

# THE APPLE II MONITOR PEELED

CALLS      PEEKS      POKES  
BY      TOPIC

ALL EXPLAINED IN ENGLISH



Apple  
PugetSound  
Program  
Library  
Exchange

LOCATIONS IN HEX AND DECIMAL

by  
William E. Dougherty

# ***The Apple II Monitor Peeled***

Published by Apple Pugetsound Program Library Exchange (A.P.P.L.E.)  
[www.callapple.org](http://www.callapple.org)

Originally published in 1979 by Apple Pugetsound Program Library Exchange

Third Printing, June 2016

Paperback ISBN: 978-1-329-81836-1

## **PRODUCTION**

Brian Wiser → Design, Editing, Production  
Bill Martens → Scanning, Production

## **DISCLAIMER**

No part of this book may be reproduced, distributed or transmitted in any form or by any means, including photocopying, scanning, or other electronic or mechanical methods, without prior written permission of the publisher, except in the case of brief quotations contained in articles and reviews, and program listings which may be entered, stored and executed in a computer system, but not reproduced for publication.

*The Apple II Monitor Peeled* is an independent publication and has not been authorized, sponsored, or otherwise approved by any institution, public or private.

All images are under copyright and the property of Apple Pugetsound Program Library Exchange, or as otherwise indicated. Use is prohibited without prior permission.

Apple and all Apple hardware and software brand names are trademarks of Apple Inc., registered in the United States and other countries. All other brand names and trademarks are the property of their respective owners.

While all possible steps have been taken to ensure that the information included within is accurate, the publisher, producers, and authors shall have no liability or responsibility for any errors or omissions, or for loss or damages resulting from the use of the information and programs contained herein.

## FORWARD

While writing programs for my APPLE II, I have many times had to stop constructive work to delve into the Monitor to determine (or redetermine) how to make use of a particular function or feature. Being totally unsuccessful in finding a single PEEK, POKE, CALL reference publication in the marketplace, and having delved deeply into a dozen computers in the last twenty years, I decided to put together for myself, and maybe for others, a description of the ROM contents of the APPLE II in an organization by subject instead of organization by machine address. With a lot of encouragement from my associates who have APPLES, I decided to go beyond the organized notes I needed for my purposes and actually finish it for publication, describing functions and features for readers to whom it would be new information instead of just making up charts of addresses with a few cryptic comments to refresh my memory.

Although the listed CALL points in the Monitor are most useful to the machine language programmer, very many are also useful to BASIC or APPLESOFT programmers as well. For example, keyboard input of single strings which happen to contain commas and cassette tape input and output can be accomplished by the methods described within. While programming in Integer BASIC you may have decided that arrays of two dimensions would be a way to keep dollars and cents separate to allow quantities larger than \$327.67 to be manipulated, and then decided otherwise when faced with a multiply. This publication is the first in which I have seen documentation for the use of the 16 bit/32 bit multiply and divide routines in the (non-auto-boot) Monitor.

What is covered in this publication is the APPLE II Monitor, ROM address range F800-FFFF. I have not yet covered the utilities (Floating point arithmetic, Sweet16) or the compilers or DOS.

This is the manual I have been looking for. I hope you feel the same way.

Copyright 1979

William E. Dougherty

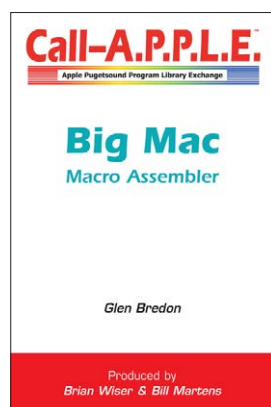
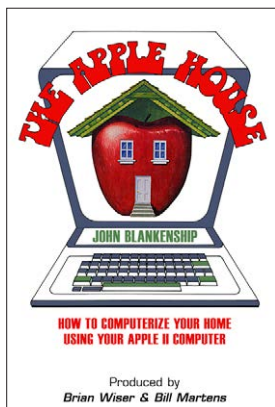
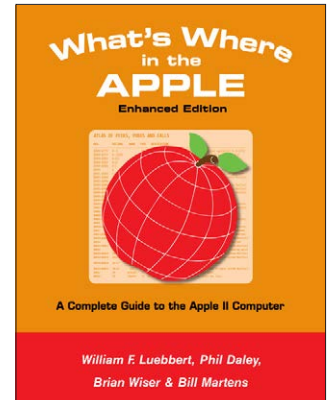
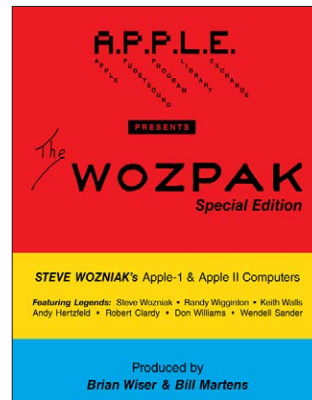
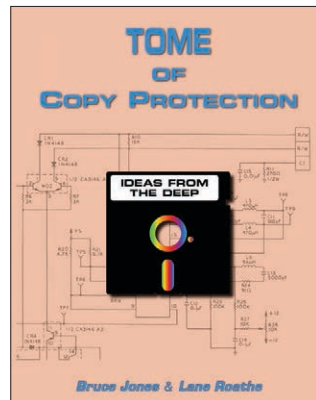
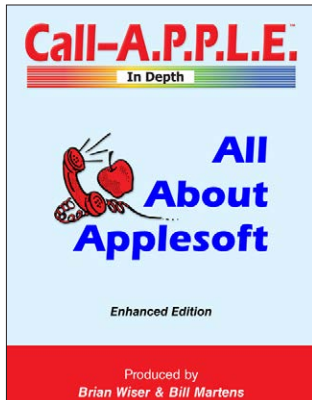
## TABLE OF CONTENTS

Page Zero Usage by the Monitor	3
Overview of Keyboard Input and Text Mode Output	11
Keyboard Input Routines of the Monitor	12
User Program Calls to Monitor Keyboard Input Routines	
Actual Keyboard Input, Functional Description	14
Keyboard Input Monitor Routine Addresses	17
Page Zero Locations Regarding Keyboard Input and Screen Output	19
Output to the Screen, Text Mode, Functional Description	20
Screen Format Control Address Table	21
Screen Format Control by POKE/STORE	22
Scroll Window Data Manipulation Entry Points	23
Cursor Position Control	24
General Text Output	27
Special Text Output (Bell, Hex, Memory display, etc.)	28
Character Output Without the Scroll Window	29
LORES Plotting	32
Data Manipulation Functions	34
Multiply and Divide 16/32 bit	
MOVE memory to memory	
SAVE/RESTORE 6502 registers	
Speaker (Bell) Use Through the Monitor	37
Cassette Tape Input and Output	38
Machine Language Program Development Aids	40
Paddles and Buttons and Annunciator Output	41
Miscellaneous Monitor Support	42
WAIT for specified time interval	
Example of Use of Control-Y with Parameter	43
Setting Registers for Monitor Calls from BASIC/APPLESOFT	44
BRK Instruction Processing Description	45
Single Cycle and Trace Peculiarities	46
Program to Program Control Information Transfer	46
Extra bytes in the Text Window	

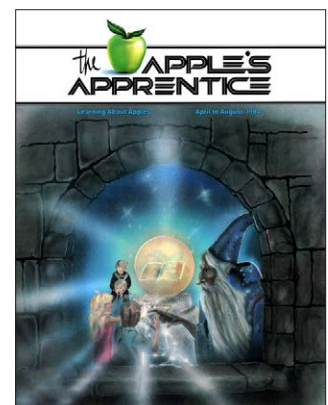


Available in Paperback and Hardback: [callapple.org/books](http://callapple.org/books)

Join Our User Group & Get Our New Magazine: [callapple.org/members](http://callapple.org/members)



v--- Magazines, Fun, History ---v



^--- Programming ---^

