a Pascal procedure or function. There is no difference between a Pascal program's use of a function coded in Pascal and of one coded in assembly language.

The example for this article is a pair of somewhat useful routines, INTMAX and INTMIN, which will find and return the maximum and minimum values respectively of an integer array. INTMIN works the same way as INTMAX, which will be described in detail.

INTMAX is a FUNCTION, meaning it reports back to the program with a value. The value will be an integer, so the function is declared to be of TYPE INTEGER. The function needs to know where in memory to find the array and how many array

elements to examine, so it will have two items in its parameter list. Since one of the parameters is an array, we need to pre-define the array as a TYPE, this way:

```
TYPE INTARRAY : ARRAY[1..100] OF INTEGER;
```

We can then declare the function this way:

```
FUNCTION INTMAX( X : INTARRAY; SEARCH  
  _COUNT : INTEGER) : INTEGER;
```

And of course it is assembly language, not Pascal code, so in place of the usual Pascal instructions ("begin ... end;") is the single word, "EXTERNAL;". That is the magic word which connects assembly language to a Pascal program. Listing 1 is a short Pascal program which employs both of the example functions.

When the program calls INTMAX, the Pascal operating system does all the work of getting the information the machine code will need. It will all be on the stack, in a prescribed order,

---

---

## LISTING 1

### A PASCAL PROGRAM USING ASSEMBLY LANGUAGE MODULES

```
program usemax;  
  
  (After compiling this program, use the Linker  
   to link the code from Listing 2.)  
  
  const bignum = 100;  
  
  type intarray = array[1..bignum] of integer;  
  
  var x : intarray;  
      counter, pointer : integer;  
  
  function intmax(x : intarray; search_count : integer) : integer;  
  external;  
  
  function intmin(x : intarray; search_count : integer) : integer;  
  external;  
  
  begin {program}  
    for counter := 1 to bignum do x[counter] := 0;  
    write('How many numbers to enter: ');  
    readln(counter);  
    if counter > 0 then  
      begin {if}  
        for pointer := 1 to counter do  
          begin {for}  
            write('Enter value #',pointer,': ');  
            readln(x[pointer]);  
          end; {for}  
        writeln('Maximum value: ',intmax(x,counter));  
        writeln('Minimum value: ',intmin(x,counter));  
      end; {if}  
    end.  
end.
```





```

FUNCTION INTMAX -- return maximum value in an
Integer variable.
Call:
<INTVAR> := INTMAX(<INTARRAY>,<NUMOFELEMENTS>)

Where INTARRAY is the name of an integer array,
and NUM OF ELEMENTS if the number of elements to
be examined counting the first element as one.

.FUNC INTMAX,2 ;Two words of parameters expected

Next declare labels which can be used by
other procedures and functions

.DEF POPEM, FETCH, COMPARE

Now begin the FUNCTION code

JSR POPEM ;Pop off the stack parameters
LDX #TEMP1 ;Point FETCH at TEMP1
JSR FETCH ;First array element ==> TEMP1
LOOP LDA COUNT ;Test COUNT=0 by ORing low and
ORA COUNT+1 ;high bytes.
BEQ DONE ;Finished if both = 0
LDX #TEMP2 ;Else next element ==> TEMP2
JSR FETCH
JSR COMPARE ;Set up N and Z flags

Test the flags
If TEMP1 < TEMP2 then N=1, Z=0
If so then replace TEMP1 with TEMP2

BEQ NOTLESS ;Z = 1 so leave TEMP1 alone
BPL NOTLESS ;N = 0 so leave TEMP1 alone
LDA TEMP2 ;otherwise make the trade...
STA TEMP1
LDA TEMP2+1
STA TEMP1+1
NOTLESS JMP LOOP ;Repeat the process

Branch here when COUNT falls to zero
DONE PUSH TEMP1 ;Put max value onto stack
EXIT RETURN ;Report back to caller

Subroutines
POPEM POP TEMP2 ;Save return of this subroutine
POP RETURN ;Save function return address
RMVBIAS ;Remove 4 empty bytes from stack
POP COUNT ;Save number of elements
POP POINTER ;Save pointer to first element
PUSH TEMP2 ;Restore this subroutine's return
RTS

FETCH LDY #0 ;Initialize indirect index reg
LDA (POINTER),Y ;Load low byte of array element
STA 0,X ;Store it in location X
LDA COUNT ;Check count low byte = 0
BNE $0 ;No, skip next line
DEC COUNT+1 ;Decrement count high byte
$0 DEC COUNT ;Decrement count low byte
INC POINTER ;Increment pointer...
BNE $1
INC POINTER+1
$1 LDA (POINTER),Y ;Load high byte of element
STA 1,X ;Store it in location X+1
INC POINTER ;Increment pointer again...
BNE $2
INC POINTER+1
$2 RTS ;Fetch complete

```

```

Compare TEMP1 with TEMP2
Pascal integers are signed, two's-complement.
This routine sets Z=0, N=1 if TEMP1 < TEMP2.
and sets Z=0, N=0 if TEMP1 > TEMP2.
Source: Levanthall, Lance A. and Saville, Winthrop
"6502 Assembly Language Subroutines",
Osborne/Mc Graw-Hill, Berkeley, CA, 1982,
PP 249-252.

COMPARE LDA TEMP1
CMP TEMP2
BEQ LOWEQUAL

Low bytes are not equal, test high bytes

LDA TEMP1+1
SBC TEMP2+1
ORA #1
BVS OVFLOW
BVC TSTFLAGS

Low bytes are equal -- test high bytes
LOWEQUAL LDA TEMP1+1
SBC TEMP2+1
BVS OVFLOW
BVC TSTFLAGS

Complement N flag without affecting C and Z
OVFLOW EOR #80
ORA #1

All done. Return to caller with flags set
TSTFLAGS RTS

FUNCTION INTMIN --> find minimum integer
in an array. use routines in INTMAX

.FUNC INTMIN,2 ;Two words of parameters on stack

Reference routines in INTMAX to use here
.REF POPEM, FETCH, COMPARE

Now on with the function...

JSR POPEM ;Same comments as in INTMAX...
LDX #TEMP1
JSR FETCH
LOOP LDA COUNT
ORA COUNT+1
BEQ DONE
LDX #TEMP2
JSR FETCH
JSR COMPARE

Test the flags
If TEMP1 > TEMP2 then N=0, Z=0
If so, replace TEMP1 with TEMP2

BEQ NOTMORE ;N=1 so leave TEMP1 alone
BHI NOTMORE ;Z=1 so leave TEMP1 alone
LDA TEMP2 ;Otherwise move TEMP2 in...
STA TEMP1
LDA TEMP2+1
STA TEMP1+1
NOTMORE JMP LOOP ;Repeat the process

We reach here when COUNT=0.
DONE PUSH TEMP1 ;Put the minimum on the stack
EXIT RETURN ;Report to headquarters
.END ;Mandatory end of assembly source file

```

# Interfacing the Diablo 630

barry downes

After reading the article in the May *ON THREE* discussing printer configurations, I realized I had never seen in print the proper configuration for connecting your hard working Apple /// to one of the great and equally hard working printers of our time, the Diablo 630. (Actually, the 630 goes back to the earliest days of the Apple II and was one of the first, if not *the* first letter quality printer available for microcomputers. . . .ed)

I now have two of these printers and over a period of continuous activity have yet to face a single service call. This is a fact that pleases me, since the charges for such service calls are very heavy. Also don't expect any more than minimum help and information from Diablo itself. Unfortunately, their behavior is typical of a number of large companies. Still, Diablo makes a great printer which, by the way, allows you to use metal daisy wheels which give you far longer life than the plastic variety.

Anyway, I'll list the configuration in typical cable parlance. Have it made up by somebody who knows what they're doing and you should be in business. They will have no trouble understanding the data. Interestingly enough, in calling Apple some years ago when we started using our first Diablo 630, we found they did not know the correct configuration for this printer, and what they gave out was in error.

This configuration was figured out by one of the real talents in the computer field—a fellow named Barak Berkowitz, once a salesman in New York at McGraw-Hill, then he headed up the computer department at Macy's, and most recently has been taken into the womb by Apple itself and is now captive in Cupertino.

Here is the Diablo 630 configuration for both the Modem Eliminator cable and connecting cable. Note that the Modem

Eliminator should be connected from the printer side and the other cable from your Apple ///. It *does* make a difference.

### Modem Eliminator

205208-1 - -2' - - - -205208-1  
4025p

### Straight through:

1-8, 10-13, 17-23, 25

### Cable from Printer to Apple

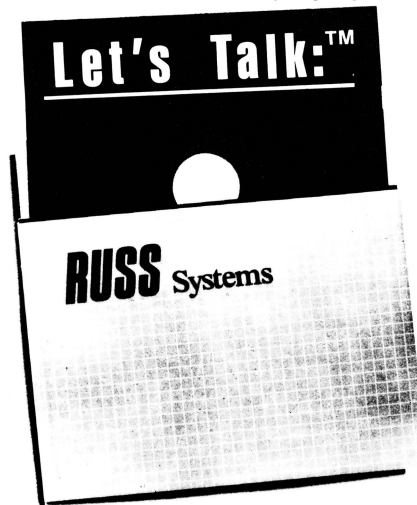
205208-1 - -10' - - - -205208-1  
4110p

- 1-1 (drain)
- 2-3 (black)
- 3-0 (brown)
- 4-6,8 (red)
- 5-0 (orange)
- 6-11 (yellow)
- 7-7 (green)
- 8-0 (blue)
- 20-0 (purple)
- 22-0 (white)



**"You Couldn't Have Made It Any Simpler! Now Everyone Can Afford To Go On-Line"**

Shaun Ralston on-line from Personal Computing Magazine.



Apple III - 256k native mode

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Three Questions (and a few answers):

# One, Two, /// Forum

---

## It's the Price You Pay

Dear Val,

Thanks for your prompt reply of March 24, 1986. Also many thanks for the complimentary issue of *ON THREE*. I do have some observations regarding *ON THREE* that I would like to share with you.

First, I was very impressed with the look and style of *ON THREE*. I felt the articles contained in your magazine were very informative and covered a wide range of Apple /// users. *ON THREE* has a professional look and feel to it. It gives us Apple /// users a feeling we are not forgotten.

Second, I applaud you for your "Call Three: Hot Line/Apple /// User Groups." It is very refreshing to see the number of volunteers out there who are willing to sacrifice their time and efforts in order to help their fellow Apple /// users. It also bespeaks well of you to publish this information for all of your subscribers to use.

Third, I would like to see the letter section moved to the front of the magazine. I like to read user letters as they often reflect the mood of the market and usually have good suggestions, arguments and positions (pro or con) regarding the full spectrum of the Apple /// market.

Finally, some criticisms. While your magazine has a superior quality behind it (in fact, I've enclosed \$40.00 for a subscription), I feel that your pricing scheme is somewhat high, especially considering the Apple /// market and your competitors. \$16.95 is just too much money for a "Disk Of the Month." *The Three Magazine* has many public domain software disks available for \$11.00. TAU also has many public domain disks available for \$3.50! Apple Fortran /// for \$104.00? The Three Magazine has this available for \$38.00! Sider 10/20/34 MG hard disks from \$999.00 - \$1999.00? CMC Computer Systems has hard disks from 10-40 MG for \$495.00-1150.00 (these are high-quality drives with optional one-year extended warranties for \$50.00). Reconditioned Apple ///'s for \$999 (256K) to \$1399 (512K)? Sun Data has the same Apple ///'s for \$589 (128K) to \$749 (256K) to \$999 (Brand New ///+ 256K)! Similar savings can be found on *Lazarus ///*, *Desktop Manager*, and the *Micro-Sci* disk drives. Of course you can argue that you are not paying for the quality that *ON THREE* provides, or that similar products are not going to perform as well as those available from *ON THREE* but the point I'm trying to make is that given the Apple ///'s limited market, the software and hardware manufacturers should be trying to give us the best possible deal while still making a *little* profit. I feel so strongly about this that I have given my four years of work on the Apple /// as a software developer to the public domain libraries available for the Apple ///.

Please don't take my criticisms personally, I only wanted to share my opinions of the Apple /// market and to provide *ON THREE* with the user input necessary to make it an even better magazine in the future.

Again, thank you for your time and consideration.

John E. Cisar  
Des Moines, IA

Thanks for your subscription and your kinds words about the magazine as well as your other observations. Our letters section is probably the most widely read and popular feature in *ON THREE* and it is one which gives us the most pleasure in editing. It is not feasible to place it at the beginning of the magazine for a couple of reasons, the primary one being it is the last section completed before going to press, and is used extensively at the last minute for the purpose of gaining space for a "hot" story, or for filling space when needed. You may note that the individual pages are often complete within themselves, thus facilitating this operation. In addition, editorial protocol usually places letters and other "department" type features in the back half of the magazine.

While we thank you for the compliments about some aspects of *ON THREE*, we disagree on other points and would like to take this opportunity to point out some of the rationale on our pricing and other policies.

Our Disks Of the Month cost more because they are not public domain programs. We pay fair royalties on all software we produce. Regarding the /// Magazine having less expensive disks, they are, as you say, public domain. As a matter of fact, both Rob Turner, and Bob Consorti have uploaded public domain software onto various national bulletin boards. The /// Magazine has chosen to download these and other items and sell them for a profit. Since these products obviously are royalty-free, they can be sold for less. Neither Rob nor Bob were contacted to authorize the sale-for-profit of the programs they put in the public domain via Ed Gooding's "Three's Company" BBS from which they were apparently obtained.

The point about Apple Fortran is of particular concern. When the Apple /// was dropped, Bob twice flew up to Apple in attempts to get them to change their minds. While that aspect of the trips was unsuccessful, Apple was persuaded to release some internally developed programs and we were able to pick up the exclusive marketing rights to both *Selector ///* and *Fortran*. The royalty rates and pricing structure on both these products are dictated by Apple and the author(s), not *ON THREE*. We've never asked *The ///* Magazine to discontinue selling *Fortran* because we didn't want to force Apple into the dispute, nor did we wish to create publicity which could be detrimental to the /// community.

Regarding the hard disks, pricing pretty much follows a set pattern which equates value in terms of features and options included in a base unit. The more features, the higher the manufacturing cost upon which the retail price is established. The CMC line of hard disks are warranted for only 30 days and do not have tape backup units or daisy-chain capability. In addition, they are not compatible with the Apple ][ and IBM PC. With the Sider line we offer a full one-year parts and labor warranty plus an optional low cost warranty extension. Our Siders are neither slot dependent nor built with obsolete technology. Using the most advanced VLSI circuitry, they are true technological state-of-the-art drives.

We have worked out a better purchasing arrangement for our used Apple ///'s and in the near future, we will be offering 512K Apple ///'s for only \$1148. As you can tell, that's exactly what Sun Data is selling their 256K machines for plus the cost of the 512K memory expansion. As ON THREE lowers our costs, we pass it on to our consumers.

Regarding the Micro-Sci disk drives, if other people are selling them for less, then you must understand why. Last year, after Micro-Sci discontinued the A-3 and A-143 drives, ON THREE had Micro-Sci manufacture a number of extra drives for our customers. We bought them all (or what we thought was all) for an excellent price and we accordingly reduced our prices to the end user.

As Micro-Sci went out of business, they apparently fixed a number of bad drives that people had returned. Without our knowledge, they sold the fifty or so remaining drives for far below what we had previously paid for top of the line new drives. If other people are selling these used drives as new, ON THREE can hardly compete. And wouldn't want to.

Regarding the Desktop Manager and Lazarus /// programs, we can only assume that you are talking about the "Retriever" and "Power Keys DM+" from D.A. DataSystems. The pricing on the Retriever has always been higher than Lazarus. Originally it sold for \$100. It is now priced at around \$50, just like Lazarus. It would not be my choice since its speed suffers greatly because it is written in BASIC. If you compare the basic features and add-on module prices of the two desktop accessory programs, you will find that Desktop Manager offers far more value for the money, both in terms of features and in ease of use.

One last—and very important—point we'd like to respond to relates to your perception of The /// Magazine, Third Apple Users and ON THREE as having the same general types of production costs. TAU is an Apple /// user group,

and an excellent one. However, it is typical of user groups in that almost all activities and functions, including software production are handled by dedicated volunteers. The /// Magazine, like ON THREE, contains a great deal of valuable information, and they too charge a \$40 subscription rate. There, however, the similarity ends. Each issue of ON THREE costs several thousand dollars to produce which includes expensive typesetting, glossy stock and color art plus the salary of a full-time editor and author royalties. If ON THREE is to continue developing new Apple /// products, we must not only cover our overhead costs, which include a professional staff of seven, along with office and warehouse space, but in addition accrue reserves for product development and promotion.

We appreciate that someone like yourself can give four years of your work to public domain libraries. That kind of effort is one which helps the /// survive. However, if we were you, we'd also be concerned that the /// Magazine—with a minimum of overhead expense, and bulk diskette prices at far less than a dollar—is making a profit selling disks for \$10 or more that may well include programs you spent time writing and compiling over the last few years.

Certainly ON THREE is in business to make money, but it doesn't mean that in so doing we should neglect the needs of the /// community by not offering the very best possible quality products and service and with full support. We do appreciate the time you took to write and voice your concerns and hope that we have been able to offer you a better understanding of some of the problems that face a major software and hardware producer.

#### Automating Music Maker

Dear Val,

As a [non-professional] musician, I read with interest Steven Jungst's "Music, Maestro, Please." It seems to be a fairly practical idea (in Music.Player) to read the pitch and duration values from a disk file. However, I have two questions.

First, isn't there an easier way to create the musical data that is to be saved to disk, other than laboriously typing in DATA statements? And secondly, why is the editor writing a letter to the editor?

Val J. Golding  
Tarzana, CA

Well, Val, you really put your foot in it this time. How do you expect us to explain this one to the readers? But to answer your question, there are a couple of things that could be done to accomplish what you suggest. The first would be to save the newly created DATA statements in the form of a text file that could be "EXEC'd" into the main program. This would probably eliminate the need for separate create and play programs, since the data would now be common to both in the form of DATA statements. In addition, the entire process could be automated by adding a "DATA statement writer" module to the program. This would be similar to something we did in Applesoft Basic quite some time back and would take the form of a PRINT statement such as:

```
PRINT linenbr; " DATA ";pitch%(i); ","; time%(i); ",";
...etc.
```

It would of course involve a major rewrite. But if Steven or any other reader is interested in enhancing an already good program, we'll publish it.

To answer your second question, we had to come up with some way to sneak this idea in. "That's another fine mess you've gotten us into..."

## ON THREE presents... The Unprotect Driver \$19.95 <sup>plus</sup> \$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.



### Competent Advice

Dear Mr. Consorti:

After having received a "complimentary copy" of *ON THREE* Magazine (April '86) this past Saturday, I was amazed to find an article which fit the problem I was having with my second disk drive.

The article, written by Mr. D. Martin, described the same trouble that I experienced with my Apple /// disk drive when I tried to format a blank disk (Device Dependent Error #34: See Manufacturer's Documentation).

After reviewing the article, I carefully followed Mr. Martin's procedures. To my absolute delight, it worked.

My thanks to Mr. Martin and to *ON THREE* Magazine.  
Bruce J. Ruhl  
Philadelphia, PA

*We're glad "Taming Timing" solved your problem. We have had the experience many times of having published an article at precisely the right time for it to solve someone's problem. Incidentally, after having corrected drive speed, you may sometimes find that a floppy that was created or written to while the drive was off-speed can no longer be read. If this should occur, the drive must be re-adjusted close to its former [out of tolerance] speed and the disk copied to another drive or media, after which the off drive may again be returned to normal.*

*You didn't indicate that you were subscribing, but we hope that is the case, and if so would like to add "Welcome aboard!"*

### Have a Heart

Dear Val,

/// E-Z Pieces has a heart-stopping bug. I discovered it while working on a lengthy word processing project which involved cutting and pasting many ASCII files (for use with Super AppleWriter and Micro Terminal), all carefully assembled from various Apple /// newsletters.

The disk that I wanted to save my work to was nearly full. I had carelessly not yet saved my hours of work (shame on me!) When I tried to print my first ASCII files to disk, /// E-Z Pieces gave me a "Can't finish writing to this disk" error. The prompt said to "Press Space Bar to Continue." Escape claimed that it would return me to "REVIEW/ADD/CHANGE." Neither key did as they suggested they would. I got what looked like a software lock-up. Nothing would get me out of the error message! I knew the system wasn't hung because the flashing cursor was still doing its thing. The program simply didn't know where to go next. Three hours of work were about to go to RAM heaven, never to be seen again!

In desperation, I tried several open-apple keys. At first I got a lot of "beeps." But when I pushed the open-apple "S" key (save to disk) the program took off and started to save my file as a regular Easy Pieces file. I pushed Escape to cancel the save and lo and behold, the program then came back and displayed my file on the screen. All was normal again.

Jeff Fritz  
Williamson, WV

*Jeff, we hope the description and [inadvertent] solution you gave to the problem you faced will be of help to someone who finds themselves in a similar situation. Letters such as yours are among those that receive high priority to appear in print because they offer potential resolution to apparently unsolvable "emergency" situations. In our opinion, they are among the most valuable that we receive.*

### Basic-ally Speaking

Dear ON THREE:

Keep up the excellent magazine, I enjoy it very much. I am very much confused about programming on the Apple /// and even extremely basic information on what disks to use, what to input to get started, etc., would be helpful for non-programmers such as myself. Do we need an Apple BASIC disk on the machine, Apple Pascal, etc., to run, or input the programs you print in *ON THREE*?

Mike Carpenter  
Edmond, OK

*Mike, we appreciate very much the type of feedback you have given us, and we will try our best to print some articles suited to your needs. In the meantime, please feel free to write with specific questions concerning programming or other aspects of the Apple ///, and please don't feel they are too simple for us to be concerned with. After all, we all started at ground zero.*

*As to the programs we publish in ON THREE, they fall into about three categories and may or may not be inter-related. They are Business Basic, Pascal and Assembly, all of which present strange appearances to a newcomer. A BASIC program may be most easily identified by its program line numbers to the extreme left of the listing, and to program in that language requires that you have the Business Basic diskette and reference manuals. Pascal is readily spotted by its somewhat drastic form which resembles a highly indented outline. To use it, you must have the combination of the System.Pascal diskettes and programming manuals. Assembly language is a technical down-to-roots programming language that may be used by itself or with either Pascal or BASIC. It requires use of the Pascal editor and assembler. Please see the article by David Sparks in this issue and the assembly program on page 21.*

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## Speed Kills

Dear Mr. Consorti,

Hope you can help me with a problem. I'm creating a database by making a German dictionary. I'm using 3EZP. I'm going to run into two problems. The first is that I'm going to run out of memory. That problem can probably be solved by getting your memory upgrade board to 512K. I have an Apple /// plus and I'm wondering if the clock will work with the 512K memory board the same as now.

The second problem is that the computer gets slower and slower as the database is getting larger. I estimate that by the time I get to 4000 words in my dictionary that it will take about 20 seconds to search the database. Is there any way of speeding up the Apple ///? I have heard that there is another microprocessor, the 65802, I believe is the designation. Is this microprocessor faster? Is it compatible with the Apple ///? If so how complicated is it to install and where can I get one?

Thanks for your help.

Richard Sieve, M.D.  
Saratoga, CA

*Our 512K memory upgrade will definitely resolve your problem of running out of available memory, and as far as the clock is concerned, you will never know the difference. In your second problem, you have run into one of the limitations of an 8-bit microcomputer. Because of the extensive data manipulation involved in search or sort routines there is no alternative to thumb-twiddling during processing unless you write your own programs with search modules designed for your specific application.*

*To answer the balance of your questions, we must invoke the old "good news/bad news" gag. The good news is that the 65C802 is much faster than a 6502, both by virtue of a*

*higher clock speed and though use of 16-bit registers and instructions. It is compatible with the Apple /// and installation is no more involved than unplugging the old chip and plugging in the new one. They are available from ON THREE for \$75.*

*The bad news is that a 65C802 will not speed up /// E-Z pieces or operations on your database because /// E-Z Pieces is not written to take advantage of 16-bit instructions. The superior speed and performance of the 65C802 can be taken advantage of only when programs are written to utilize its 16-bit registers, such as our in-house ON THREE assembler which is faster than the Pascal TLA on a scale of about 60:1.*

## Interfacing a Typewriter

Dear Sir:

I use a 256K Apple /// with two disk drives, IDS-560 dot matrix printer and a UPIC [interface card]. I also have an IBM 60 Electronic typewriter that I would like to use as a letter quality printer. Is there any way to do this?

Michael D. Johnson  
Franklin, LA

*The IDS 560 is an excellent printer, and since we used a 460 for quite some time, we are quite familiar with it. In our experience, we found that there was a combination of printer commands that did produce excellent near letter quality output. With respect to the IBM, we can't really answer you without knowing more details such as is it capable of interfacing to a computer at all, and if so, via serial or parallel interface. If it has interface capability, it would probably work by using the System Configuration program to modify the RS-232 or .Printer drivers to accommodate its parameters.*

ON THREE Presents . . .

# Sandman

a new multi-level arcade game by Mel Astrahan

## \$29.95

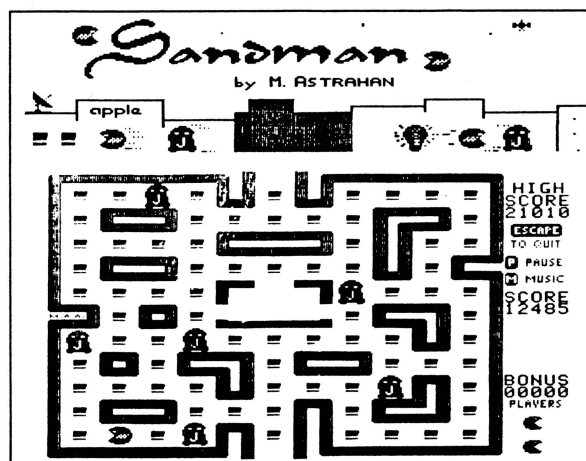
plus \$2 shipping and handling

- Use with joystick, keyboard or mouse
- Can be run as a Desktop Manager background module

*The objective of SANDMAN is to score as many points as possible. Salvage all of the Apple /// parts discarded throughout the halls of Apple's labyrinthian research lab to receive points. WARNING! The lab is haunted by the ghosts of JOBS. . . if they catch you, you're done for!*

*Your only weapon against the JOBS is to find the WOZ who wanders about the lab pecking 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.*

**"—Brilliant, colorful and fast moving, Sandman will provide hours of fun."**



## Titanic Waves

Dear Bob:

I recently received my April copy of *ON THREE*. Needless to say it is always a pleasure to be kept abreast of what is going on in the Three World. The one article that caught my attention is the increased interest in Titan products. Three'ers might want to know that there are really two products that are manufactured by Titan and one must be aware of what they are buying. There is the Titan Apple ][ emulation package as well as the Titan /// plus //e. The two products are completely different and the Titan /// plus //e is the best of the two products. The other problem in acquiring Titan products is that Titan Technologies, Inc., of Ann Arbor, MI will not sell directly to the public, they deal only through distributors. However unfortunate (for Titan) this is the only way to acquire the product.

Having used both products, I must confess that Titan has outdone themselves with the /// plus //e boards. I've found this product to be far superior to the Titan ][. To keep from getting long winded, I will identify [only] a few of the superior features which are truly outstanding. Installation is the simplest; there is no need for a dealer to get into your back pocket. There is an additional use of 128K of dynamic RAM memory from Apple /// mode (not available in the emulation mode). Booting and rebooting is less painful than ever. Instead of rebooting with the control-reset keys, the procedure is complete with any Apple ][ program in the disk drive and pressing Open-Apple and reset which brings up the main menu. Press the "3" key and you're on your way. There are many more excellent features and I suggest you purchase it. You'll not be sorry.

One more thing relative to the package is that Titan recommends replacement of the ///'s microprocessor (NMOS 6502B) with a 65C02B which will enable you to run the newer ][ series programs like SuperCalc 3a for example.

This replacement will not allow you to run the older series of ][ programs but I don't think you will find this to be a problem. Beware of the caution by Titan for the correct installation off the /// plus //e for all you ProFile owners there are additional steps you will have to take.

One source for the Titan /// plus //e is Sun Data, Inc., in Logan, Utah. (800) 821-3221.

Karl la Rue  
Kennewick, WA

*We've heard several good words about the Titan /// plus //e. Readers should be aware, however, that it requires two of the four available slots on the Apple /// motherboard. One other thing, we do not concur with Titan's recommendation of replacing the 6502 with a 65C02 for the reason that certain timing differences between the two microprocessor chips may eventually come to light in time-critical applications. A far better solution, in our opinion, is to use a 65C802 as a replacement chip, since all instructions take the same number of cycles to execute as does the original 6502, and it contains all of the added instructions of the 65C02 as well as many new 16-bit instructions and registers which would leave you in a position to use forthcoming Apple /// enhancements.*

### Y'all Come, Hear

Dear Folks,

First let me say that I'm delighted y'all have resumed publishing on a monthly schedule. The April edition is the tenth I've received since subscribing in May of 1983 (I think I special-ordered Volume 1 Number 1). You are certainly keeping your word that a subscription is twelve issues.

To the real purpose of this letter. It would be useful if you would publish the full addresses of your [One, Two /// Forum] correspondents. For example, I feel the urge to

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address Raymond Fugere's question on Mail List Manager, but I only know that he is in Dartmouth.

Your answer to his question was not quite correct. Version 1.1 of "Mail List Manager" (ca. 1982) will indeed store files on a hard disk. Unfortunately, each file is still limited to 960 records. I understand that there was a very quiet free dealer upgrade (from Version 1.0) some years back. If he'd send me his original MLM disk and return postage, I'd be happy to give him the upgrade.

MLM may be old and slow and limited, but so am I, so I keep using it. Apart from that, I have reservations about your suggestion that Mr. Fugere switch over to 3EZP. Without the ability to export a file that 3EZP can import, the MLM user would have to re-key all his or her data. That could be a daunting prospect, even if one could ensure that no errors or omissions attended the transcription.

I wrote such an export program and—in a weak moment—paid for a small ad in Frank Moore's magazine to announce it. The ad yielded nothing. If I knew anything about marketing, I'd be earning an honest living. Nonetheless, I do suggest that you consider the time, effort, money, and danger that could be involved in manual transcription before you recommend that someone change database packages.

Allan M. Bloom, Ph.D.  
2303 San Marcos St.  
Blacksburg, VA 24060

*You're absolutely right on all counts. We stand (or sit) reprimanded. The best we can say is chalk it up to our lack of experience with Apple /// programs to this point. But we all learn as we go, and that is one of the reasons this column is so popular. As we explained elsewhere in this section, we have a policy of withholding addresses and phone numbers unless specifically requested otherwise. The reason for this is to protect our reader's interests from—however faint the possibility—burglary or crank phone calls, etc. What we will try to do, however, is to make more frequent mention of the fact that we require their permission to publish that data. And certainly we can see, as in the case you mentioned, how it might benefit them.*

*The program that you wrote—and advertised—is one from which a few members of our community might benefit. However we can also understand that because of its limited appeal, it would make the cost of advertising (expensive at best) quite prohibitive. You might consider publication in ON THREE to the good of the community or you might also consider asking us to market it on a royalty basis. In the latter case, you should contact Bob Consorti or ourselves for further details.*

### **A Penny for your Thoughts**

Letters To the Editor:

Having ten Apple ///'s I am certainly glad your magazine is back up and running well. As you can tell, I made a bigger commitment to Apple than Apple did to me. A good example might be yesterday, when I had to buy two plastic space-bar guides that, in fact, can't cost one penny apiece and was told by our local Apple dealer that the only way they can be obtained is to salvage them from old Apple ///'s. We then called Sun Data, who took over Apple's inventory, and they are also salvaging them, cannibalizing them from broken keyboards. In the meantime, you can get replacements of these two tiny plastic parts for \$15.00 a pair. If that is what Apple meant by saying they would support their machines for five years, I'm frankly quite disappointed.

In addition, I do have a problem that maybe you or your readers know the answer to. We have bought an accounting package called "EASY Executive Accounting System" manufactured by the Denver Software Company, 14100 East Jewel Avenue, Suite 15, Aurora, CO 80012. This is their [floppy] disk system and later they came out with an upgrade that was compatible with ProFile. For current users there was a two- or three-hundred dollar charge for this item and we purchased it. However, shortly thereafter the company was involved in bankruptcy, and there goes any and all support. I'm wondering if you or any of your readers purchased this program and have it up and running. If so, I would like to get in touch with them to see if I could snag a copy, i.e., I'm not in the normal mode of just getting someone else's copy and using it, however, in this particular case I bought and paid for a working program and would really like to obtain one.

As you are well aware the initial cost of a new book-keeping system, although quite substantial, comes second to the man hours involved in learning a new system. Especially when one is working as well as this. If either you or any of your readers can accommodate us we would be extremely grateful.

Stan Schmidt, President  
S.B. Schmidt Paper Co.  
1020 East 146th Street  
Burnsville, MN 55337

*Thanks for your comments. We sometimes wonder about Apple's policies, notwithstanding that their statement of support for the /// was made prior to last year's major management upheaval. What would happen if... the Macintosh didn't make it as a viable product, what then?*

*Your other question we throw open to the readers, having no answers ourselves. Please note also, that we published your complete address, something we normally don't do, since we treat them as confidential. Those readers who have open questions such as yours must include with their letters a specific statement authorizing us to publish their address and/or phone number.*

### **Setting Prefixes with WPL**

Dear Bob,

In the February issue you asked for any little tricks to make using the /// easier. I am enclosing a copy of the WPL program that I use on my AppleWriter. It is saved to the boot disk with the name STARTUP; the AppleWriter /// program will run it when it tells you to press return. As you can see with this program I automatically set the Apple Speller program path, set the proper prefixes so that my wife and daughter can save their files without worrying if they are doing it correctly, load special print value and tab files, load glossary files and set up my printer for emphasized and double strike. The printer setup should only be selected when memory is clear, since it loads an AppleWriter file containing the proper printer codes, sends the file to the printer and then clears memory.

Earl T. Brelje  
So. St Paul, MN

*Wow, you said a mouthfull. Your WPL program appears to do everything except wash the dishes in the kitchen sink. While you wrote it for use in your specific household, the concept is generalized enough so that many of our readers may find it of value. Thanks much.*

SYSTEM STARTUP SELECTION		PPR	LETTER	G*
A. BILLING INVOICES		PPR		OH. PROFILE/AW. DATA/ PPR
B. LETTER		PPR		QE. PROFILE/AW. DATA/LETTERS QC. PROFILE/AW. DATA/SYS
C. BARB'S REPORTS		PIN		
D. SUE'S REPORTS		PCS !\$A!!		QA. PROFILE/AW. DATA/SYS QM. PROFILE/CATALYST/SPELLER
E. SETUP PRINTER (emphasized and double strike)		PGO QUIT		PGO QUIT
Press RETURN to Exit		PCS !\$A!A!	BARB	G*
Enter your selection :=\$A		PGO INV		OH. PROFILE/BARB. DATA/ PPR
		PCS !\$A!a!		QE. PROFILE/BARB. DATA/LETTERS QC. PROFILE/BARB. DATA/BARB
START PND		PGO INV		QA. PROFILE/BARB. DATA/BARB QM. PROFILE/CATALYST/SPELLER
PPR		PCS !\$A!B!		PGO QUIT
PPR		PGO LETTER	SUE	G*
PPR		PCS !\$A!b!		OH. PROFILE/SUE. DATA/ PPR
PPR		PGO LETTER		QE. PROFILE/SUE. DATA/LETTERS QC. PROFILE/SUE. DATA/SUE
PPR		PCS !\$A!C!		QA. PROFILE/SUE. DATA/SUE QM. PROFILE/CATALYST/SPELLER
PPR		PGO BARB	PRINTER	PGO QUIT
PPR		PCS !\$A!c!		L. PROFILE/AW. DATA/PRINTER. SETUP PNP
PPR		PGO BARB		NY
PPR		PCS !\$A!D!	QUIT	PGO START PPR
PPR		PGO SUE		
PPR		PCS !\$A!d!		
PPR		PGO SUE		
PPR		PCS !\$A!E!		
PPR		PGO PRINTER		
PPR		PCS !\$A!e!		
PPR		PGO PRINTER		
PPR	INV	QE. PROFILE/AW. DATA/BILLINGS		
PPR		OH. PROFILE/AW. DATA/ PPR		
PPR		QA. PROFILE/AW. DATA/INV		
PPR		QC. PROFILE/AW. DATA/INV		
PPR		PGO QUIT		

### Unprotect Oversight

Dear Val,

I received my version of the the *UnProtect Driver* today and changed the *SOS.DRIVER* on my original disks of *AppleWriter ///* and *VisiCalc*. I then made copies of each program and tried to boot them up. Each had a problem.

When I tried to boot *AppleWriter ///* I get a note on the lower right corner of the monitor in inverse: *System Failure = \$06*. When I tried to boot *VisiCalc*, it stops with: *Insert System Diskette and Reboot* centered on the monitor in the usual position.

Both programs start off properly with the normal first screen and run for about the same amount of time as the originals but both have the individual problems stated above. Help!

My son has an *Epson MX-80* printer that he uses on his *Commodore 64*. Can I use it on my *Apple ///* plugging it in directly into the *RS232* port? Will it work with/for *Draw ON* or should I get some other printer. I have a *C. Itoh FP-1500-25P* printer plugged into a card in one of the slots on the motherboard that I use for all printing that I do now.

I appreciate all the help you have given me. *Thanks!*

Ken Gerler  
St. Louis, MO

*We have been virtually flooded with calls and letters regarding the Unprotect Driver. The problems you have experienced are identical to those reported by many others. Fortunately, the solution is simple. All ON THREE products are supplied with the most recent versions of the appropriate Apple /// system software to take advantage of bug fixes, etc. Therefore, it is often found that some products will not run correctly with earlier software releases. We do suggest that all users who have not already done so, update their software. ON THREE supplies a number of inexpensive system updates which will be the subject of a future article. It does appear that many, many users are running on earlier versions of BASIC, SOS, Pascal, etc., a fact that we completely overlooked in our documentation.*

*All you (and others with the same problem) need to do is copy the (Version 1.3) SOS.KERNEL file from the Unprotect disk to your application program disks and all will be well.*

*The Epson MX-80 is supplied in both serial and parallel versions, and you didn't indicate which yours is. If it is indeed serial, then it may be plugged into your RS-232 port as you suggest. If it is a parallel version it should run from the interface card now used for your C. Itoh printer. In either case it is compatible with Draw ON.*

### Omni Present

Dear Val,

*ON THREE* is back, better than ever! Just want you to know that you're much appreciated. I don't know just when my subscription expires, but you may certainly expect to receive my renewal promptly. Keep up the good work.

In the April issue (page 25), *Jim Redfield*, *Costa Mesa, CA*, said he had a *Pascal Technical Reference Manual* that he would part with. Could you put me in touch with him? I'd like to buy his manual.

One last thing, I have *ONTIME*. Will it work with *C/PM*? I am having some difficulty getting it to work on *Omnis 3*, and get an I/O error message when attempting to boot. My driver configuration includes an outboard drive *///* and a *Micro-sci A-143*. Any suggestions? Thanks much.

Don L. White  
Louisville, KY

*We'll check our files and see if we can put you in touch with Jim Redfield. If we don't have his address available, we hope he will contact us.*

*We can't say for sure if ONTIME will work with C/PM as we have not tried it. However, be sure you are using SOS 1.3. As far as Omnis 3 is concerned, best guess is that you simply have a bad diskette which is causing the I/O errors. A second, and less probable, possibility is a problem with the disk drive itself, either off speed or . . .*

## Confusion Reigns

Dear Bob Consorti,

I received this form letter the other day for subscription to "The /// Magazine," at first I thought it was for me to renew my subscription to *ON THREE* since it is close to being due. Also the way they are advertising it seems like they are talking about the *ON THREE* magazine. I like the *ON THREE* magazine very much and I was going to renew my subscription, but to the wrong magazine.

I almost made the mistake and maybe some of your subscribers may. Maybe you should mention in *ON THREE* that there is another magazine that has a similar name and readers should be careful when they receive these forms from the other magazine.

Martin De Muro  
Yonkers, NY

*Thanks for letting us know you were confused. By printing your letter, we will be able to alert our other readers. We agree the similarity of names is a problem, however they appear to be distinct enough so as to not present a trademark conflict. In addition, it is a good newsletter with a lot of worthwhile information.*

## Hi, Noon

Dear Rob:

I have just installed my mouse and *Desktop Manager* and after you told me over the phone to remove my ONTIME driver it is working great. My wife just left my office to return to her Macintosh and finally she admits this Apple /// can do all her Mac can and much much more.

The automatic save feature of the Notepad and Appointment Calendar is fantastic since I use the Corvus hard disk with the Omninet system, my secretary and I can call up, add, or change appointments without much fear of erasing what the other is doing. The reminders appear on her screen and mine at the same time.

I have noticed one thing that does cause me to stop and take notice. The *Desktop Manager* handles 12:00 noon as 12:00 A.M. and when you add an appointment in the twelve o'clock hour in the afternoon such as 12:30 it must be entered as 12:30 A.M. This is no problem once you catch on to the tricks but it did take a few trials to figure it out.

Thanks for all the great help in making a great machine better.

Bob McRae  
Guatemala, Central America

*Well, you did manage to hit on the only real bug in the Desktop Manager. The 12:00 problem has been fixed. The fix is in an updated version that was recently mailed to all purchasers of record which you should have received by now.*

*We're glad the autosave feature works on your Corvus system but we have a feeling you may have been just lucky to date. We would therefore urge some caution in common usage.*

## Sheet Feeding

Dear Val,

In case any New York Apple /// owners or Lisa owners (which seems unlikely) are reading this, I'd like to compliment the computer department of Macy's in Herald Square, New York. Just recently they committed with Apple to continue service and support for both the Apple /// and Lisa machines.

I wonder how many readers are using a sheet feeder to do their work. I would highly recommend the automatic sheet feeders made by the LQ Corporation, 180 Research Parkway, Meriden, CT 06540. We've bought two of their feeders for use with our Diablo 630's and they've worked perfectly. The ones I have do not automatically feed envelopes though I was told they were working on that design modification. If you look around I think you can find them at a fairly reasonable price. (We paid over \$400 apiece for each of ours, but we have seen ads for them for as little as \$179.) If you have need for them, they're great at any price.

Barry Downes  
New York, NY

*Thanks for the tips, Barry. Contributions such as yours are what keep the /// alive and kicking.*

## Getting Extra k

Dear Bob:

I have problems getting extra letters (usually "k" and ";") when I touch-type. I tried cleaning, etc. It happens on every Apple ///, //e and //c that I use. Any ideas?

Since you are selling Apple ///'s, are you interested in buying one? When Apple stopped production, I purchased an Apple /// plus and upgraded it to 512K. I still have the original Apple /// (clock plus 256K). I would also like to sell one or two Apple /// disk drives so that I can shift to your improved drives.

I have a ProFile. If I shift to your 10M hard disk, would it be possible to use Backup /// and the 5M ProFile to backup the 10m hard disk (or at least most of it)?

Donald D. MacDougal  
Fairfax, VA

*We hate to be the bearer of bad tidings, but because you are experiencing extra characters on every machine you use (and bear in mind each keyboard design is different) and because those characters are generated at the "home" position of two fingers of the right hand, the suspect cause is your typing skill. You should be aware that each of the different machines you use have an "auto-repeat" feature where a keypress held down for a specific period will replicate the keystroke. Had you indicated that it occurred on one machine only we would have given some credence to the possibility of the repeat timing being off. Under the given circumstances, we would recommend some typing practice with emphasis on the pressure applied. Try for a lighter stroke and see if that helps to resolve the problem.*

You also asked a question on graphics which we have edited out. Because of its complexity and our lack of knowledge in this area, we will refer it to our resident guru, Dr. Mel Astrahan for research.

In order to offer the lowest possible prices on used machines consistent with our profit margin, ON THREE does not normally purchase used machines from individuals. Because there appears to be a substantial used machine market at the present time, we suggest selling your surplus equipment with an ON THREE de-classified ad.

*We discussed the question of backing up a 10m Sider with a 5m ProFile, using Backup ///, here at the office. The conclusion that we came to is that while it would probably be possible, it would not be practical and once the 10m exceeded 5mb of actual storage you would be just inviting data loss problems.*



## Phoney Information

Dear Sir:

I am in the market for Apple /// communications software and could use some advice on which software package offers the most power for the dollar.

The April 1986 issue of *Personal Computing* magazine ran an article on resident phone directory setups that can function as an auto dialer and data base in conjunction with a communications package. Is any such software available for the Apple ///?

Michael D. Johnson  
Franklin, LA

*It's too bad that the Apple /// has such a shortage of good telecommunications software. The most popular package is Access /// available from Sun Data, Logan UT. Another is Data Capture by Southeastern Software, New Orleans, LA. We used the Apple ][ version of Data Capture for quite some time and found it to be a well-written user-friendly package.*

*ON THREE is considering writing a database/dialer package but we cannot predict at this time if or when it will be available. That decision certainly would be influenced by reader response. We know of no other suitable package.*



## DE CLASSIFIEDS

**Classified rates:** \$1 per word, \$25 minimum. Copy must reach us 60 days prior to cover date, e.g., March 1st for May issue, which would be mailed April 1st.

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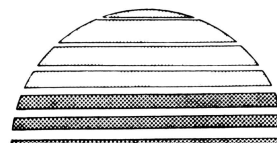


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# Call Three: Hot Line/Apple /// User Groups

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 M25R 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 Dobrowski  
 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**  
*Charlottesville Apple /// User Group*  
 216 Turkey Ridge Rd., Charlottesville  
 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 them 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 inadvertently 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.

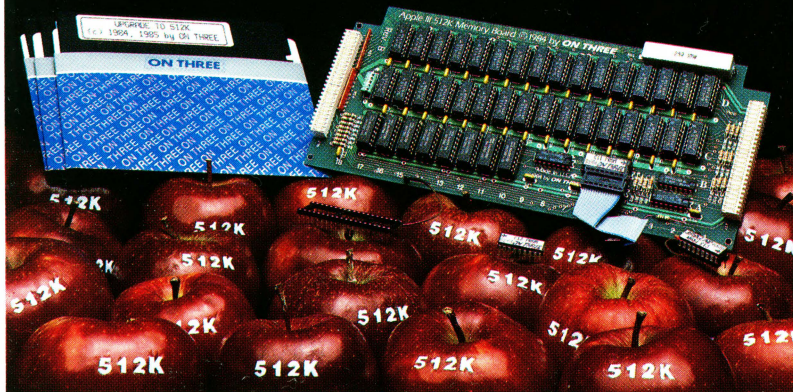
The following is an alphabetical listing of subjects and abbreviations used in the "subjects" column of the consultants listing.

Subject	code	Subject	code
Accounting	AC	Graphics	GR
Agriculture	AG	Micro-Sci	MI
Assembly	AL	Modems	MD
Lang.		Modula-2	MU
Business	BB	Pascal	PA
Basic			
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	EP
		Pieces	

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



# 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 \$399\* for a limited time only**

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

Calif. residents add 6% sales tax (products only) We accept Visa, Mastercard, American Express\*  
13% surcharge on American Express orders



BULK RATE  
U. S. POSTAGE  
PAID  
Permit No. 90  
Ventura, CA

■ 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 instruc-

tion 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

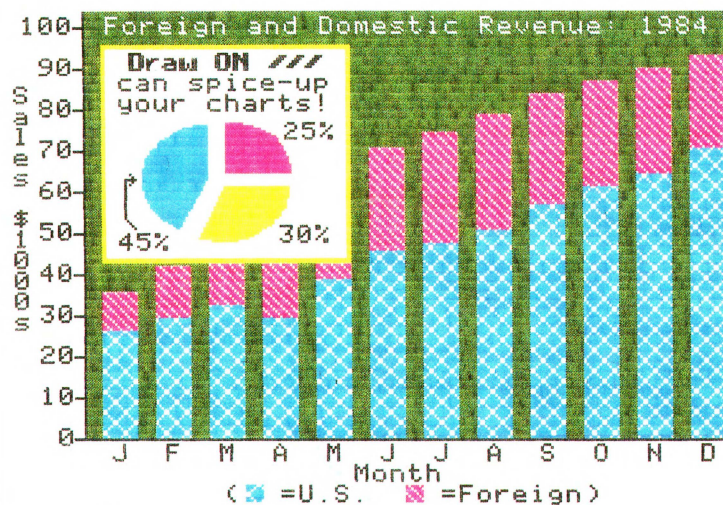
- Multiple help screens
- User-adjustable grids
- Zoom in for detailed work
- Rubber-banding of lines

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

**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 child's 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

ON THREE Presents ...



\$179 ... plus \$5 shipping and handling

## 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