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FOR IMMEDIATE RELEASE

APPLE RENAMES LISA COMPUTER AS MACINTOSH XL

CUPERTINO, Calif., January 23, 1985--Apple Computer, Inc. today announced that the Lisa® 2/10 computer has been renamed the Macintosh™ XL to reflect the computer's key role in The Macintosh Office, Apple's new line of business products.

"Many people have asked when Apple will introduce a Macintosh that has a built-in hard disk, enlarged screen and the internal capacity to process very complex business applications," said Mike Murray, director of marketing for Macintosh at Apple. "We already have such a Macintosh. It's called the Lisa 2/10 and we want people to know what it can do.

"That's why we're changing its name to Macintosh XL--to better communicate that the XL is truly an extra-large Macintosh."

The Macintosh XL has a 12-inch screen, larger than either the 128-kilobyte or the 512-kilobyte Macintosh computers. It comes with 512 kilobytes of memory, expandable to 1 megabyte, or 1,024 kilobytes. The computer also has a built-in hard disk that can store up to 10 megabytes of information.

With up to 1 megabyte of memory, the Macintosh XL enables business users to run complex applications. Users of Lotus Development Corp.'s Jazz integrated business software, for example, can use the full memory capacity to create very large documents and models.

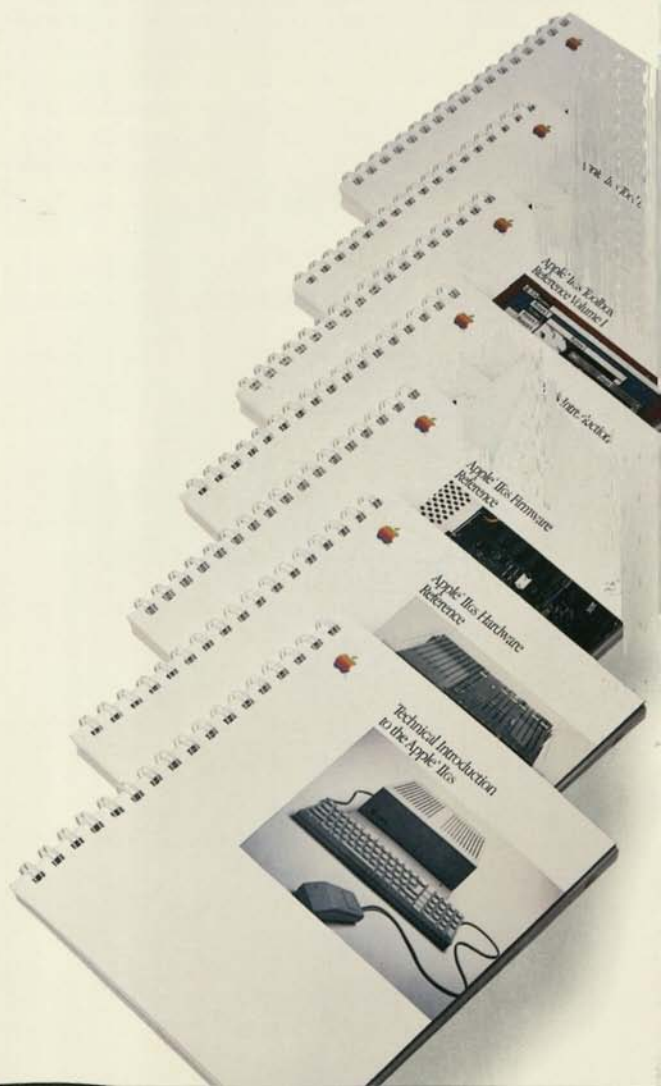
The built-in hard disk offers fast performance and 25 times the storage capacity of a floppy disk. The larger screen allows users to see more data at one time, such as more columns in a spreadsheet or wider pages in word-processing applications.

"Apple is committed to its installed base of Lisa users," Murray said. "For people who already own the Lisa 7/7 business software, we will offer a migration path from 7/7 into the networking environment of our new Macintosh Office products. This package includes programs that transfer files from Lisa 7/7 to Macintosh software applications, including MacWrite, MacDraw, MacProject and Jazz.

"With the new role of the Lisa 2/10 as a 'big Macintosh' in The Macintosh Office, the Lisa 2 and Lisa 2/5 will be phased out," Murray said.



Check Out These Books From The Apple Technical Library



The Apple IIgs™ Suite

Intended for serious programmers, the suite will consist of seven volumes:

- *Technical Introduction to the Apple IIgs*
- *Apple IIgs Hardware Reference*
- *Apple IIgs Firmware Reference*
- *Programmer's Introduction to the Apple IIgs*
- *Apple IIgs Toolbox Reference: Volumes I and II*
- *Apple IIgs ProDOS 16 Reference*

Technical Introduction to the Apple IIgs will be the first offering in this addition to the Apple Technical Library from Apple Computer and Addison Wesley. It will be published in December, 1986.

A detailed description of each volume in the suite follows.



Technical Introduction to the Apple IIgs

This is the introductory book of the Apple IIgs Suite. It describes the features of the Apple IIgs that a programmer must consider when designing or revising a program.

Not a how-to book, it is rather an overview of the general design, system architecture, programming environments, Toolbox, graphics modes, and sound capabilities of the IIgs. Further, it provides a comparison between the IIgs and earlier members of the Apple II family of computers. It also includes a "roadmap" to the other manuals in the IIgs Suite.

Apple IIgs Hardware Reference

Required reading for hardware developers, this book will also be of interest to anyone who wants to know in detail how the Apple IIgs works. It includes mechanical and electrical specifications of all I/O and expansion connectors, including signal levels and timing. It also describes the internal operation of the IIgs: the Video Graphics Controller (VGC), the Mega II IC, the Fast Processor Interface (FPI), and the Ensoniq sound IC.

Apple IIgs Firmware Reference

This member of the Apple IIgs Suite describes the programs and instructions (exclusive of the Toolbox routines) that are stored in the IIgs ROM. Included are discussions of the system monitor, interrupts, serial ports, video, mouse, disk support, Desktop Bus, and SmartPort (formerly called the protocol converter). These firmware programs provide the means to manipulate the system to accommodate the programmer's particular tasks.

Toolbox routines are defined in the *Apple IIgs Toolbox Reference* manuals, described elsewhere.

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Programmer's Introduction to the Apple IIgs

This book will help a programmer begin to write software that takes advantage of the new features of the Apple IIgs. In particular, it introduces the concept of *event-driven* applications (sometimes called "mouse-driven" programs), in which the user, rather than the program, dictates what happens next.

In fact, central to the book is the exploration of a sample event-driven application. The underlying philosophy and concepts, as well as the major steps in programming such an application, are presented.

While individual reference books in the IIgs Suite provide the specific details, this book provides a survey of how the IIgs hardware, operating system, firmware, and development environment interrelate—all from the programmer's point of view.

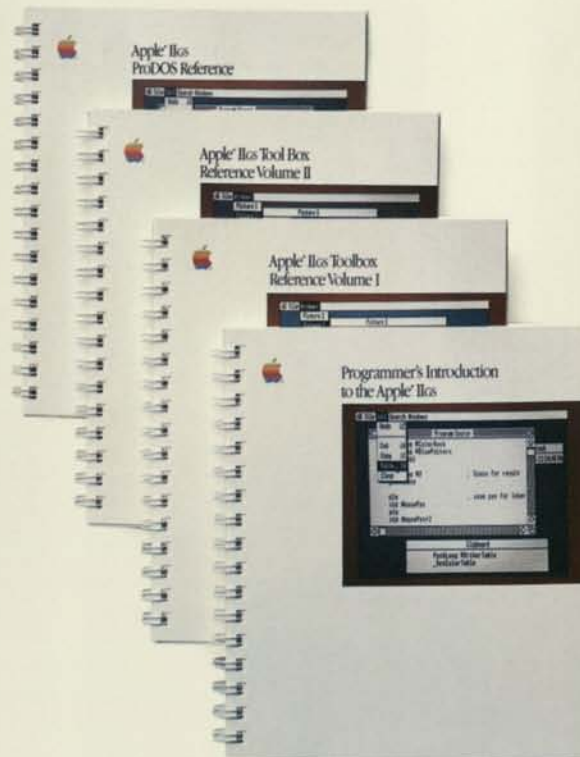
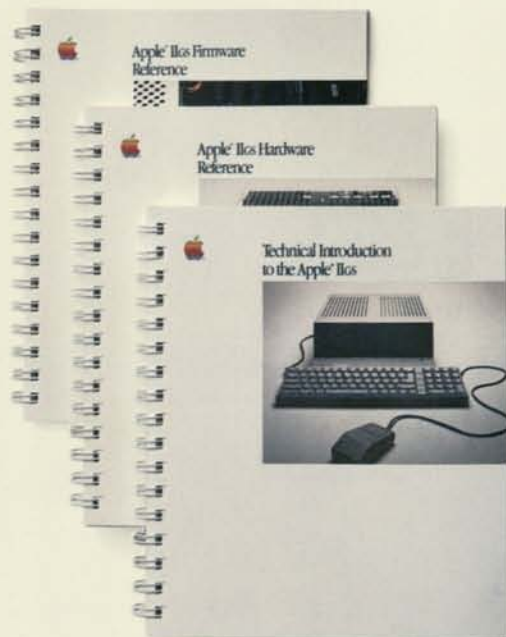
Apple IIgs Toolbox Reference: Volumes I and II

This two-volume set defines the Apple IIgs tools—routines that allow many common functions (such as menus, windows, and dialog boxes) to be performed easily without the programmer having to reinvent the routine. The books define each set of tools, and present the concepts and terminology necessary to use each tool. They provide specifications for all tool calls, in all available languages. They also provide information about the mechanism used to construct the tools, and about how you can write your own set of tools.

Apple IIgs ProDOS 16 Reference *Includes System Loader and Finder*

This book provides information for the programmer about the System Loader and Finder, as well as ProDOS 16. ProDOS 16 is a significantly enhanced version of ProDOS that is designed to take advantage of the Apple IIgs 16-bit architecture. The System Loader works in concert with ProDOS 16 and is responsible for loading all code and data into memory.

Apple IIgs ProDOS 16 Reference discusses file handling, memory management, and writing device drivers. Included is a disk that contains ProDOS 16, system files, and the ProDOS 16 Exerciser program. The Exerciser allows you to practice ProDOS calls without writing a system program.



Individual volumes in the Apple IIgs Suite will be available from Addison-Wesley and distributors carrying The Apple Technical Library. Ordering information and tentative publication dates are listed below:

Technical Introduction to the Apple IIgs — December 1986, 120 pgs., perfect bound, ISBN 17742, \$9.95

Programmer's Introduction to the Apple IIgs — Spring 1987, 150 pgs., spiral bound, ISBN 17745, \$19.95

Apple IIgs Hardware Reference — Spring 1987, 250 pgs., spiral bound, ISBN 17743, \$26.95

Apple IIgs Firmware Reference — Spring 1987, 250 pgs., spiral bound, ISBN 17744, \$24.95

Apple IIgs Toolbox Reference, Vol. I — Summer 1987, 400 pgs., spiral bound, ISBN 17746, \$29.95

Apple IIgs Toolbox Reference, Vol. II — Summer 1987, 400 pgs., spiral bound, ISBN 17747, \$29.95

Apple IIgs ProDOS 16 Reference (disk included) — Summer 1987, 200 pgs., spiral bound, ISBN 17749, \$39.95

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For further information on titles in the Apple IIgs Suite, contact the Retail Sales Group at Addison-Wesley, Route 128, Reading, MA 01867, 617-944-3700, x2643.



Addison-Wesley

General Publishing Group, Reading, MA 01867

To order, call 800-447-2226; inside Massachusetts, call 800-447-2226

Monday through Friday, 9:00 A.M. - 4:30 P.M. EST



1986 Apple II® Products Compatibility Guide





THIS GUIDE IS NOT AN ENDORSEMENT OR ADVERTISEMENT FOR PRODUCTS. IT IS MEANT TO PROVIDE YOU, THE DEALER, WITH THE BEST INFORMATION THAT WE CAN GIVE REGARDING MANY APPLE II-FAMILY SOFTWARE AND HARDWARE PRODUCTS. THIS DOCUMENT IS FOR YOUR USE AND SHOULD NOT BE DISTRIBUTED TO CUSTOMERS. QUESTIONS ON SPECIFIC PRODUCTS ARE BEST ANSWERED BY THE MANUFACTURERS THEMSELVES. REMEMBER, THERE IS NO SUBSTITUTE FOR IN-STORE USE ON THE APPROPRIATE HARDWARE CONFIGURATION BY CUSTOMERS BEFORE THEY BUY A PRODUCT.

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About this guide

This guide of hardware and software products is designed to show the compatibility of these products with the Apple® IIE computer, the Apple IIc, and our latest addition to the Apple II family: the Apple IIgs™.

All of the more than 300 products listed in this guide have been tested by the Apple Computer Product Testing Group according to rigorous standard procedures. Included in the test are all of the Apple-labeled software and hardware products as well as popular third-party packages and peripherals. However, because of the thousands of products available on the market, many of them had to be left out of this guide.

For the satisfaction of the customer, please check compatibility before selling a product. If the product you are selling is not listed in this guide, check with the manufacturer. If you discover incompatibility problems not listed in this guide, please notify the product's manufacturer and your Apple representative.

Later in this section you'll find a brief description of the major features of each system on which the products have been tested. The Apple IIE used for testing was the enhanced CPU configured with 128K of RAM: No major changes have occurred to this CPU since introduction. The Apple IIc (A2S4100) however has been modified to allow optional memory expansion of up to 1 megabyte. Finally, the Apple IIgs is our latest computer which adds major new capabilities to the Apple II family.

Organization

This guide is divided into two sections:

1. Hardware Products: An alphabetical listing of peripherals and accessory products that shows their compatibility with the enhanced Apple IIE, the Apple IIc, and the Apple IIgs.
2. Software Programs: An alphabetical listing of programs that shows their compatibility with the enhanced Apple IIE, the Apple IIc, and the Apple IIgs.

If a column is blank, it means that the product was not tested on that computer or was not designed to work with that computer.

Both listings have a comments column. In the hardware section, this column sometimes has additional information or a date or a version number. In the software section, there is almost always a date or version number. Please check the version number of the product you are selling and inform the customer of any comments listed.

Questions

If you have questions regarding this Apple II Compatibility Guide, please direct them to the appropriate contact.

- For questions regarding Apple products: Please contact the Regional Support Centers.
- For questions regarding non-Apple products: Please contact the manufacturer.

The systems

Apple IIGs

The Apple IIGs personal computer, the high performance Apple II, provides compatibility as well as many new capabilities with both software and hardware. Many of the features can be summarized in five categories:

1. **Compatibility.** A key design goal was to provide compatibility with the majority of existing Apple IIe and Apple IIc software, Apple IIe plug-in cards, and add-on peripherals. This is evident in hardware by maintaining the Apple IIe-compatible slots. Like the Apple IIc, the Apple IIGs has built-in ports for common peripherals, including monitors, disk drives, printers, modems, keyboards and mice, joysticks, and AppleTalk®. The new 65C816 processor is in the same family as the 65C02 and is fully backward compatible.
2. **Memory.** The new 65C816 allows the Apple IIGs to linearly address up to 8 megabytes of memory. The standard memory configuration of 256K can easily be expanded to over 1 megabyte by using the Apple IIGs Memory Expansion Card.

3. Speed. The Apple IIgs operates at 2.8 megahertz. This allows existing applications designed for the Apple IIe and Apple IIc to run up to 2.8 times faster on the Apple IIgs.
4. Graphics. A custom graphics chip supporting all existing Apple IIe and Apple IIc video modes (including 40/80 column text) has been enhanced with 16-level grey scales and with two new linearly addressed graphic modes: 640(H) x 200(V) with 4 colors/scan line, and 320(H) x 200(V) with 16 colors/scan line.
5. Sound. The Apple IIgs has an advanced sound chip which allows simultaneous playback of 15 voices and includes a jack for external speakers or head phones. Naturally, all of the existing beeps and tones heard on the Apple IIe and Apple IIc are supported with a built-in speaker like the one on the Apple IIe.

The Apple IIgs will not only run existing Apple IIe and Apple IIc software, but also run it faster automatically. Many of the new applications will feature the Macintosh™ style human interface using pull-down menus, icons, and windows, in many cases in rich, vibrant colors. The Apple IIgs also makes it possible for existing applications to use desk accessories. Most of the applications that can print on the ImageWriter™ can also print on the LaserWriter® printer over the AppleTalk network.

Features

65C816 microprocessor

Custom video graphics

Modes:

640 x 200 pixels

320 x 200 pixels

4096 color palette

Enhanced sound

Built-in sound chip

Jack for external speakers or headphones

Benefits

Compatible with existing Apple IIe and Apple IIc software

Automatically runs 2.8 times faster than the 65C02

Addresses up to 8 megabytes of RAM and 1 megabyte of ROM

Compatible with existing Apple II video

New, more powerful applications specific to the Apple IIgs

ROM support of QuickDraw II

Compatible with existing applications, up to 15 voices playing simultaneously

Major causes of incompatibility

The Apple IIGs has been engineered to be compatible with most Apple-labeled and third party products available for both the Apple IIe and Apple IIc. Developers were given guidelines to develop their software, but some of them used illegal entry points or different guidelines, which is the cause of some of the major incompatibilities. Desk accessory support is also provided in firmware for software written under DOS 3.3, Pascal, and ProDOS®. However, ProDOS Version 1.1.1 turns interrupts off in the system. Interrupts must be on in order to get into desk accessories. This incompatibility can be alleviated by replacing ProDOS 1.1.1 with ProDOS 8 Version 1.2.

Some products originally designed for the Apple IIe do not work with the Apple IIGs because of one of the following differences:

1. There is no Apple IIe auxiliary connector in the Apple IIGs. The reason is that 80 column text, analog RGB color support, and 256K memory are standard on the base system. The Apple IIGs memory expansion slot allows for linearly addressed RAM memory expansion up to 8 megabytes and up to 1 megabyte of ROM. All Apple-labeled and third party cards designed for the auxiliary connector will not fit or work in the Apple IIGs.
2. The Apple IIGs uses the Zilog SCC (Serial Controller Chip). This is the same chip used in the Apple Macintosh computers. Using this chip provides support for both modems and serial printers as well as the ability to link the Apple IIGs to the AppleTalk network. This chip has made most modem software and data communication programs incompatible, unless a Super Serial Card is added in a slot.
3. Hardware that depends on particular timing may not function properly in the Apple IIGs. Because the internal speed is 2.8 megahertz and slows to 1 megahertz for video and input/output, some timing specific applications may not function. However, if the Apple IIGs is set to "Normal" speed, most of these applications should run correctly. The clock speed is in fact 1.0124 megahertz, like on the Apple IIe when in Normal mode.

Apple IIc

The Apple IIc personal computer has 128K of user memory, 32K of ROM, a built-in 5.25-inch disk drive, a full-size keyboard, three separate color graphic modes, a built-in speaker with volume control and headphone jack, two built-in serial ports, and built-in connectors for attaching a mouse, joystick, hand controllers, a second disk drive, and an RF modulator.

The Apple IIc just became even more powerful with the introduction of the Apple IIc Memory Expansion Card. This optional card comes with 256K RAM and can be expanded to 1 Megabyte in 256K increments. The card is compatible with any Apple IIc (older IIc's will require an upgrade) and software compatible with the Apple II Memory Expansion Card. Increased memory provides faster program execution, quicker access to files, and, with appropriate software, the ability to create larger documents.

Increasing the memory capabilities of the Apple IIc required some technical changes that may affect how some software runs on a new or an upgraded Apple IIc with the memory expansion card. Specifically:

- Although most programs can be loaded into the RAM card, many programs do not automatically direct information to the card.
- To allow for memory expansion, mouse port circuitry was relocated from slot 4 to slot 7. Applications that do not follow Apple programming guidelines (which specify to poll slots to detect the presence of a mouse) may not recognize when a mouse is connected.
- Because the firmware for the Apple IIc Memory Expansion Card is located in the Apple IIc ROM, programs that do not correctly test for the presence of an Apple IIc Memory Expansion Card may list the card as an option even when it is not actually installed. In such cases, ignore that option.

Over 90% of the programs from the Apple II software library are completely unaffected by these changes. However, users that want to use the card with their upgraded Apple IIc's should be aware that some software may not work properly once the card has been installed. If you experience these or other difficulties, contact the software manufacturer to see whether there is an updated version of the program available. Software manufacturers routinely update their application programs to take advantage of new features.

Apple IIe

An outstanding choice for educational, technical, business, and personal applications, the Apple IIe is unmatched in hardware expansion capability with hundreds of cards and peripherals available. Because no significant changes have been made to the enhanced Apple IIe since introduction, it serves as the point of reference for the compatibility information published in this guide.

The Apple IIe personal computer can be functionally upgraded to the new high performance Apple IIgs. Make sure your customers are aware of the opportunity to expand the horizons of their Apple IIe with the Apple IIgs Upgrade (model number A2S6001).

Explanation of codes

The codes used in the compatibility listings are defined as follows:

- 40 Works only with Control Panel set to 40 column. The Control Panel comes set to 80 column. These programs require the Control Panel to be reset to 40 column before booting.
- A Requires Alternate Display Mode. Text Page 2 is not present in the Apple IIgs. If the program enables interrupts, Alternate Display Mode can be selected from the Desk Accessory menu. This sets up an area of memory to be used as the old text Page 2. Note: This Alternate Display Mode can cause the sound to be badly degraded.
- C Compatible but unable to access the Control Panel from within the program. The program runs, but any Control Panel changes must be made before booting the software.
- D Documentation problems. Manual or screen directions are no longer valid. For the Apple IIgs, the most common problem is because the Solid-Apple key was changed to the option key.
- F Doesn't work with ADB (Apple DeskTop Bus) mouse. The program will work with the mouse-card mouse.
- G Display differences. The improved graphics on the Apple IIgs causes some colors, especially blue, to be invisible. Users can try selecting different graphics settings (for example, color for a black and white monitor, monochrome for a color monitor) to improve the display.

- H Hardware works, accompanying software needs update. The product is compatible only if used with the latest software update. Please contact the manufacturer.
- K Keyboard overlay only works on retrofit keyboard. Because several keys have been moved or reduced in size, keyboard overlays may be partially or totally incompatible.
- N Works only in Normal speed. The Control Panel comes set to Fast speed. These programs require the Control Panel to be reset to Normal speed before booting.
- P Doesn't print from port. The program prints only with a Super Serial Card. This problem is usually caused by software looking for ACIA (Asynchronous Communications Interface Adapter) which is no longer there.
- T Text Page 2 doesn't work. Alternate Display Mode cannot be used with programs which disable interrupts. These will display 2's on the screen where the text Page 2 picture used to be. Users should contact the developer for upgraded versions.
- W Doesn't work with the mouse. The location of the mouse in the new Apple IIc's has been moved from the equivalent of slot 4 to the equivalent of slot 7. Programs looking for the mouse in the equivalent of slot 4 won't be able to use the mouse. The manufacturers of these products have been notified.
- X Product works as defined in documentation. The program runs without any problem.
- Z Product doesn't work. The program has major problems that cause it to be unusable: for example, it won't boot, or can't read files, or can't print.

Product	Company	Ile	Iic	IIGS	Comments
100 Robotic Modem	Visionary	X		X	
7710 Serial Card	Cal. Computer Systems	X		X	
Accelerator Iie	Titan Technologies	X		Z	
Apple Iic Memory Expansion Card	Apple Computer		X		
Apple Iic Monitor (Monochrome)	Apple Computer	X	X	X	
Apple Iie 80-Column Text Card	Apple Computer	X		Z	No AUX slot on IIGS
Apple Iie Ext. 80-Column Text Card	Apple Computer	X		Z	No AUX slot on IIGS
Apple Iie Memory Expansion Card	Apple Computer	X		X	
Apple IIGS Memory Expansion Card	Apple Computer	Z		X	
Apple 3.5 Drive	Apple Computer	Z	Z	X	
Apple Color™ RGB Color Monitor	Apple Computer	X		X	
Apple ColorMonitor 100	Apple Computer	X		Z	
Apple ColorMonitor Iic	Apple Computer	X	X	X	Not recommended for new graphics mode on IIGS
Apple ColorMonitor Iie	Apple Computer	X		X	
Apple Color Plotter	Apple Computer	X		X	
Apple Daisy Wheel Printer	Apple Computer	X		X	
Apple Dot Matrix Printer	Apple Computer	X		X	

H Hardware works; accompanying software needs update

N Works in Normal speed only

X Product works

Z Product doesn't work

Product	Company	Ile	Iic	IIGS	Comments
Apple Flat Panel Display	Apple Computer		X	Z	Connectors incompatible on IIGS
Apple Graphics Tablet	Apple Computer	X		X	
Apple Hand Controller II	Apple Computer	X		X	
Apple Joystick II	Apple Computer	X		X	
Apple Modem 300/1200	Apple Computer	X		X	
Apple Monitor II (Monochrome)	Apple Computer	X		X	
Apple Mouse	Apple Computer	X		X	
Apple Mouse Card	Apple Computer	X		X	
Apple Numeric Keypad IIe	Apple Computer	X		X	For IIGS, can be used with upgraded IIe only
Apple Personal Modem	Apple Computer	X		X	
Auto Dial 212A Modem	U.S. Robotics	X		X	
BusinessCard (Serial/Clock)	Street Electronics	X		Z	Multifunction, not compatible
Cat 300 Baud Modem	Novation	X		X	
Centronics Parallel Printer	Centronics	X		X	
Champion Parallel Card	Cirtech	X		X	
Constellation II Network	Corvus	X		X	
Corvus 20 Mb Hard Disk	Corvus	X		N	
Corvus Multiplexer Network	Corvus	X		X	

H Hardware works; accompanying software needs update
N Works in Normal speed only

X Product works
Z Product doesn't work

Product	Company	Ile	Ilc	IIGS	Comments
Decillionix DX-1	Decillionix	X		X	
Disk Controller: Disk II®	Apple Computer	X		X	
Disk Controller: DuoDisk®	Apple Computer	X		X	Remove resistors from drive for IIGS*
Disk Controller: ProFile™	Apple Computer	X		Z	Card is now incompatible*
Disk Controller: UniDisk™ 3.5	Apple Computer	X		X	
Disk II	Apple Computer	X		X	
DuoDisk	Apple Computer	X		X	Remove one resistor from drive for IIGS*
Echo +	Street Electronics	X		N	
Elite One 5.25	Rana Systems	X		X	
Flipster Ram Card	Cirtech	X		Z	
Fourth Dimension 5.25	Fourth Dimension	X		X	
FX-80 Dot Matrix Printer	Epson	X		X	
Gold Card 192 K	Digital Research	X		X	
Graph Writer Printer Card	MPC	X		X	
Grappler + Parallel Interface	Orange Micro	X		X	
Grappler + Serial Interface	Orange Micro	X		X	
Grappler Serial Interface	Orange Micro	X		X	

H Hardware works; accompanying software needs update

N Works in Normal speed only

X Product works

Z Product doesn't work

* You can find technical details on AppleLink

Product	Company	Ile	Iic	IIGs	Comments
Greengate Digital Sampler	Greengate	X		Z	
Greengate MIDI Interface	Greengate	X		Z	
Hitachi analog RGB	Hitachi			X	Product designed for Apple IIGs only
Hitachi VM 129 U Monitor	Hitachi	X		X	
HR 15 Dot Matrix Printer	Brother	X		X	
IEEE-488 Card	Apple Computer	X		X	
ImageWriter™ Wide Carriage Printer	Apple Computer	X		X	
ImageWriter II	Apple Computer	X		X	
ImageWriter (Standard)	Apple Computer	X		X	
IQS 401LX Spectrum Analyzer	IQS	X		X	40 column compatible
Keys-1Parallel Interface Card	Syntauri	X		X	Rev.B
Keys-1Parallel Interface Card	Syntauri	X		X	Rev.C
Koala + Pad	Koala Technologies	X		X	Poor response to buttons in Fast speed
Kurzweil Reading Machine	Kurzweil	X		X	
Legend E Card	Legend Industries	X		Z	No AUX slot in IIGs
Lis'ner 1000 Voice Recog.	MicroMint	X		X	2.0
Lobo 5.25 Disk Drive	Lobo	X		X	

H Hardware works; accompanying software needs update
 N Works in Normal speed only

X Product works
 Z Product doesn't work

Product	Company	Ile	Iic	IIGS	Comments
M & R Enterprises Monitor	M & R Enterprises	X		X	
MD212 Modem	Ven-Tel	X		X	
MD212-3E Modem	Ven-Tel	X		X	
Micom Instalink 460 Modem	Micom	X		X	
Micro Music DAC Board	Temporal Acuity Products	X		N	
Micromodem IIe	Hayes	X		X	40 column compatible
Microsoft Softcard II System	Microsoft	X		H	
Microstore Hard Disk	AST	X		X	
Microtek Parallel Interface	Microtek	X		X	
Mikron ADC 4000 (RS232)	Mikron	X		X	
Model A-2 Modem	Micro SCI	X		X	
Mountain Music Card	Mountain Computer	X		X	Works with Metatrack 5.0
MultiRam IIe	Checkmate Tech.	X		Z	
Muppet Learning Keys	Koala Technologies	X		X	
MX-80 F/T Dot Matrix Printer	Epson	X		X	
Novation Cat Modem	Novation	X		X	
Novation Series 4000 Modem	Novation	X		X	
Orange Parallel Card	Orange Micro	X		X	

H Hardware works; accompanying software needs update

N Works in Normal speed only

X Product works

Z Product doesn't work

Product	Company	Ile	Ilc	IIGS	Comments
Panasonic Omni Monitor	Panasonic	X		X	
Parallel Interface Card	Apple Computer	X		X	
Passport MIDI Interface Card	Passport Designs	X		H	MasterTracks 5.0 doesn't work
Passport MIDI Interface Card	Passport Designs	X		H	With Tape Synch
PJ-1080A Printer	Canon	X		X	
PKASO/U Interface	PKASO/ U Interactive Struct.	X		X	
Power Pad	Chalk Board	X		X	
Print It!	Texprint	X		Z	
ProFile 10 Mb (Hard Disk)	Apple Computer	X		X	ProFile cards are not compatible*
ProFile 5 Mb (Hard Disk)	Apple Computer	X		X	ProFile cards are not compatible*
QC 10 (Hard Disk)	Quark	X		X	
Quick 20 (Hard Disk)	CMC Computer System	X		X	
Qume Sprint 5 Printer	Qume Corp.	X		X	
Ramworks	Applied Engineering	X		Z	
RX-80 Printer	Epson	X		X	
Sanyo DM5012 CX Monitor	Sanyo	X		X	

H Hardware works; accompanying software needs update
N Works in Normal speed only

X Product works

Z Product doesn't work

* You can find technical details on AppleLink

Product	Company	Ile	Ilc	IIGS	Comments
Sanyo VM 4209 Monitor	Sanyo	X		X	
Scribe® Printer	Apple Computer	X		X	
Seiko Watch-Data Terminal	CPU	X		X	
Sider II - 10 Mb (Hard Disk)	First Class Peripherals	X		X	
Sider II - 20 Mb (Hard Disk)	First Class Peripherals	X		X	
Silentype® Printer	Apple Computer	X		X	
SmartHome	Cyberlynx	X		X	
Smartmodem 2400	Hayes	X		X	
Softcard CATS Rev.A	Microsoft	X		X	
Super Serial Card	Apple Computer	X		X	
Super Serial Interface 7711	Apple Computer	X		X	
Swyftcard	Information Appliance	X		X	
Syntech MIDI Interface Card	Syntech	X		H	
Syntech MIDI Interface Card	Syntech	X		H	With Tape Synch
Telmac LDD-1 Modem	Telmac	X		X	
Telmac Modem	Telmac	X		X	
The CP/M Card Rev. B	ALS / Digital Research	X		Z	
Think JET Printer	Hewlett-Packard	X		X	
Thunderclock Plus	Thunderware	X		X	

H Hardware works; accompanying software needs update

X Product works

N Works in Normal speed only

Z Product doesn't work

Product	Company	Ile	Ilc	IIGs	Comments
U.S. Robotics Password Modem	U.S. Robotics	X		X	
Ufonic Voice System	Borg Warner	X		X	For the IIGs, card fits only upgraded Ile cases
UltraTerm Video Display	Videx	X		Z	
UniDisk 3.5	Apple Computer	X	X	X	
UniDisk (5.25)	Apple Computer	X	X	X	
Volksmodem	Volksmodem	X		X	
Z-Engine	Advanced Logic Systems	X		N	
Z80 Plus	Applied Engineering	X		N	

H Hardware works; accompanying software needs update

N Works in Normal speed only

X Product works

Z Product doesn't work

Product	Company	Ile	Ilc	IIGs	Comments
Access II	Apple Computer	X	X	CF	1.1; IIGs needs SS card
Adv. Business Accountant (GL- Sys. Man.)	Manzanita Software	X	X	C	4.00
Algebra 1-6, Volume 1	Edu-Ware	X	X	X	1.7
Algebra 1-6, Volume 2	Edu-Ware	X	X	X	1982- 83
Algebra 1-6, Volume 3	Edu-Ware	X	X	X	1983
Algebra 1-6, Volume 4	Edu-Ware	X	X	X	1982- 83
Algebra 1-6, Volume 5	Edu-Ware	X	X	X	1983
Algebra 4	Edu-Ware		X		1.0
Algebra Arcade	Wadsworth Electronic	X	X	X	1983
Alien Action	DLM	X	X	X	1984
Alien Addition	DLM	X	X	X	1985
Alligator Alley	DLM	X	X	X	1984
Alligator Mix	DLM	X	X	X	1985
Alphabet Zoo	Spinnaker	X	X	X	1983
Alphabetic Keyboarding	Southwestern	X		X	
Amazon	Telarium	X	X	C	1984

A Works with Alternate Display Mode

C Compatible but unable to access the Control Panel from within the program

D Documentation differs

F Doesn't work with ADB mouse

G Display differences

K Keyboard overlay works only with upgrade keyboard

N Works in Normal speed only

P Doesn't print from port

T Text Page 2 doesn't work

U See manufacturer for upgrade

W Doesn't work with mouse; works with keyboard

X Product works as defined in documentation

Z Product doesn't work

40 40 column only

Product	Company	Ile	Ilc	IIGS	Comments
Anagrams Hispanoamericanos	Gessler Educational Software	X		X	
Animal Photo Fun	DLM	X	X	X	1985
Annam	Educational Activities	X	X	X	1983
Apple II Instant Pascal	Apple Computer	X	X	X	1.0
Apple II Pascal 1.1	Apple Computer	X		C	
Apple II Pascal 1.3	Apple Computer	X	X	C	
Apple II QuickFile	Apple Computer	X	X	C	1982
Apple at Play	Apple Computer	X	X	ATFC	1984
Apple at Work 40/80	Apple Computer	X	X	C	1984
Apple Education Classics	Apple Computer	X	X	ACT	1980
Apple FORTRAN	Apple Computer	X	X	C	
Apple Logo II (128k)	Apple Computer	X	X	C	1984
Apple Logo (64K)	Apple Computer	X	X	C	1982
Apple Logo Classroom Kit	Apple Computer		X		1983
Apple Presents Apple Logo II	Apple Computer	X		C	
Apple Super Co-PILOT	Apple Computer	X	X	C	1982

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Product	Company	Ile	Ilc	IIGS	Comments
Apple SuperPILOT Log	Apple Computer	X	X	C	
Apple Term	Apple Computer		X		1.5
AppleWriter™ II (ProDOS) with Tutorial	Apple Computer	X	X	C	2.0
AppleWorks™ 1.3	Apple Computer	X	X	C	1.3
AppleWorks 2.0	Apple Computer	X	X	X	2.0
Arcade Machine	Broderbund	X	X	C	1983
ASCII Express (ProDOS)	United Software	X	X	X	4.30P; IIGS needs SS Card
Astronomy: Stars for all Seasons	Educational Activities	X	X	G	
Back to Basics Accounting System	Peachtree Software	X	X	X	1.00; IIGS won't accept Unidisk 3.5
Backup II	Apple Computer	X		C	
Bank Street Speller	Scholastic	X	X	X	1984
Bank Street Storybook	Mindscape Software		X		1984
Bank Street Writer	Broderbund	X	X	40 D	
Baron	Blue Chip Software	X	X	X	2.1
BASIC Programming with ProDOS	Apple Computer	X		C	

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Product	Company	Ile	Ilc	IlgS	Comments
Blazing Paddles	Baudville		X		1984
Body in Focus	CBS	X	X	K	
BPI Accounts Payable	BPI Systems	X	X	C	2.2.1
BPI Accounts Receivable	BPI Systems	X	X	C	2.2.1
BPI Business Analyst	BPI Systems	X	X	C	2.2.1
BPI General Accounting	BPI Systems	X	X	C	2.2.1
BPI Inventory Control	BPI Systems	X	X	C	2.2.1
BPI Payroll	BPI Systems	X	X	C	2.2.1
Build-A-Book About You	Scarborough Systems	X	X	X	1985
Bumble Games	The Learning Company	X	X	Z	1980- 81
Bumble Plot	The Learning Company	X	X	X	1982
Business Works (GL-Inventory-AP)	Manzanita Software	X	X	C	5.00
Capitalization Plus	Microcomputer Workshops	X	X	X	48K
Cartels and Cutthroats	Strategic Simulations	X	X	X	1.1
Catalyst 3.0	Quark	X	X	U	3.0
Cavern Creatures	Data Most	X		X	1983

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Product	Company	Ile	Iic	Iigs	Comments
Charles Goren: Bridge Made Easy	CBS	X	X	X	1983
Charlie Brown's ABC	Random House	X		X	1984
Chess 7.0	Odesta	X	X	Z	7.0
Choplifter	Broderbund	X		40	
Coast to Coast America	CBS	X	X	X	1984
Code Quest	Sunburst Communications	X		X	1983
Color Keys	Sunburst Communications	X		X	
Color Me	Mindscape Software		X		
Comp-U-Solve	Educational Activities	X	X	A	1983
Comparison Kitchen	DLM	X		X	
Computer SAT Preparation	Harcourt Brace Jovanovich	X		Z	3.1E
Create with Garfield	DLM	X		Z	1986
Cricket	Street Electronics		X		
Crossword Magic	Mindscape Software	X	X	X	1981
Crypto Cube	DesignWare	X	X	X	1983

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Product	Company	Ile	Iic	IIGS	Comments
Cut and Paste	Electronic Arts	X	W	Z	1983
DazzleDraw	Broderbund	X	X	Z	1984
Diagnostics: Iic & IIGS	Apple Computer		X	X	1.0
Dinosaur Dig	CBS	X	X	K	1984
Dollars and Sense	Monogram	X	W	K	III.15
DOS 3.3 System Master	Apple Computer	X	X	X	
DOS Programmer's Toolkit	Apple Computer		X		
Dragon Mix	DLM	X	X	X	1982
Early Games for Young Children	Springboard	X		X	1984
Ernie's Quiz	CTW	X	X	AFT	1981
Elementary, My Dear Apple	Apple Computer		X		
Elementary Volume 1: Mathematics	MECC	X	X	X	3.5
Elementary Volume 4: Mathematics	MECC	X		X	
English Achievement I	Microcomputer Workshops	X	X	X	48K
English Achievement II	Microcomputer Workshops	X	X	X	48K

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Product	Company	Ile	Ilc	IIGs	Comments
English Achievement III	Microcomputer Workshops	X	X	X	48K
English Achievement IV	Microcomputer Workshops	X	X	X	
English Achievement V	Microcomputer Workshops	X	X	X	48K
Explorer Metros: A Metric Adventure	Sunburst Communications	X	X	X	1.0
Exploring Logo	Apple Computer	X	X	C	
Fact and Fiction Toolkit	Scholastic		Z		Program freezes at intro screen
Fahrenheit 451	Telarium	X		X	
FantaVision	Broderbund		X	X	
Fay: That Math Woman	Dida Tech Software	X		X	
Financial Cookbook	Electronic Arts		Z		Mouse problems
Fish Scales	DLM	X	X	X	1984
Flash Spell Helicopter	Microcomputer Workshops	X	X	N	
FlashCalc	Paladin Software	X	X	C	1.0

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Product	Company	Ile	Ilc	IIGS	Comments
Flight Simulator II	SubLogic	X	X	40	1983
French Achievement I	Microcomputer Workshops	X	X	X	48K
French Achievement II	Microcomputer Workshops	X	X	X	48K
Galaxy Math Facts Game	Random House	X		X	
Game of the States	Milton Bradley	X	X	X	1984
Geometry Concepts	Ventura	X	X	X	1984
Gertrude's Puzzles	The Learning Company	X	X	X	1984
Gertrude's Secrets	The Learning Company	X	X	X	1.2
Getting Down to BASIC	Apple Computer	X	X	C	1984
Golf Classic and Compubar	Edufun (Milliken)	X	X		1982
Grammar Examiner	DesignWare	X	X	X	1984
Grandma's House	Spinnaker	X	Z	X	Will not boot
Graphics Exhibitor	Koala Technologies	X	X	Z	1984
Graphics Magician	Penguin Software	X	X	X	1983
GraphWorks	PBI Software	X	X	C	1.3
Home Accountant Expanded	Continental Software	X	Z	X	

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Product	Company	Ile	Iic	IIGS	Comments
How About a Nice Game of Chess	Odesta	X	X	Z	1983
Idea Invasion	DLM	X		X	
Instant Zoo	CTW	X	X	X	1981
Introduction to the Iic	Apple Computer		X		1984
Jane	Arktronics Corp.	X		40 N	1983
Jenny of the Prairie	Addison Wesley	X		X	1983
Juggles' Rainbow	The Learning Company	X	X	K	1982
Karel the Robot	Cybertronics Int'l	X		C	1981
Kidwriter	Spinnaker	X	X	X	1984
Koala Pad / Koala Painter	Koala Technologies	X	X	N	1983
Krell Logo	Krell Software	X	X	X	B- 1981- 1985
La Corrida de Toros	Gessler Educational Software	X		X	
La Guillotine	Gessler Educational Software	X		X	
Larry Bird & Julius Erving Go One-on-One	Electronic Arts	X	X	Z	1983
Latin Hangman	George Earl	X		Z	1983
LISA V 2.6: Lazer's Interactive Symbolic Assembler	Lazerware	X		X	

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Product	Company	Ile	Iic	IIGS	Comments
Lovejoy's Prep. for SAT	Simon and Schuster		X		
Magic Office System	Artsci	X	X	X	1984
Magic Spells	The Learning Company	X	X	X	2.0
Management Edge	Human Edge Software	X	X	X	
Mask Parade	Springboard	X	X	Z	1984
Master Match	Advanced Ideas	X		X	1983
Mastering the SAT	CBS	X	Z	X	1983 On Iic only, program doesn't run examination
Mastertype	Scarborough Systems	X		X	1.7
Mastertype	Scarborough Systems	X	X	X	2.1, 1984
Mastertype's Writing Wizard	Scarborough Systems		X		
Math Blaster!	Davidson & Associates	X	X	X	1983
Math Masters	Houghton Mifflin	X		X	
MegaWorks	Megahaus	X	X		1.1
Memory: A First Step	Sunburst Communications	X	X	X	1983

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Product	Company	Ile	Ilc	IIGS	Comments
Memory Myth	Micro Power and Light	X	X	X	1980
Meteor Mission	DLM	X	X		
Meteor Multiplication	DLM	X	X	X	1984
Microtype PAWS	Southwestern	X	X	X	1.0
Microzine Vol 1: Number 1	Scholastic		X		1983
Microzine Vol 1: Number 2	Scholastic	X	X	X	1983
Microzine Vol 1: Number 3	Scholastic	X	X	X	1983
Microzine Vol 1: Number 4	Scholastic	X	X	X	1984
Millionaire	Blue Chip	X	X	X	2.1
Minus Mission	DLM	X	X	X	
Mix and Match	CTW	X	X	X	
MonkeyMath	Artwork Software	X		X	1983
Moptown	The Learning Company	X		X	1981
Moptown Hotel	The Learning Company	X	X	C	2.0
Moptown Parade	The Learning Company	X	Z	C	2.0 Freezes on Main Menu
Mouse Budget	International Solutions		X		

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Product	Company	Ile	Ilc	IIGS	Comments
MouseCalc	International Solutions	X	X	Z	1.1
MouseDesk	VersionSoft (International Solutions)	X	X	X	1.1
MousePaint™	Apple Computer	X	X	C	1.1
MouseWord	International Solutions	X	Z	Z	Intermittent freezes on Ilc and IIGS
MouseWrite	Roger Wagner	X	X	N	1.5.7
Multiplan	Microsoft	X	X	X	
Muppet Learning Keys- Muppet Discovery Disk	Koala Technologies	X	X	N	
Murder by the Dozen	CBS	X		C	
Music Construction Set	Electronic Arts	X	X	X	1983
Oh, Deer!	MECC	X	X	X	1.1
Operation: Frog	Scholastic	X	X	X	1984
Ortho Personal Plant Selector	Ortho	X		Z	
Pascal Profile Manager	Apple Computer	X		C	
Personal Tax Planner	McGraw Hill		X		1984
PFS: Access	Software Publishing	X	X	Z	1984

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Product	Company	Ile	Ilc	IlgS	Comments
PFS: File	Software Publishing	X	X	X	1984
PFS: Graph	Software Publishing	X	X	G	1984
PFS: Plan	Software Publishing	X	X	C	1985
PFS: Report	Software Publishing		X		1985
PFS: Write	Software Publishing	X		C	1984
Pic.Builder	Xerox Educational Pub.		X		1984
Pinball Construction Set	Electronic Arts	X	X	X	1983
Pinpoint	Pinpoint Publishing	X	X	Z	
Pinpoint Spelling Checker	Pinpoint Publishing	X	X	Z	
Poker Parat (German)	Gessler Educational Software	X		X	
Poker Pari (French)	Gessler Educational Software	X		X	
President Elect	Strategic Simulations	X	X	X	1.1, 1981
ProDOS Assembler Tools	Apple Computer	X	X	C	

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 Z Product doesn't work
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Product	Company	Ile	Iic	IIGS	Comments
ProDOS User's Disk	Apple Computer	X	Z		Identifies Apple IIc Memory Expansion Card incorrectly
Projectiles II	Vernier Software	X	X	X	1982-1983
Quicken	Intuit	X	X	Z	1985
Quizagon	Springboard	X	X	X	1984
Raster Blaster	Budge	Z	X	Z	1981
Reader Rabbit	The Learning Company	X	X	X	1.1
Remember!	DesignWare	X	X	X	1985
ReportWorks	Megahaus	X	X	X	
Robot Odyssey I	The Learning Company	X	Z	X	1.1
Robotwar	Muse Software	X	X	P	11/16/83
Rocky's Boots	The Learning Company	X	W	X	1982
Run Robot Run	Educational Teaching Aids	X		X	48K; DOS 3.3
SAT Preparation Course	Edu Tech		X		3.0
Sensible Speller IV (DOS 3.3)	Sensible Software	X	X	C	1984

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Product	Company	Ile	Ilc	IIGS	Comments
Sensible Speller IV (ProDOS)	Sensible Software		X		1M
Skyfox	Electronic Arts	X		Z	1984
Songwriter	Scarborough Systems	X	X		1983
Space Math	Learning Well	X	X	X	1983
Spanish Achievement I	Microcomputer Workshops	X	X	X	48K
Spanish Grammar Review	Gessler Educational Software	X		X	
Speed Reader II	Davidson & Associates	X	X	X	1983
Spell It!	Davidson & Associates	X	X	X	1984
Spellicopter	DesignWare	X	X	X	1983
Spelling Wiz	DLM	X		X	
Spot Light	CTW	X	X	X	
Square Pairs	Scholastic	Z		Z	1983
Star Search	Earthware Computer Services	X	X	X	1983
State of the Art Accounting (GL)	State of the Art	X		X	1982
States and Traits	DesignWare	X	X	X	1984

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Product	Company	Ile	Ilc	IIGS	Comments
Stickybear ABC	Xerox Educational Pub.	X	X	X	1982
Stickybear Basket Bounce	Xerox Educational Pub.	X	Z	X	Screen freezes
Stickybear Bop	Xerox Educational Pub.		X		
Stickybear Numbers	Xerox Educational Pub.		X		1982
Stickybear Opposites	Xerox Educational Pub.	X	X	X	1983
Stickybear Reading	Xerox Educational Pub.	X	X	X	1984
Stickybear Shapes	Xerox Educational Pub.	X	X	X	1983
Stickybear Town Builder	Xerox Educational Pub.	X	X	X	1985
Story Maker	Scholastic	X	W	D	1984
Story Maker	Sierra On-Line		W		
Story Tree	Scholastic	X		X	1984
Success With Math	CBS		X		
SuperCalc3a	Computer Associates	X	X	PG	1985
Survival Math: Simulations	Sunburst Communications	X		X	
Swyftcard	Information Appliance	X		CD40	1985

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Product	Company	Ile	Ilc	IIGS	Comments
System Utilities 2.0, 2.1.2	Apple Computer	X	X	X	Doesn't see Apple IIc Memory Expansion Card to format, verify, etc.
Talk Back	Russ Systems	X	X	X	1.1
Teach Yourself Essentials of Accounting	Addison Wesley	X		C	
Terrapin Logo	Terrapin	X	X	CG	1.3
Terrapin Logo Utilities	Terrapin	X	X	X	
The Body Transparent	DesignWare	X	X	X	1985
The Factory	Sunburst Communications	X	X	X	1983
The Game Show	Advanced Ideas	X	X	Z	1982
The Great Maine to California Race	Hayden Software	X	X	X	1.0
The Incredible Laboratory	Sunburst Communications	X	X	X	1984
The Inside Story	Apple Computer	X	X	D	1984
The Newsroom	Springboard	X	Z	PC	1984
The Pond	Sunburst Communications	X		X	

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Product	Company	Ile	Ic	IIGs	Comments
The Print Shop	Broderbund	X	X	X	1984
The Secrets of Science Island	Grolier	X		C	1984
The Shell Games	Apple Computer		X		
The Visible Computer: 6502	Software Masters	X	X	X	1984
ThinkTank	Living Videotext	Z	X	Z	1983
ThinkWorks	Megahaus	X		Z	
Trains	Spinnaker	X	X	X	1984
Treasure Hunter	Grolier Electronic	X	X	X	
Triple Dump	Beagle Brothers	X	X	Z	1984
Turbo Pascal	Borland	X		NC	
Turtle Tracks	Scholastic	X	X	CG	1982
Typing Tutor III	Kriya Systems-Simon & Schuster	X	X	X	1984
Utility City	Beagle Brothers	X	X	Z	1984
Verb Viper	DLM	X		X	
Versaform	Applied Software	X	X	C	1981
Volcanoes	Earthware Computer Services	X	X	X	1981

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Z Product doesn't work

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Product	Company	Ile	Iic	IIGS	Comments
Welcome Aboard! A Muppet Cruise to Computer Literacy	Broderbund	X		X	
Where in the World is Carmen Sandiego	Broderbund	X	X	X	1985
Wiz Works	DLM	X	X	X	1984
Wizard of Words	Advanced Ideas	X	X	X	1983
Word Attack!	Davidson & Associates	X	X	X	1983
Word Invasion	DLM	X		X	
Word Master	DLM	X		X	
Word Radar	DLM	X		X	
Word Spinner	The Learning Company	X	X	X	1984
X10 Powerhouse: Home Controller	Powerhouse	X	Z	X	
Your Personal New Worth	Scarborough Systems	X	X	A	
Zaxxon	Datasoft	X	X	40	1983
Zoom Grafix	Phoenix Software	X	X	PC	Second edition

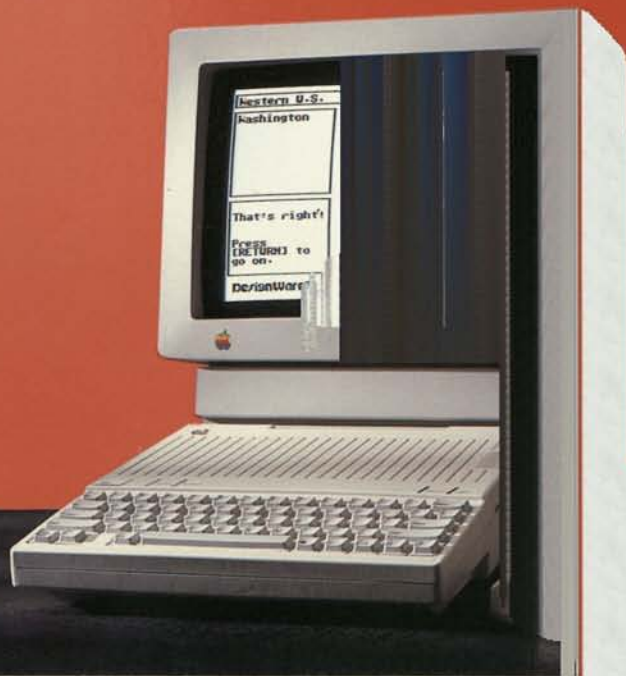
- | | |
|---|--|
| A Works with Alternate Display Mode | P Doesn't print from port |
| C Compatible but unable to access the Control Panel from within the program | T Text Page 2 doesn't work |
| D Documentation differs | U See manufacturer for upgrade |
| F Doesn't work with ADB mouse | W Doesn't work with mouse; works with keyboard |
| G Display differences | X Product works as defined in documentation |
| K Keyboard overlay works only with upgrade keyboard | Z Product doesn't work |
| N Works in Normal speed only | 40 40 column only |



Apple Computer, Inc.
20525 Mariani Avenue
Cupertino, California 95014
(408) 996-1010
TLX 171-576



There's
a lot to be said
for owning
an Apple IIc.



You can do a lot more. A lot sooner. For a lot less.

People buy a personal computer because they want to be more productive, look more professional, save more time, and give their kids more educational advantages.

People buy an Apple® IIC personal computer because they can do all that. And so much more.

Like keeping track of important personal investments. Writing tomorrow morning's acceptance speech. Helping the kids with their book reports.

Which means you won't have to stuff those accordion folders with invoices and bills. You won't have to search for that piece of paper with the key points for your speech. Or hear your kids say the dog ate their book report.

And you won't have to develop the software program you want. Because with more than 10,000 software programs available, chances are it already exists.

If you don't believe us, ask your kids. Since they probably use an

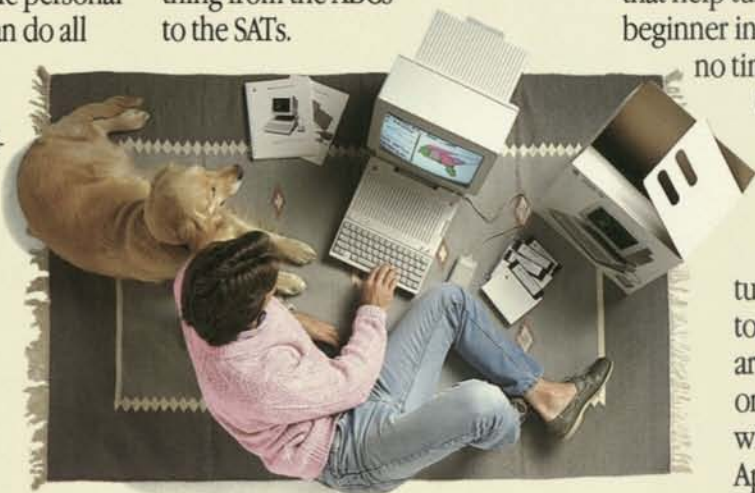
Apple II at school, they already know that there are programs covering every subject—including recess. So with an Apple IIC at home, your kids will get a head start on everything from the ABCs to the SATs.

Like 128 kilobytes of memory. Ports to plug in add-on accessories. Even room inside to expand that memory by up to a full megabyte. And a complete set of tutorial disks that help turn even the most cautious beginner into a confident user in no time.

So when you get it home, all you have to do is plug it in. And turn it on.

Many other computers don't include these features. But you'll be happy to know that these extras are standard equipment on the Apple IIC. That's what makes buying an Apple IIC so easy. And so affordable.

You'll also be glad to learn that millions of parents, teachers, and families have made the Apple II the most popular personal computer in the world. Now turn the page, and you'll see why.



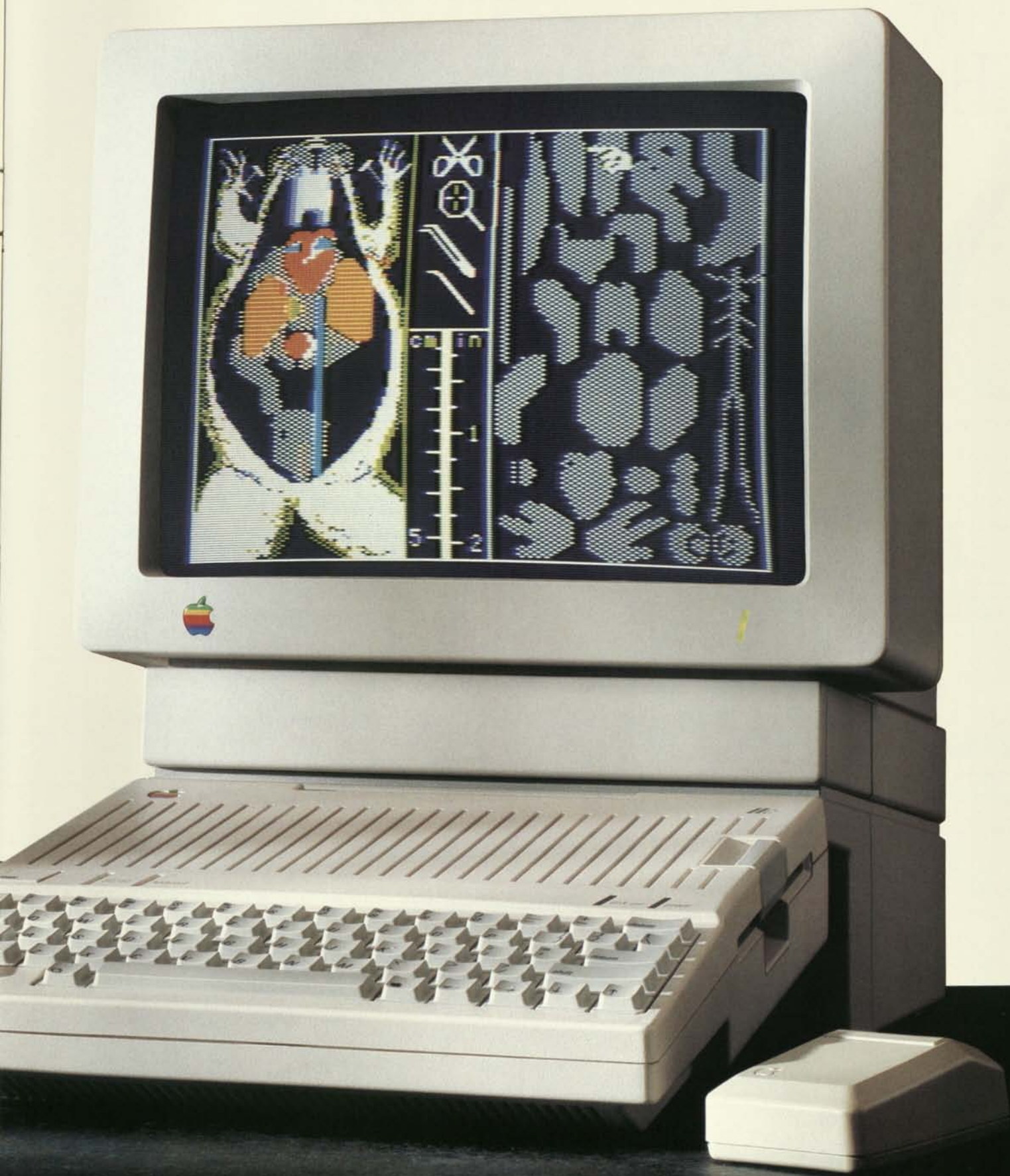
You'll feel right at home with an Apple IIC. Right out of the box. You can set it up in seconds. Learn it in minutes. Use it for years. And like every Apple II, it will grow as your needs grow.

Now let's talk about doing all this a lot sooner. Because the Apple IIC is one of the easiest personal computers to use, right out of the box.

There are no difficult steps to memorize. Or complicated setup procedures to follow.

Everything is already there.







Brought up in the best of families, it has all the traits of an Apple II.

One of the hardest things to come by when you're buying a personal computer is a history.

The Apple II family of personal computers has one. And a proven one at that.

Just ask any one of the more than 2½ million people who've bought an Apple II over the past 10 years.

And if they leave anything out, you can bet their kids won't. Because the Apple II is also the leading computer in schools.

Which means that when you bring yours home, chances are your kids will already know how to use it. And for once, they'll be able to teach you a thing or two.

But actions always speak louder than words.

That's why no matter how many Apple II owners you talk to, each will have a different reason for using one.

Some students might tell you they have an Apple II because it teaches them how to do everything from calculating algebra problems to conjugating French verbs.

Teachers have said that using the Apple II is the most popular classroom activity since recess.

For years, families have been saying that banking, book reports, household budgeting, and even babysitting are easier because of their Apple II.

But you'll discover that for yourself, as soon as you

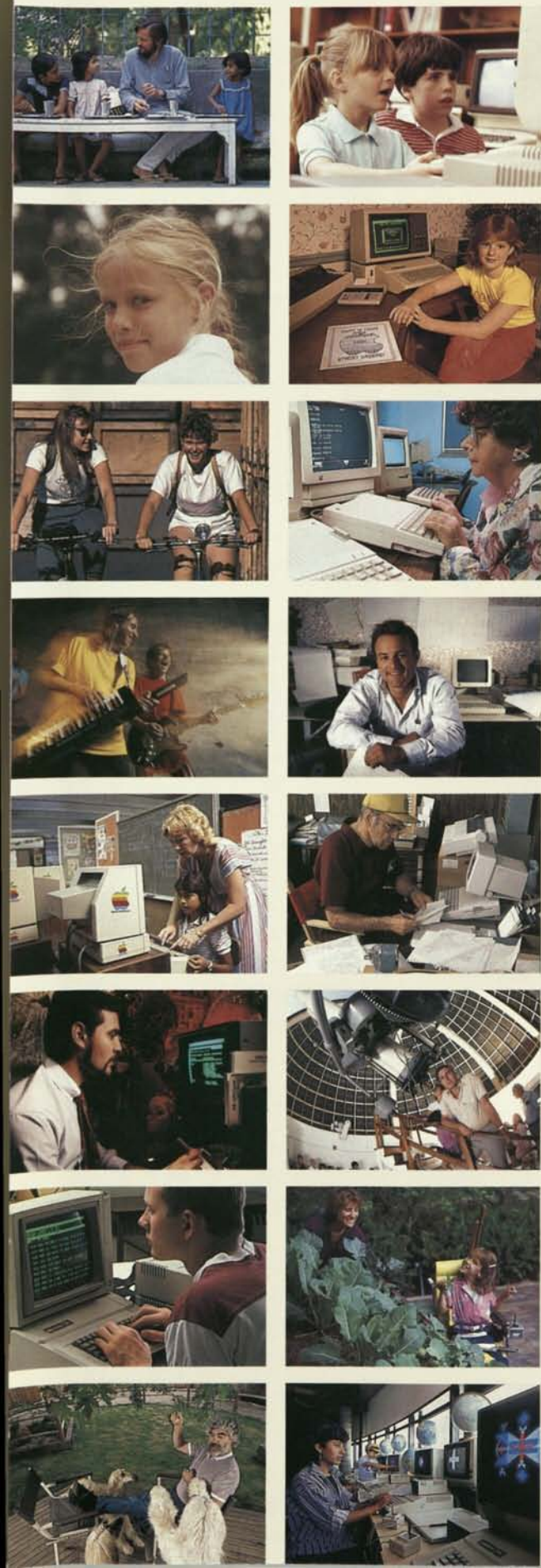
have your own Apple IIc.

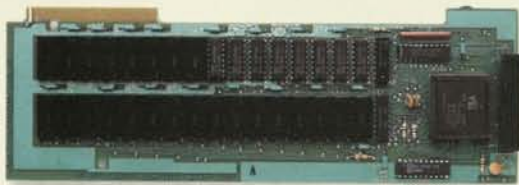
You can use it to take care of your household budgeting. Along with the bills. Term papers. Party invitations. Christmas card lists. Memos. And book reports.

With so many fine things to say about the traits of this member of the Apple II family, perhaps you should consider bringing one up in yours.

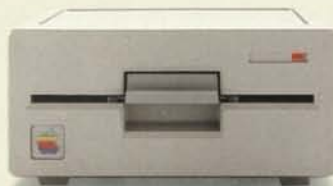


With the finest education and breeding, this member of the family carries on the Apple II name.





Apple IIc Memory Expansion Card



Apple 5.25 Drive



UniDisk 3.5



Apple IIc Monitor with Stand



ImageWriter II



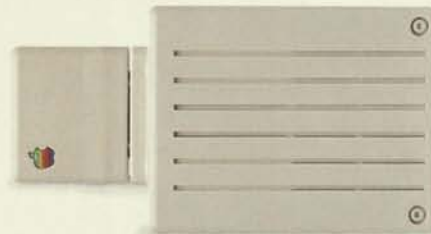
Apple IIc Carrying Case



Apple Monochrome Monitor



AppleColor Composite Monitor



Apple Personal Modem

What's really great about an Apple IIc is that, just like its kin, it's ready for more when you are.

More speed. More power. More memory.

In plain English, that means you can run your programs faster.

It also means you can use more powerful programs. So complex functions like computing and analyzing can turn into simple functions like adding and subtracting.

And it means you can store more information in one place. So all the information you need when you're editing lengthy documents or recalculating complex budgets is already there, without your going through

stacks of papers, file cabinets, and a year's supply of aspirin.

In short, it means you have more options. And on the Apple IIc, some of these options come in the form of peripherals.

Apple Monochrome Monitor

If you plan to work primarily with words and numbers, you might want to equip your system with our new 12-inch black and white monitor. Its crisp text and graphics, and easy-to-read screen are extra gentle on the eyes.

AppleColor Composite Monitor

Apple's most versatile display, the AppleColor™ Composite Monitor lets you compute in 16 colors, then automatically switches to an easy-to-read black and white mode for word-

processing and other text-oriented software.

Monitor IIc with Stand

With its sharp, nonglare screen, classic black and green format, and stand that tilts to any angle, the Monitor IIc is perfect for any member of your family.

ImageWriter II

There's not a more versatile printer made today: One moment the ImageWriter™ II is turning out drafts at the rate of 2½ pages per minute; the next it's quietly producing documents of near-letter quality. And a simple switch of the ribbon lets you even print full-color graphics.

Because it's an Apple II, you can keep adding on.

There's an optional SheetFeeder attachment for letterheads and personal stationery. And a 32K Memory Option that lets you continue your work on the IIc while the ImageWriter II is printing.

Apple 5.25 Drive

The Apple 5.25 Drive is the standard 5.25-inch floppy-disk drive of three generations of Apple II computers. Each drive can handle 140 kilobytes, or approximately 100 type-written pages, of information. And the increased convenience of an extra disk drive means decreased need for disk swapping.

UniDisk 3.5

Don't let its size fool you. As disks and drives are getting smaller, their storage capacity and power are growing. The UniDisk™ 3.5 uses double-sided 3.5 inch disks that hold 800 kilobytes of data—roughly 400 pages of information. It's faster than 5.25-inch drives, too. So you'll spend less time waiting for data, and more time working on it.

AppleMouse IIc

With mouse-based software, the AppleMouse™ IIc takes on the same function as your finger. It points. And by pointing, it tells your computer to do anything from finding a file and

editing a document to printing a copy. So instead of using keyboard commands, all you have to do is lift a finger.

Apple Personal Modem

Just plug in a modem, and the world is at your fingertips. With an Apple Personal Modem and appropriate software, your kids can explore a universe of educational resources. And you can send mail through your phone, do some banking, make airline reservations, and even do a little shopping—all without leaving your chair.

Adding any of these peripherals to your Apple IIc is as easy as putting a plug into a wall socket. Because the back of your Apple IIc has all the ports to plug in all the peripherals you'd ever want.

Apple IIc Memory Expansion Card

With a Memory Expansion Card, you can now add up to one megabyte of memory to your Apple IIc. Which means you can run your software faster, write longer documents, and access your files instantly.

Take note. Because for the first time, you can expand the memory of every Apple IIc, just by taking it to your authorized Apple dealer (who will install the Apple IIc Memory Expansion Card for you).

So as your family and needs grow, your Apple IIc can, too. Which means that the smallest member of the Apple II family can grow to be one of the biggest.



AppleMouse IIc

At last count, over 10,000 software programs can run on your Apple IIc. Of course, even more are being developed as you're reading this.

And no matter how many programs you can imagine ever wanting to run on your Apple IIc, there's always someone imagining one more. That's why the number keeps growing.

But before you get carried away with all the programs you can use, perhaps you should start at the beginning.

With *AppleWorks*™

Often referred to as the only program you'll ever need, it contains three of the most popular functions Apple II owners ever want.

And still have more than 10,000 ways to take off.

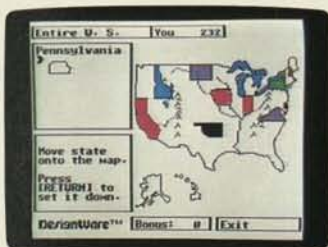
Word processing. Spreadsheet. And data base.

Word processing is what you do every time you write anything down on paper. But with your Apple IIc and *AppleWorks*, you can write, edit, rearrange paragraphs, delete sentences, correct spelling, and even change your mind—without ever

having to lift an eraser, smear correction fluid, grab a pair of scissors, or reach for that roll of tape.

The spreadsheet is there to help you put your finances in order, organizing them as accurately as an accountant. And when you realize you forgot to include just one expense report or to take that extra

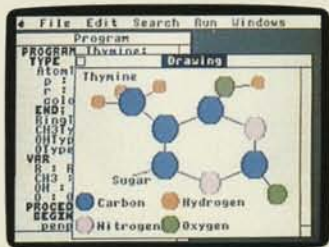




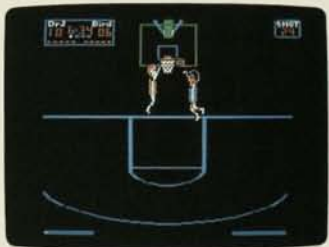
Take your kids traveling with States and Traits.



Compose yourself with Music Construction Set.



Write your own programs with Instant Pascal.



It's Larry Bird vs. Dr. J in a game of One-on-One.



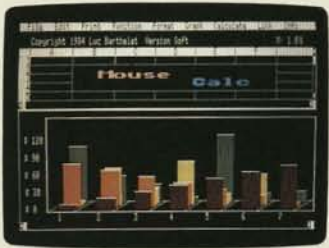
And more.



Fly behind the cockpit of Flight Simulator.



Make your own greeting cards with Print Shop.



Get a grip on the household budget with MouseCalc.



Get down to business with AppleWorks.



And more.



Crunch numbers fast with SuperCalc 3A.



Can your kids find their way out of Town Builder?



Put color pictures on paper with Stickybear Printer.



Can you solve Where in the US is Carmen San Diego?

And more.

deduction, all you have to do is put in one new number. In seconds, you can see the new bottom line.

Sound fast and easy? It is.

So is the *AppleWorks* data base. Use it to store things such as lists, inventories, travel itineraries, and names and addresses—anything you'd ever need to reference. You'll never have to go hunting through that kitchen drawer again. Or spend your free time writing names and numbers into your new address book.

Instead, you'll have more time to enjoy your Apple IIc.

If spelling was never your best subject in school, you might want to use *Sensible Speller* to check your work.

Or you might want to try using *X-10 POWERHOUSE* to water your

lawn or turn your lights on when you go on vacation.

There's *Dow Jones News/Retrieval* to give you daily stock market quotes and investment news. Check airline departures and arrivals. Even let you do your banking or shopping without ever leaving your chair.

Those are just some of the programs that are available for you.

Wait till you see what we have for your kids.

Charlie Brown's ABC's teaches your preschoolers their ABC's.

Operation Frog lets your older children indulge their bent for biology. And *Barron's Computer Study Program for the SAT* is one of the best ways you can help your high schooler make it into an even higher school. College.

Once you and your kids do all that, you'll probably be ready to have some fun.

Your Apple IIc is always ready.

There are entertainment programs that let you travel through time, play chess, solve mysteries, and compose music, offering learning as well as fun.

For instance, take *Music Construction Set* and *Print Shop*. With them, you could compose the music for the next gold record... and design the album cover to go with it.

The list grows every day.

And so do all the ways you'll be able to use your Apple IIc.

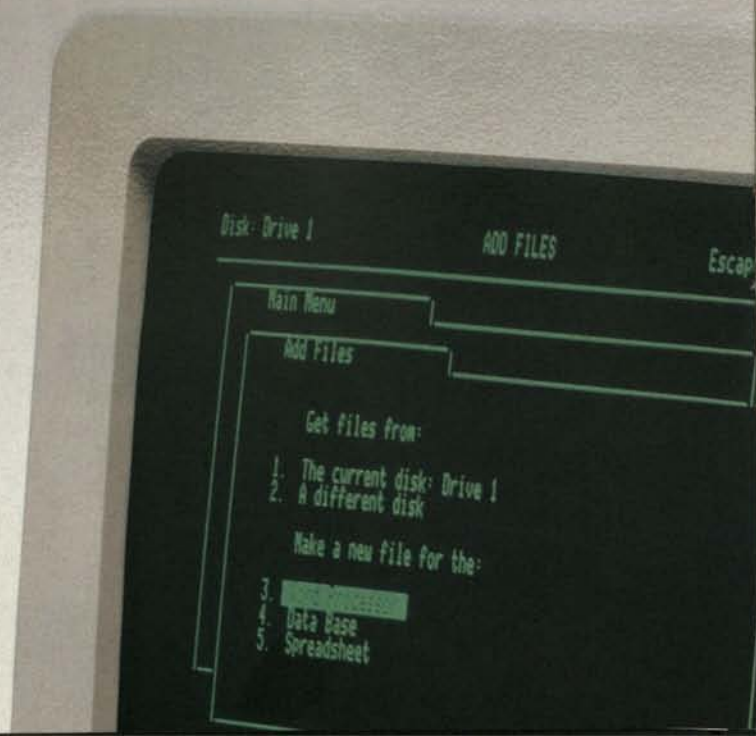
Which means that once you get started, you won't want to stop.

A little support makes a big difference.

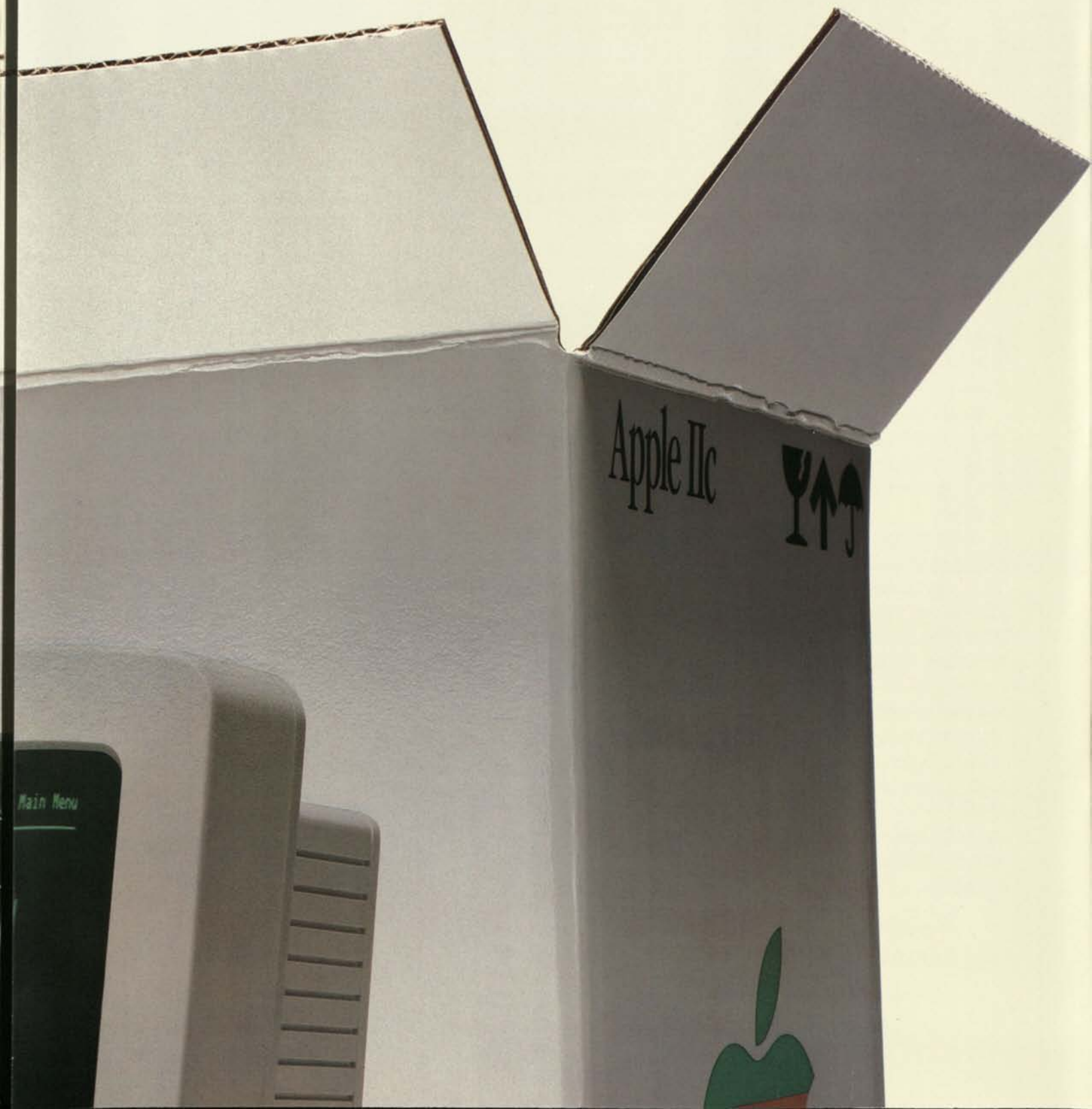
Let's say you've read all the literature, weighed all the facts, even talked to a couple of the 2½ million Apple II owners, and decided to bring home an Apple IIc.



Apple IIc



When you open the box, you'll discover all the differences between owning an Apple IIc and owning something else.



There's a lot of good reading with an Apple IIc.

The manuals that come with your Apple IIc are a little different. They're written in people language, not computer language.

So when you follow the setup instructions in your manual, you'll actually be able to set up your Apple IIc. And using your *Apple IIc Owner's Manual* is just as simple.

demonstrate how things work, and even test your newfound skills. So you'll learn by using, not just by reading.

Start running right away.

We've also included a free set of tutorial disks that'll show you around your new computer,





There are hundreds of Apple User Groups across the country that would like to share their experience with you.

Relax. You're not alone.

There are millions of people out there like you who still need some extra help every now and then. And because you're an Apple II owner, you'll get it.

First, from your authorized Apple dealer, who'll answer questions, demonstrate products, and explain the programs available for your Apple IIc.

There's no question your Apple dealer won't be happy to answer. And in the few cases where your dealer can't answer your question, an answer can be found in a matter of minutes through AppleLink.™

AppleLink is our own electronic information network. It's a direct connection to Apple, designed exclusively for our dealers.

With AppleLink, authorized dealers get instant answers to your Apple IIc hardware, software, installation, maintenance, and upgrade questions.

With an Apple IIc, you meet the nicest people.

You'll find them at your local Apple User Group. They're people



Nobody knows more about the Apple IIc than your authorized Apple dealer. Look for this sign. There's sure to be one near you.



Our tutorial disks and manuals get you off on the right foot by walking you through all the features of your Apple IIc. You'll be up and running before you know it.

just like you, who get together regularly to swap stories, share information, and otherwise engage in one of their favorite pastimes: making the most of their Apple computers.

And you don't have to be a computer whiz to fit in. User Groups have members with all levels of experience—beginner to expert. In fact, most User Groups have training meetings especially for newcomers.



More books and magazines are devoted to the Apple II than to any other personal computer.

How to become an Apple IIc expert.

There are so many books, articles, magazines, and directories written especially for Apple II owners, it's easy for you to learn as much about your Apple IIc as you'd like.

Because your own library, bookstore, newsstand, or dealer probably carries more information about Apple II personal computers than about any other computer.

Which means you can read valuable software tips, information on new products, and columns that answer common questions.

One less thing to worry about.

When it comes to service, the easiest and best way to keep your Apple IIc in the same great working condition year after year is with AppleCare.® For one annual fee up-front, AppleCare gives you repair coverage like that of your original Apple limited warranty. No matter how often you use it. And the cost is far below that of a single typical repair.

We've made it compact, easy, and affordable. But you get all the credit.

We think you deserve a lot of credit for your decision to buy an Apple IIc.

So we'd like to introduce you to the Apple Credit Card.

You may qualify for up to \$2,500 of instant credit.

With low monthly payments, you can buy your Apple IIc and take it home with you the same day.

But before you leave the store,

your authorized Apple dealer will have one last thing to say:

"Welcome to the family!"



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People buy
Apple II computers
for a number
of reasons.





2,780,833 at last count.

No matter what time of day you're reading this, there's a member of the Apple® II family of personal computers hard at work in America.

If it's three in the morning, Bruce Mowery of Duluth is probably using his to feed the cows at his dairy ranch.

If it's seven at night, Eileen Evans of Huntsville is totaling up the profits at her used-clothing shop before calling it a day.

And if it's breakfast time, thousands of Apple IIs are snapping to life in schools around the country. Ready to educate the next wave of nurses, physicians, firefighters, musicians, and scholars.

Fact is, people buy Apple II computers to do more than just write letters or help their kids with their homework.

They buy them to do just about everything.

And it's not surprising.

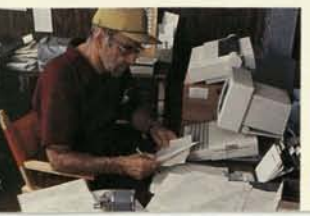
First of all, no other family of personal computers is as easy to use. Ask any kid who's ever used one in school.

And no other computer family offers such expansion capabilities and so great a complement of accessories. To handle all those jobs you never imagined you could do.

But, most important, no other computer family has so many programs, covering thousands and thousands of tasks, waiting for you on dealers' shelves.

Right now.

So while over two million people bought Apple II personal computers for over two million reasons, they also bought over two million Apple II personal computers for just one reason: To do whatever it was they wanted done.



Here are the first three reasons.

Meet the family: Starting with the Apple IIc on the left. In the center, the Apple IIe. And on the right, the new Apple IIgs™

Three different Apple II personal computers.

Yet they're all very easy to use. If you don't believe us, ask one of the thousands of people who became Apple II computer pros this year.

And with three different models to choose from, it's easy to pick an Apple II and not get stuck with too much computer. Or too little.

Take, for example, the Apple IIc.

It's the smallest, most affordable computer we make.

And it's every inch an Apple II.

That means it runs virtually all of the more than 10,000 programs in the Apple II library. Your kids can tell you—since they probably use an Apple II at school, they already know there are programs covering every subject—including recess. So with an Apple IIc at home, your kids will get a head start on everything from their ABCs to the SATs.

The Apple IIc is fully equipped with a built-in 5.25-inch disk drive, 128K of memory that's expandable to over 1 megabyte, and ports in the back to plug in accessories.

The Apple IIc is small enough to fit conveniently into crowded places.

Like a dining nook. Or your kid's bedroom.

And so easy to set up that you can quickly move it back and forth between the two.

An Apple IIc can be doing a homework assignment one minute and income taxes the next.

Of course, there's also the Apple IIe.

It's the personal computer that's in more schools, homes, and businesses than any other. In fact, the Apple IIe is the most popular per-



sonal computer ever built—partly because it's so expandable.

It comes with 128K of memory, expandable to more than 1 megabyte. And seven expansion slots for adding the hundreds of available accessories.

Then, when you're ready for more performance, you can buy an upgrade kit and convert your Apple IIe into the more powerful Apple IIGs.

That's why the Apple IIe has never gone out of style.

And why it's the personal computer standard in schools and homes across America.

Finally, there's the Apple IIGs.

The newest, and most powerful, member of the Apple II family.

Yes, it runs virtually all of the more than 10,000 Apple II programs.

But it's the first Apple II with a 16-bit microprocessor and 256K of memory, which is expandable to more than 1 megabyte. Like all Apple II computers, the Apple IIGs is expandable. In addition to the peripheral ports on the rear panel, there are eight expansion slots that allow you to add a wide range of peripheral and memory options. All of which gives the Apple IIGs the built-in muscle to handle the biggest jobs, and run the most powerful software—three times faster than its predecessors.

You can see that power in action with just one look.

It shows off its color graphics with images so real they resemble photographs—not pages from the Sunday comics. True-to-life graphics that will make everything you do with

an Apple IIGs more realistic, more exciting, and more fun.

But you haven't heard everything yet.

Literally.

Until you've heard the Apple IIGs, which has the most advanced sound of any personal computer.

Sound so realistic, the Apple IIGs can reproduce the pounding surf or a jazz quartet. Faithfully, and in high fidelity.

Amazingly enough, you harness all this power by doing something you've done all your life.

Pointing.

For the first time on an Apple II, a mouse is standard equipment. The very same mouse and pull-down menus made famous by our own Macintosh™ personal computer.

Without a doubt, the Apple IIGs is one of the most impressive personal computers you've ever seen.

Or heard.



And here are the ones people always take for granted.

We're referring to those things that help you get more out of your Apple II once you get it out of the box.

Our dealers. Training materials. User groups. And all the other pieces that make up our worldwide support network—a unique network we established and maintain for one purpose: to make Apple personal computing about as mysterious as microwaving a TV dinner.



Nobody knows more about the Apple II computers than your authorized Apple dealer. Look for this sign. There's sure to be one near you.

Any questions?

If so, ask an authorized Apple dealer. You'll discover that dealers have the answers in one of two places—on the tip of the tongue, or at the tip of a finger.

For the latter, you can thank AppleLink,™ our own electronic information network. It's a direct connection to Apple, designed exclusively for our dealers.

With AppleLink, dealers get instant answers to your Apple II hardware,

software, installation, maintenance, upgrade, and pricing questions. And they get them the modern way: via an Apple personal computer and modem. Not the old-fashioned way:

by thumbing through pages and pages of often-outdated information.

Which means the answers to your questions are as up-to-date and accessible as the Apple II itself.

Your Apple II can explain itself.

With the aid of tutorial disks you'll find inside every Apple II box. They're part of our in-home, hands-on training program. A training program unique to Apple.

The disks contain hints, tips, techniques, and basic information all designed to walk you through the use of your Apple II. And all at your own pace.

More magazines are devoted to the Apple II than to any other personal computer.

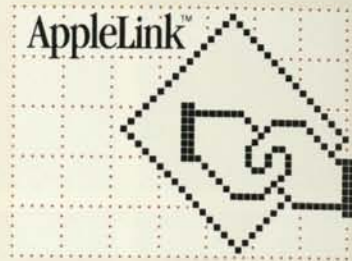


There are hundreds of Apple User Groups that would like to share their experience.



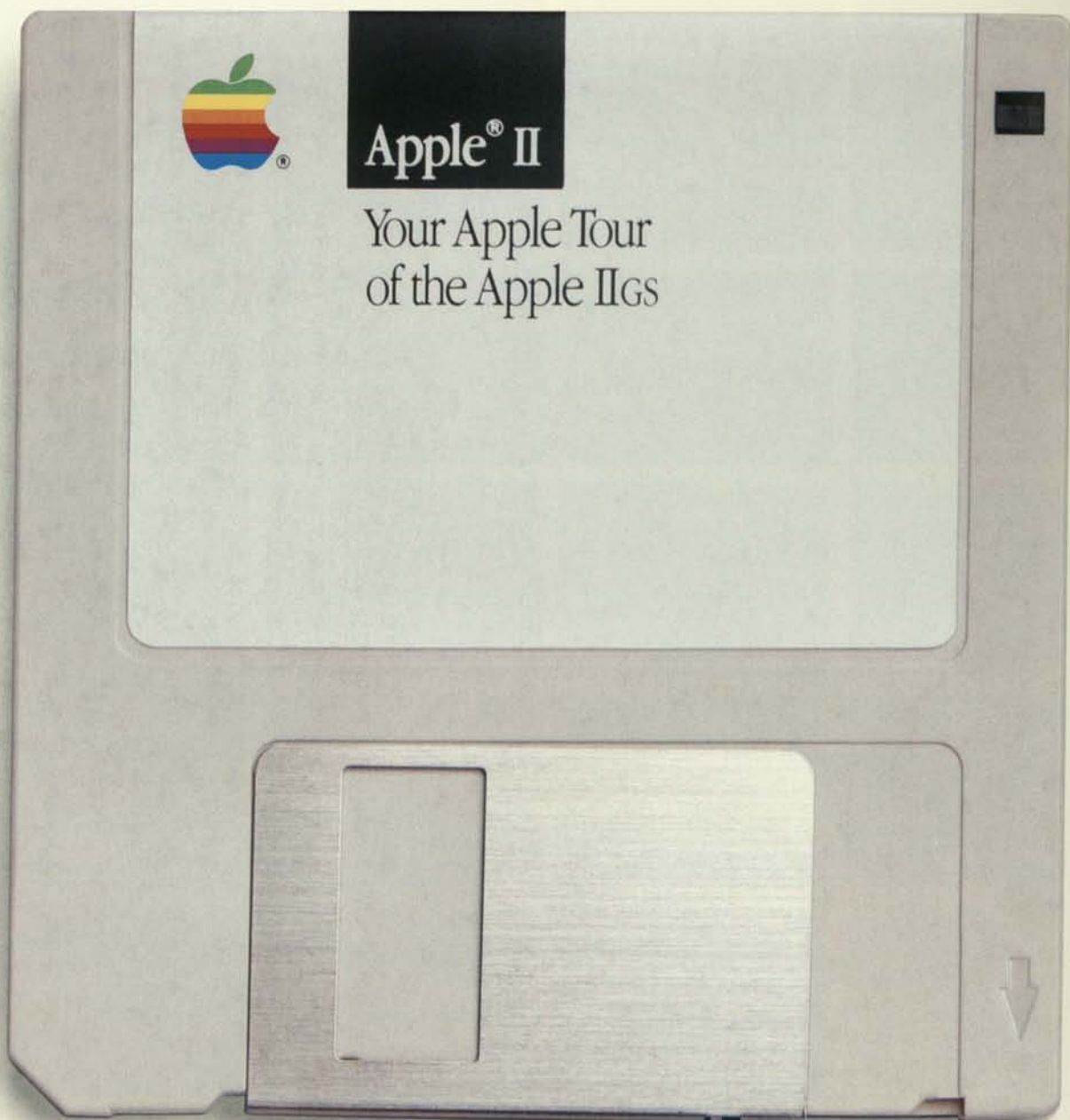


Groups across the country that experience with you.

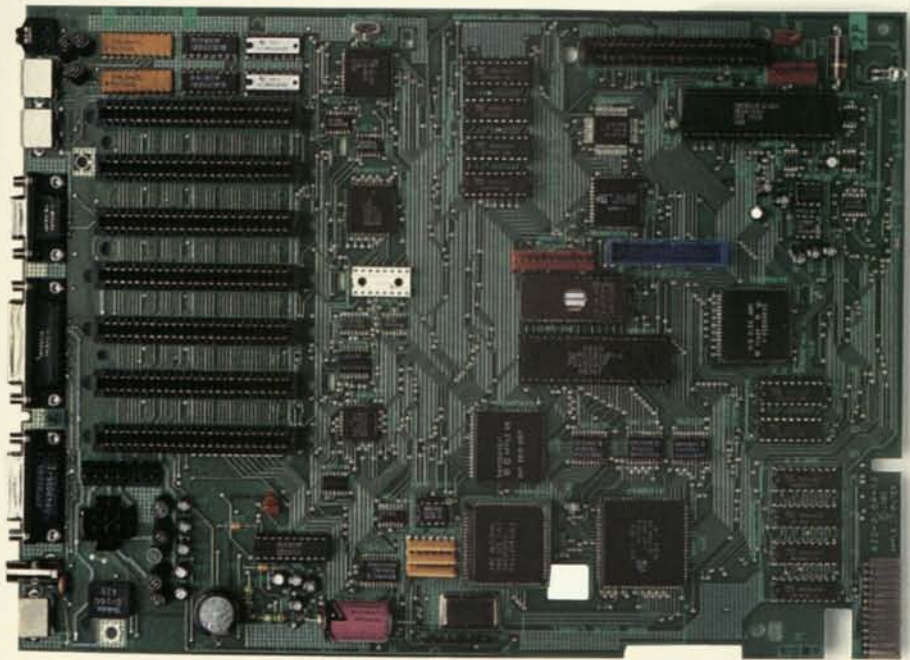
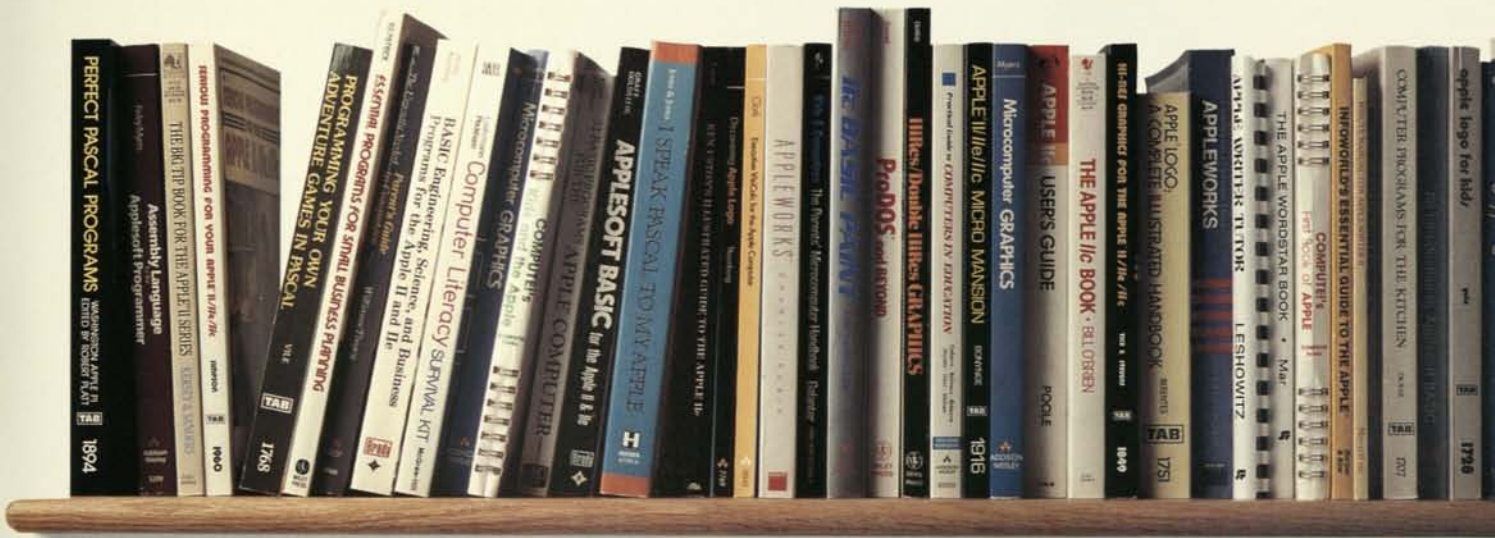


Use your Apple II to tap into electronic networks for round-the-clock access to important information.

The AppleLink electronic network supplies your Apple dealer with instant answers to your Apple II questions.



This tutorial disk gets you off on the right foot by walking you through all the features of your Apple II. You'll be up and running before you know it.



Remember what we said about magazines?
Ditto for books.



Upgrade kits and expansion cards are an Apple II tradition. They keep your Apple II computer up to date. Instead of up in the attic.



Our AppleCare program keeps your Apple II healthy—without a healthy investment on your part.



Even if you've never touched the keyboard of anything more technical than a toy piano, you'll probably be using your Apple II in no time.

Keep at it, and before you know it you'll be doing useful work with powerful software programs.

The tutorial disks. They're the fastest way yet to learn an Apple II.

Meet the nicest people.

You'll find them at meetings of your local Apple User Group.

They're people like you who get together regularly to swap stories, share information, and otherwise engage in one of their favorite pastimes: making the most of their Apple II computers.

And don't think you have to be a computer whiz to fit in.

User Group members come in all levels of experience—beginner to expert. In fact, most User Groups have training meetings especially for newcomers.

Call for more information.

Add a modem, a telephone, and appropriate software to your Apple II system and share the wealth of information available through electronic user groups and bulletin boards across America. And the world.

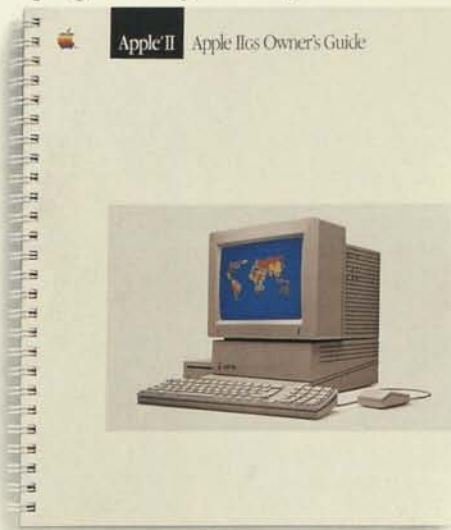
For example, both The Source and CompuServe offer their subscribers special on-line libraries crammed with comments from Apple users, notes on new products, even free Apple II programs you won't find in any software store.

And now, a few more words.

Look for them at your favorite bookstore, newsstand, or authorized Apple dealer's. You won't be disappointed.

Because more books and magazines have been written about the Apple II than about any other personal computer.

Which means you'll be able to demystify hardware, pick up tips on programming, catch up on the latest



Our manuals are designed to turn you into a computer user. So you don't have to be a computer user to understand them.

software, stay ahead of new products, and discover ready-to-run programs—all without leaving your favorite easy chair.

Keep your Apple II alive and well.

Treat it to a very special health care plan: AppleCare®, the extended service plan that picks up where your warranty leaves off.

For a single annual fee, one that's less than the cost of a typical repair,

AppleCare protects you against unexpected service costs. Just like your original limited warranty.

Then if your Apple II ever needs service, just take it to any participating dealer. It will be restored to health in no time.

And at no charge.

Your Apple II will grow up, not old.

With technology moving so rapidly, the future is bound to bring improvements you'll want to incorporate into your Apple II.

Like upgrade kits and memory expansion cards.

It's an Apple tradition.

In fact, Apple IIe users can purchase an upgrade kit today to convert their Apple IIe computers into Apple IIGs computers. And Apple IIc owners can have an expansion card installed to increase the IIc's memory to over 1 megabyte.

Because at Apple, we invent new technologies to improve our computers. Not to obsolete them.

Your authorized Apple dealer.

Not every accessory is right for every Apple II. Or for you. So when you and your Apple II are ready for a change, check with your authorized Apple dealer.

He or she will help you select exactly what you need. For whatever you have in mind.

Once you buy an Apple II, you can always change your mind.

One of the best things about an Apple II is that you can always change it.

Into a more powerful Apple II. Or a more colorful one.

You can do it yourself, with about the same effort it takes to replace a light bulb—thanks to the largest collection of plug-in accessories

ever assembled for a personal computer family.

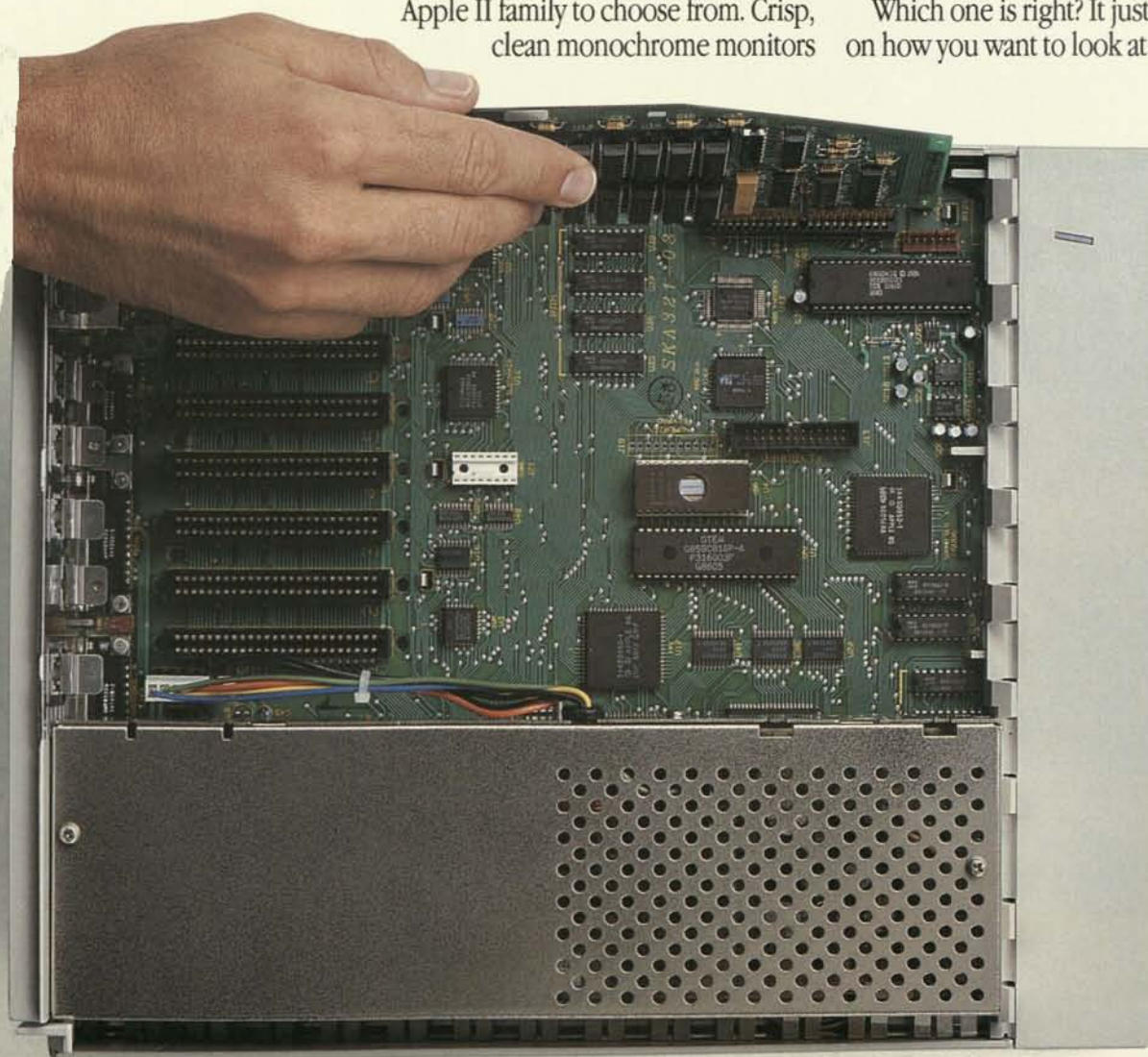
Accessories that can transform your Apple II from a tutor for your kids into an assistant for running your home.

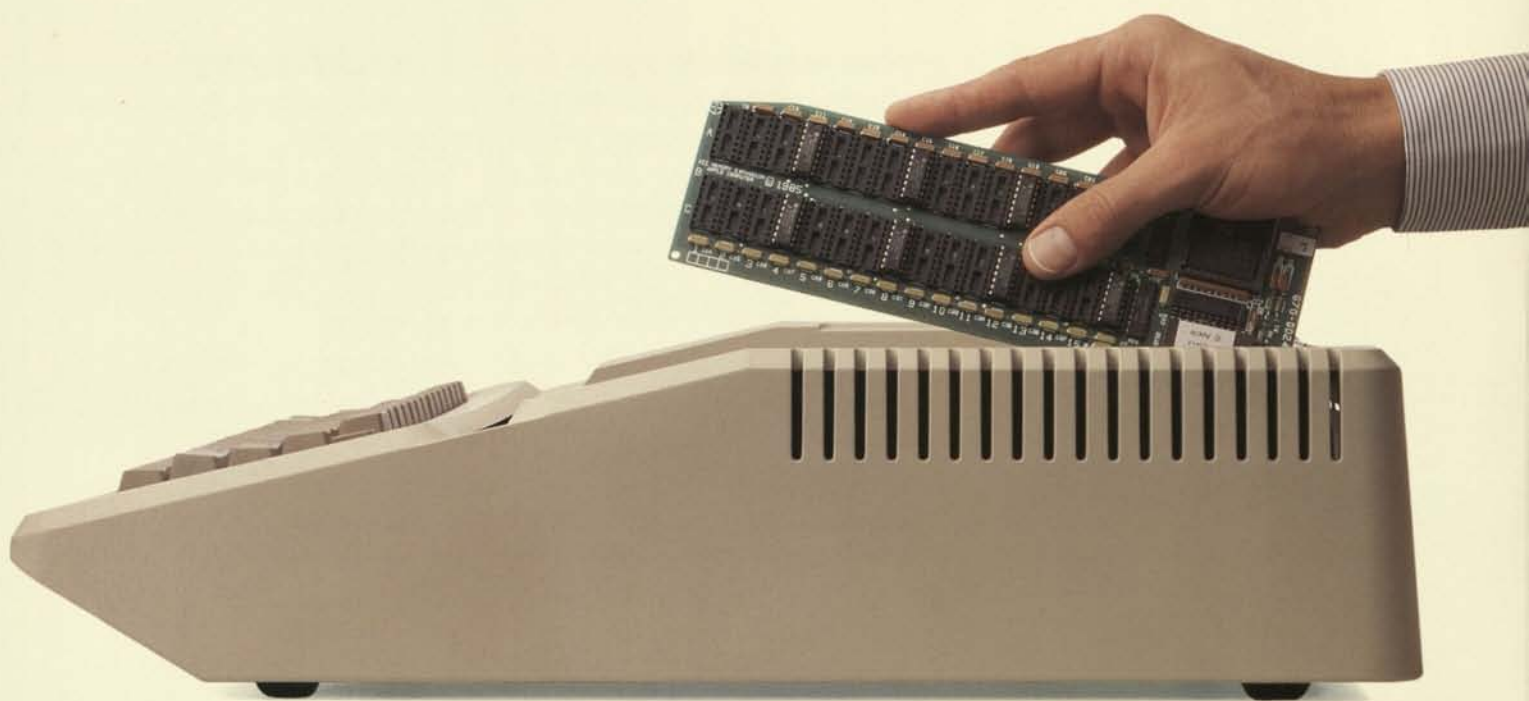
Monitors

There are various monitors in the Apple II family to choose from. Crisp, clean monochrome monitors

for text, spreadsheets, and graphics. Color composite monitors that let you create colorful graphics, and then with a flick of a switch generate easy-to-read monochrome text. Or a top-of-the-line RGB color monitor, perfect for working with the colored charts, graphs, and true-to-life images the Apple IIGS creates.

Which one is right? It just depends on how you want to look at things.





*If you've ever changed a light bulb,
you can change your Apple II into whatever you want it to be.*



Disk drives

Apple gives you a choice of disk drives and ways to store information.

Our 5.25-inch floppy-disk drive is compatible with every one of the more than 10,000 programs in the Apple II software library. And each disk drive holds 140 kilobytes—enough space for a typical Apple II program, or more than 100 typewritten pages of information.

If you'd like to cut down on the number of disks on your desk top, select our newer 3.5-inch floppy-disk drive. The plastic-encased disks hold about five times as much information as a 5.25-inch floppy disk, so you can

store multiple programs and data on one disk. And because the disks are smaller, they're easier to store and transport.

You can eliminate floppy-disk clutter entirely with our Apple Hard Disk 20SC. With an Apple SCSI Interface Card and Hard Disk 20SC, you can store the equivalent of over one hundred 5.25-inch floppy disks or twenty-five 3.5-inch disks. Not only does that make your programs and data instantly accessible, it helps your Apple IIe or Apple IIgs load information up to six times faster.

banking, traveling, investing, research, and correspondence, because it enables your Apple II to communicate with similarly equipped computers all over the world.

Don't be fooled by its size. This compact wall unit has the same features as a full-size modem—auto answer, dial, and redial. But it doesn't gobble up precious desk space.

Memory expansion cards

By expanding your Apple IIc, Apple IIe, or Apple IIgs with a memory expansion card, you can add as much as 1 megabyte of memory. Which means you can run

Modem

The Apple Personal Modem is your passport to electronic shopping,



Apple IIgs



AppleColor RGB Monitor



Apple Monochrome Monitor



ImageWriter II



Apple IIe



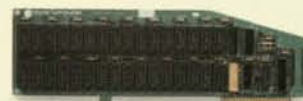
ColorMonitor IIe



Apple II SCSI Interface Card



Monitor II



Apple II Memory Expansion Card



Apple IIc



AppleColor Composite Monitor



UniDisk 3.5



Apple 5.25 Drive



Apple IIc Monitor with Stand



Apple Monochrome Monitor

your software faster, write longer documents, and access your files instantly.

Printers

The nice thing about the Apple II family of printers is the way it lets you create professional-looking work, no matter what your budget.

Take the ImageWriter™ II, for instance. One moment it's turning out drafts at the rate of 2½ pages per minute; the next it's quietly producing documents of near-letter quality. Just by switching the ribbon and using the appropriate software, you can print full-color graphics.

In addition to its enhanced printing capabilities, the ImageWriter II

also features an optional Sheet-Feeder, for printing on your letter-head, and an optional internal memory card for printing one document while you're working on another.

Other accessories you can get your hands on

Sometimes the keyboard isn't the best way of communicating with your Apple II. Even if you know how to type.

With the AppleMouse™ II and appropriate software, for example, you can find a file, edit a document, and print a copy by moving a pointer around the screen.

So instead of using keyboard commands, all you have to do is lift your finger. And point.

For entertainment, there are accessories like joysticks and hand-controllers that make going one-on-one with your Apple II more fun and more realistic.

And if there's something we didn't think of, don't worry. Someone else did. There are thousands of accessories from scores of other companies just waiting to turn your Apple II into the perfect personal computer for you.



Apple 3.5 Drive



Apple II SCSI Interface Card



LaserWriter



Apple Hard Disk 20SC



Apple Personal Modem



Apple 5.25 Drive



Apple IIgs Memory Expansion Card



Apple IIgs System Fan



AppleMouse II



Apple Hard Disk 20SC



ImageWriter II with SheetFeeder



Apple Personal Modem



UniDisk 3.5



Apple IIgs Upgrade



32K Memory Option



UniDisk



ImageWriter II



Hand Controllers



Apple Personal Modem



Joystick



Apple IIc Memory Expansion Card



AppleMouse IIc

We've made owning an Apple II quite reasonable.

We've done it with an Apple Credit Card, available from a participating authorized Apple dealer. The card lets you pay for your Apple II in low monthly installments.

You may qualify for up to \$2,500 of instant credit. If so, you'll be writing, calculating, investing, teaching, playing, shopping, banking, and

otherwise enjoying your Apple II system, at home, the very same day.

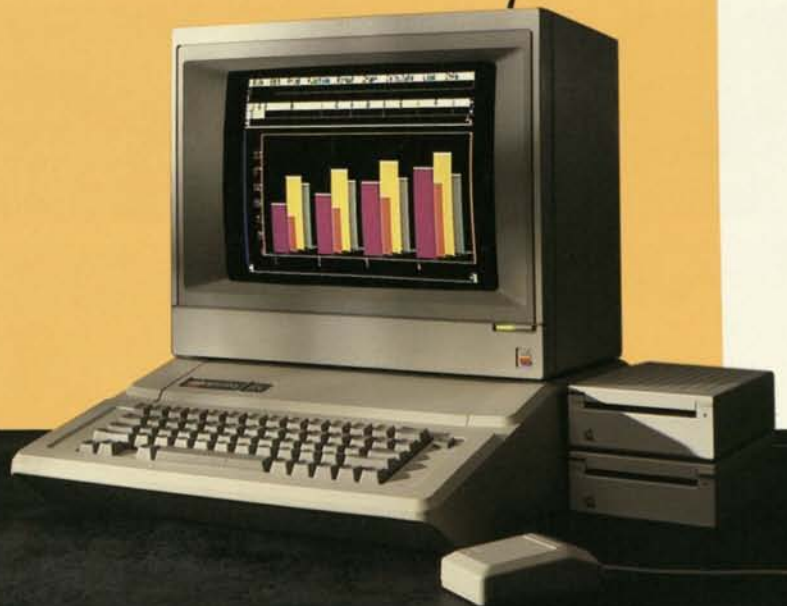
Making you wait any longer would be unreasonable.



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Surprisingly,
most people
buy an Apple IIe
because there
are some things
money can't buy.





A limitless future.

Right out of the box, the Apple IIe is well equipped to handle all manner of tasks. For starters, we've blessed

it with 128 kilobytes of memory; more than enough to breeze through thousands of powerful software programs.

You'll feel instantly at ease with the IIe keyboard, because it looks and feels much like that of a standard typewriter. Except for a few special keys that perform time-saving functions you've never seen from a typewriter.

The Apple IIe also provides you with a built-in speaker for music and special effects. Built-in 80-column-text capabilities for word processing. And built-in graphics for colorful charts and drawings.

But that's just the start.

Because tucked under the IIe's lid, you'll also find seven expansion slots. Which means that whenever your needs expand, so can your Apple.

In all the ways you see behind this page. And dozens more.





Apple II Memory Expansion Card

Just plug it into one of the IIe's slots, and you can have from 256 kilobytes to a full megabyte (1,024 kilobytes) of extra memory at your beck and call. And for the truly power hungry among you, there are cards that add still more memory.

Apple II SCSI Interface Card

Another reason your IIe will never fall behind the times. Small Computer System Interface (SCSI) is the new standard for peripherals, now and into the future. With this card, you can connect several peripherals in a "daisy chain"—all through a

single slot in your IIe. What's more, your data will be moving to and from those peripherals up to six times faster than it would through an ordinary serial port.

Apple Personal Modem

This 300/1200-baud modem will put you on speaking terms with computers all over the world. Just plug it into an ordinary wall socket and phone line. Then add appropriate software to go shopping, do your banking, make airline reservations, keep an eye on Wall Street, send electronic mail, or let your kids explore a

universe of educational resources—all without leaving your chair.

AppleMouse IIe

Want to open a new file? Change a word? Draw a picture? Print a letter? No problem, with an AppleMouse™ IIe and appropriate software. Instead of typing keyboard commands, just use this small rolling box to move a pointer on the screen. Instantly, your wish is the IIe's command.

UniDisk

This high-quality drive runs all 5.25-inch Apple II software—no small feat when you consider the



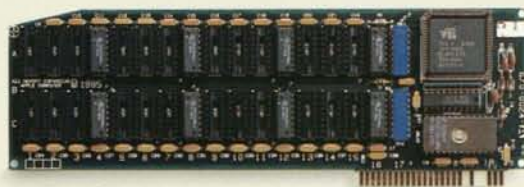
AppleMouse IIe



Apple Personal Modem



Apple II SCSI Interface Card



Apple II Memory Expansion Card



UniDisk



Apple Hard Disk 20SC



UniDisk 3.5

thousands of programs available. Or it can store up to 140 kilobytes of data. There's also a connection for plugging in a second UniDisk™ (or UniDisk 3.5) drive, and an in-use light that lets you know your UniDisk is running.

UniDisk 3.5

Don't let its size fool you. This powerful drive lets you fit 800 kilobytes of data onto a single 3.5-inch disk—more than five times the capacity of a 5.25-inch disk. That extra capacity also means you can store several programs (about 400 pages of text) on each disk.

UniDisk 3.5 is faster than 5.25-inch drives, too. So you can open a file, save a letter, or change the program you're working with in record time.

Apple Hard Disk 20SC

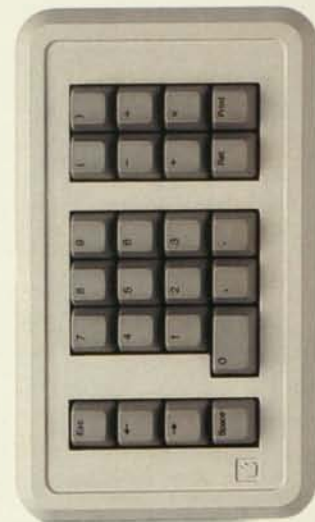
If you have a lot of information to store, this is the place to do it. A capacity of 20 megabytes (that's about 10,000 pages worth) lets you keep all your applications and files in one central location. And because it works through the Apple II SCSI Interface Card, you can access data up to six times faster than with a 5.25-inch disk drive.

ImageWriter II

There's not a more versatile printer made today: One moment it's turning out drafts at the rate of 2½ pages per minute; the next it's quietly producing documents of near-letter quality. Just by switching the ribbon and using the appropriate software, you can even print full-color graphics. There's an optional SheetFeeder attachment that automatically feeds letterheads and personal stationery into the ImageWriter™ II. And a 32K Memory Option that lets you continue to work on your IIe while the ImageWriter II is printing.



ImageWriter II



Numeric Keypad IIe



Monitor II



ColorMonitor IIe

Monitor II

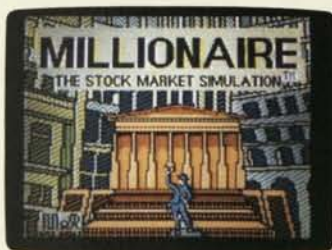
A high-resolution, 12-inch monitor that's ideal for long stretches of work because it's so easy on your eyes. It features a black and green display, sharp graphics, 80-column-text capability, and a nonglare, tilt-adjustable screen.

ColorMonitor IIe

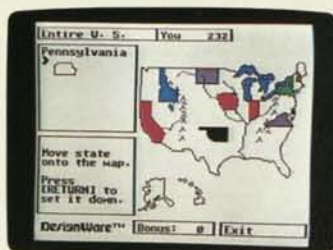
It's like having two monitors inside one box. Push a button, and you're working with a high-resolution, 80-column, 13-inch monochrome monitor. Push it again, and watch the screen come alive with your favorite color software. For entertainment, education, and even the most serious of business tasks, this is the one (and only) monitor you need.

Numeric Keypad IIe

Better than a calculator, because this keypad attaches to your Apple IIe. Which means you can use it for much more than adding and subtracting: update the monthly budget, balance your checking account, move figures around a spreadsheet, and on and on.



Strike it rich on Wall Street with Millionaire.



Take your kids traveling with States and Traits.



Write your own programs with Instant Pascal.



Fly behind the cockpit of Flight Simulator.



Put color pictures on paper with Stickybear Printer.



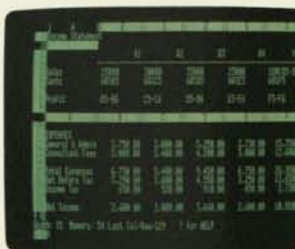
Page after page of fun and games for kids: Microzine.



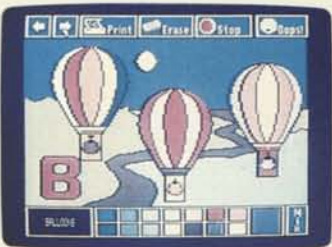
Bring your drawings to life with Animate.



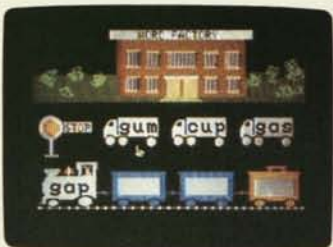
Make your own greeting cards with Print Shop.



Crunch numbers fast with SuperCalc 3A.



Colorful pictures are child's play with Electric Crayon.



Make learning to read fun with Reader Rabbit.



Kids try to make the right connects in Pipeline.

10,000 and still counting.

You've just read about some of the ways an Apple IIe can grow.

Now we'd like to tell you about more than 10,000 others.

That's how many software programs have already been written for the Apple IIe. So no matter what kind of interests you have, or what kind of work you do, there's bound to be an Apple IIe program that's perfect for you.

Make that *several* programs.

Because the simple truth is that Apple IIe software programs already outnumber those of any other personal computer. And hundreds more are being introduced all the time.

If you don't believe us, ask your kids. Since they probably use an Apple IIe at school, they already know there are programs covering every subject—including recess.

Preschoolers can learn about colors and shapes with *Stickybear Shapes*. And the alphabet from



The world's largest library of software comes in two sizes: 5.25-inch and 3.5-inch disks.



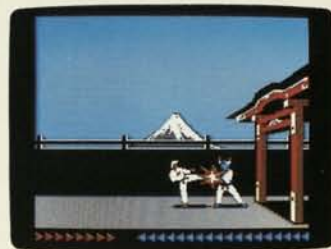
Compose yourself with Music Construction Set.



Put away the fingerpaints and bring out Color Me.



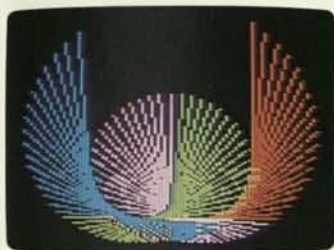
Design a four-wheeled fantasy with Car Builder.



Can you beat the karate masters of Karateka?



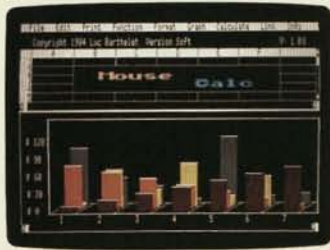
And more.



Computer programming made easy: Apple Logo II.



Control house lights and alarms with X-10 POWERHOUSE.



Get a grip on the household budget with MouseCalc.



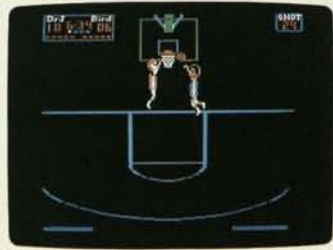
Get down to business with AppleWorks.



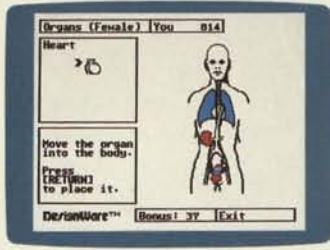
And more.



Can your kids find their way out of Town Builder?



It's Larry Bird vs. Dr. J in a game of One-on-One.



Kids get an inside look at The Body Transparent.



Anyone can be an artist with Dazzle Draw.



And more.



Fight it out in the wild blue yonder with Skyfox.



Can you solve Where in the U.S. is Carmen SanDiego?



The gang's all here in Walt Disney Comic Strip Maker.



Kids learn to write right with Writer Rabbit.



And more.

Charlie Brown's ABC's. In grade school, they'll put those ABC's to use with *Reader Rabbit*, and conquer the basics of arithmetic with *Math Blaster*.

Preteens can learn to speak French, read music, or even write their own computer programs. While high school students can use *Barron's Computer Study Program for the SAT* to get an edge on their college boards.

But enough about kids. Let's move

on to a more adult subject.

You. Whether you're running a business or raising a family, an Apple IIe can help. In more ways than we have room to describe.

But just to whet your appetite: You can plan your taxes. Write your representative. Balance your budget. Forecast your profits. Figure your house payments. Schedule your week. Design your newsletter. Check your spelling. Pay your bills. Manage your stocks.

Then if you're up for some fun, challenge your family to the mystery of "Where in the U.S. is Carmen SanDiego?"

Granted, nobody needs all of the 10,000 programs made for the Apple IIe. But mark our words: the more you use a IIe, the more projects you'll want to use it for.

Your interests will grow. Your kids will grow. Your needs will grow.

And over time, so will your stack of software.

And all the help you need today.

Let's say you just bought a personal computer. You take it home, open the box, and pull it out.

Now what?

Good question. Unfortunately, most computers don't offer much of an answer. Once you leave the store, you're pretty much on your own.

But with an Apple IIe, you'll have help every step of the way.

You'll get off to a quick start.

Put away your toolbox. Because once you pull your new IIe out of its box, you're about 60 seconds from having it up and running. Just plug in a cord or two, and switch it on.

Honest, that's it.

In fact, the only things that don't connect with a plug-in cord are the plug-in cards (as in "interface cards") you can buy for your IIe.

Now, here's another plug for the IIe's simplicity:

It'll introduce itself to you.

In just one short evening, you and your new Apple IIe will become the closest of friends.

To bring you two together, we've packed the IIe with a free set of disk tutorials. They'll give you a proper introduction to your computer, demonstrate how things work, and even test your newfound skills. So you'll learn by doing, not by reading.





Apple IIe

Apple IIe

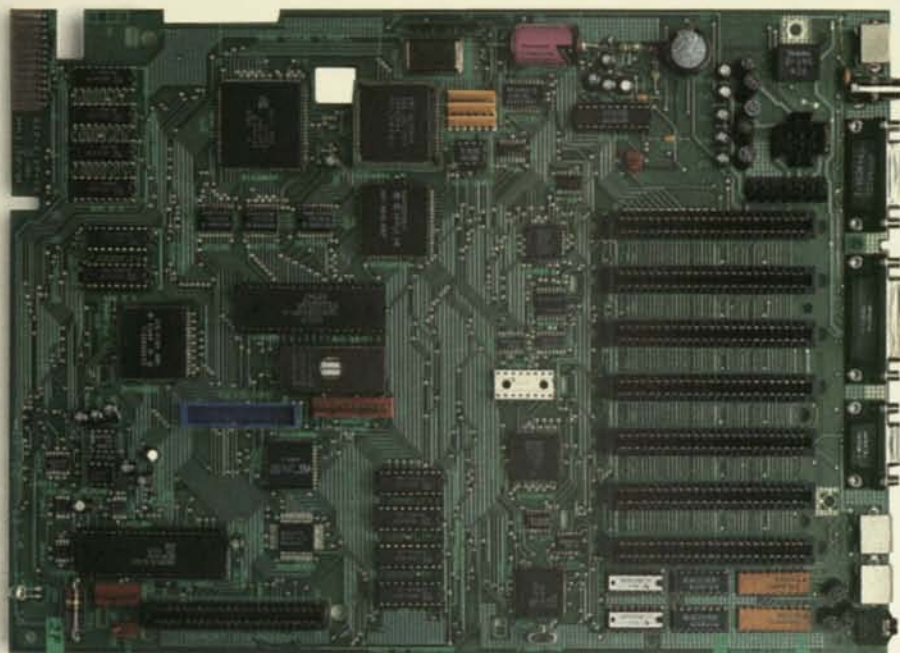


Apple IIe





Want to learn how to write your own software programs? That's just one of the subjects covered in the growing library of Apple II books.



You'll never outgrow your Apple IIe, thanks to all the ways it can be expanded, modified, enhanced—even upgraded to have all the powers of an Apple IIgs.™

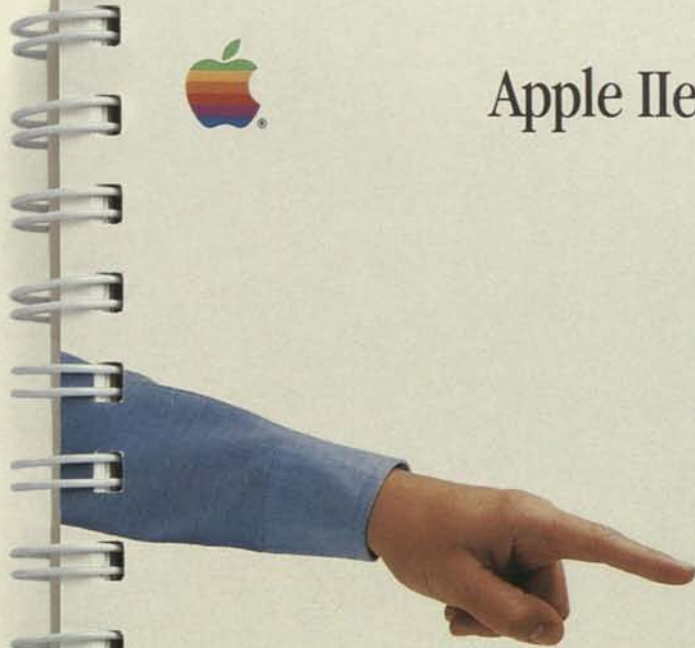


Choose from a wide range of magazines to keep current on the latest Apple software, accessories, and news.

The manuals that come with your Apple IIe are brief, clearly illustrated, and easy to read. In other words, nothing like most computer manuals.



Apple IIe Owner's Manual





An Apple User Group is the perfect place to pick up new tips, exchange ideas, and make a friend or two.

Even so, you'll be pleased to see that the manuals for your IIe are written in—saints be praised!—plain, simple English.

Read all about it.

As little effort as it takes to become an expert with an Apple IIe, it takes even less effort to remain one.

Just visit your nearby Apple dealer (or any good bookstore), and you'll discover a vast library of magazines and books written especially for Apple II owners. With helpful tips, new techniques, and all sorts of news about all sorts of products.

There are even publications that list, describe, and review the latest and greatest Apple II software.

Join the club.

If it's human contact you crave, we can direct you to the nearest Apple User Group. There you'll meet people of all levels of experience, pick up scads of helpful ideas, and have some fun to boot.

You have a friend in the business.

From the moment you become an Apple owner, your greatest source of support—moral and otherwise—is likely to be the same place where it all began: Your authorized Apple dealer's.

If you ever have a problem, *any* problem, your authorized Apple dealer will help you solve it. Even if it means getting assistance directly from Apple.



Nobody knows more about the Apple IIe than your authorized Apple dealer. Look for this sign. There's sure to be one near you.



For less than the average cost of a single repair, you can protect your new system with an AppleCare service plan.

Participating authorized Apple dealers are also fully qualified to service, upgrade, and demonstrate any Apple product. They'll provide training, if you want it. And they can offer you a low-cost, extended service plan called AppleCare® for your new IIe and Apple peripherals.

Which makes your decision as simple as this:

You could buy a computer with lots of features. Or you could buy an Apple IIe: a computer with lots of features, *and* a proven past, *and* a limitless future, *and* plenty of support from Day One. In other words, all the things money can't buy.

Now, for all those things money can buy.

One thing we just can't bear to see is people walking out of an Apple dealer's door empty-handed.

Even if that's how they walked in.

That's why we offer this nifty piece of plastic, called the Apple Credit Card.

It's worth up to \$2,500 of instant credit. With no money down, and monthly payments you can live with.

Just ask your authorized Apple dealer for an application. If you qualify, you can

actually take home your new Apple IIe system the same day.

Apple Credit.

Aside from cash, it's the most affordable way we can think of to buy one of the most affordable computers we know of.



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Introducing
the Apple IIGs.
The first personal
computer you can
understand forward
and backward.



With its incredible graphics and unmatched sound, the Apple IIgs is the most powerful Apple II ever.



1M BC

600,000 BC

300,000 BC



A.
Boisei

Homo
Erectus

Ho
So

Forward.

It's easy to understand why the Apple IIgs™ is the biggest step forward in the 10-year evolution of the Apple® II family.

Just take a look.

You'll see an Apple II that lets you create crisp, clean, near-photographic-quality images, with colors ranging from electric red to delicate violet—altogether, 4,096 colors to work with. Images so true to life that comparing them with those of ordinary personal computers is like comparing a page from *Life* magazine with one from a comic book.



The Apple IIgs is the only personal computer equipped with the most advanced digital sound synthesizer. You've never heard sound reproduction this real from something that's not a piece of quality hi-fi equipment. Listen. It's quite an earful.

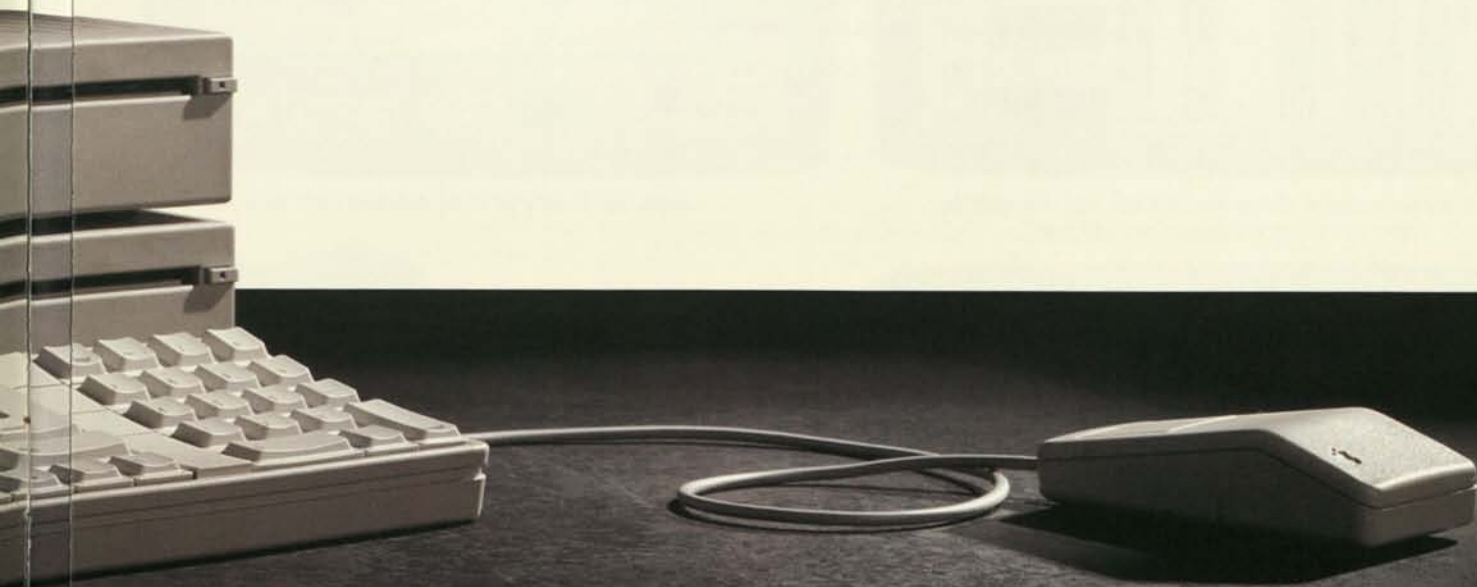
But the Apple IIgs isn't only the most remarkable computer you've ever seen.

It's also the most remarkable computer you've ever *heard*.

Because it reproduces sounds as faithfully as it reproduces sights.

From pounding surf to mellow jazz.

And human speech so clear, so natural, an Apple IIgs can read your kids a bedtime story. Or, better yet, teach them to read it themselves.



And since we gave the Apple IIGS two new ways of communicating with you, we thought it only fair to give you a new way of communicating with it.

So we selected a way that's so easy you've been doing it since you were a baby.

Pointing.

For the first time, a mouse is standard equipment on an Apple II. And so are pull-down menus. Just use the mouse to point at whatever you want to do, and click the button. Anyone can use it. Even an adult.

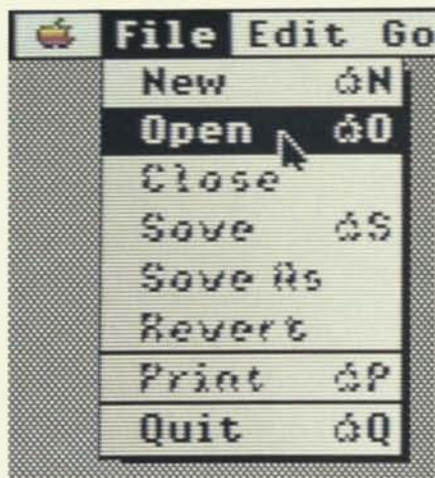
What's more, the mouse isn't the only part of the Apple IIGS you can move all over your desk.

There's also the detachable keyboard.

Move it to the right. Move it to the left. Put it in your lap. Whatever's most convenient.

Speaking of convenience, the keys have been designed to make

them easier to use. And there are function and cursor keys to help you perform selected commands without the mouse.



Since you operate the Apple IIGS by pointing, here's something to point at. It's called a pull-down menu.

There's even a built-in numeric keypad, to make working with numbers as simple as working with numbers can ever be.

But these are only the improvements on the *outside* of the Apple IIGS. There's also something going on under the hood.

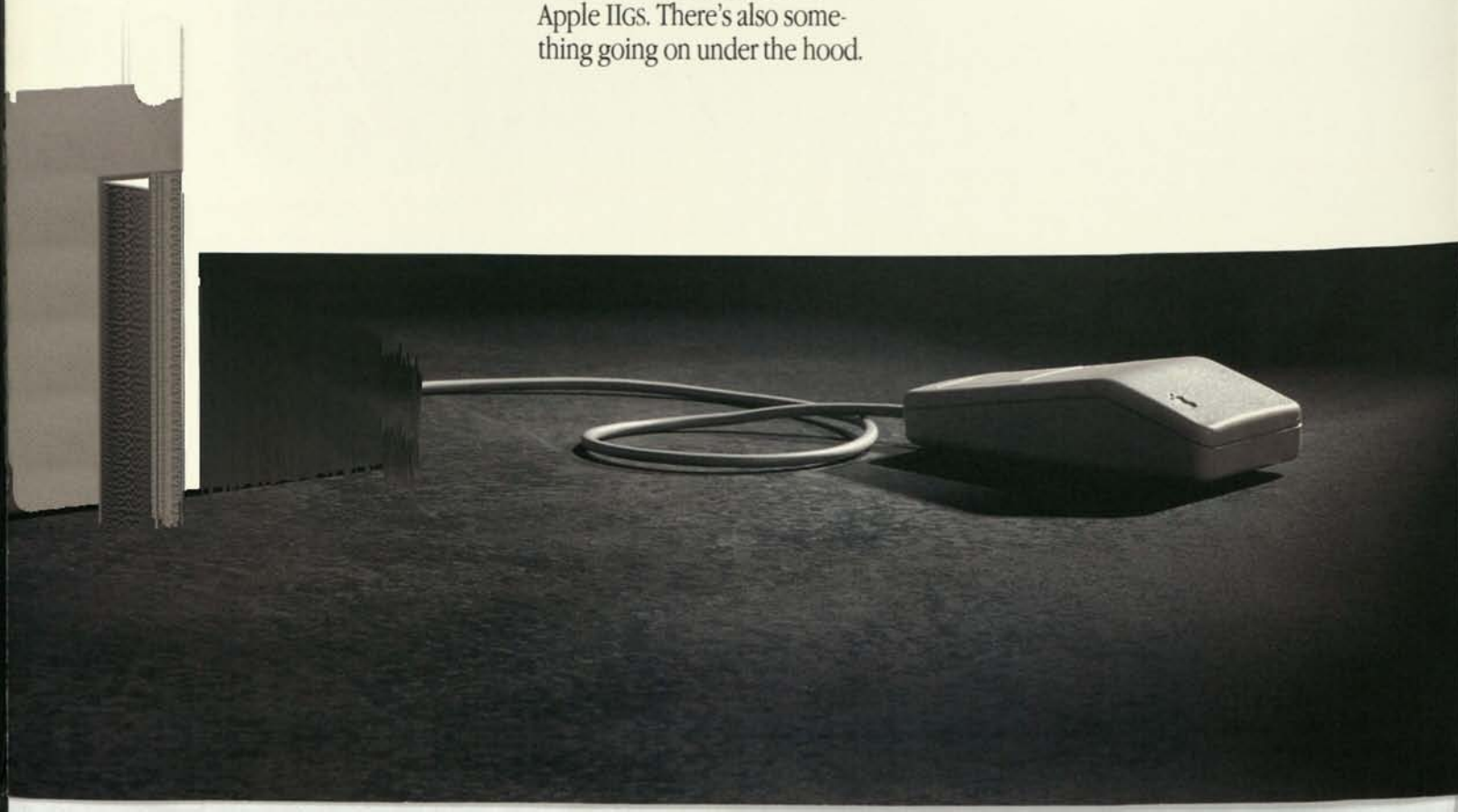
Advanced technology. New ideas, based on what Apple II owners told us they wanted. Ideas so unique, we couldn't buy the parts to make them happen. So we invented the parts ourselves.

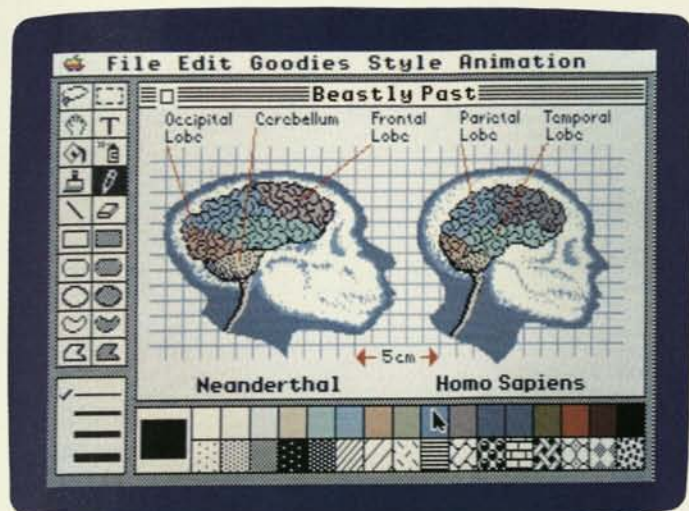
Then we combined them with a new 16-bit microprocessor and 256K of high-speed RAM (which can expand to 8 megabytes, with the appropriate card), giving the Apple IIGS the built-in muscle to tackle the biggest jobs, and to run Apple II software nearly three times faster than before.

To finish things off, we built our AppleTalk® network in. So by adding cables and network software, you can share your work with an Apple IIGS down the hall or across the classroom.

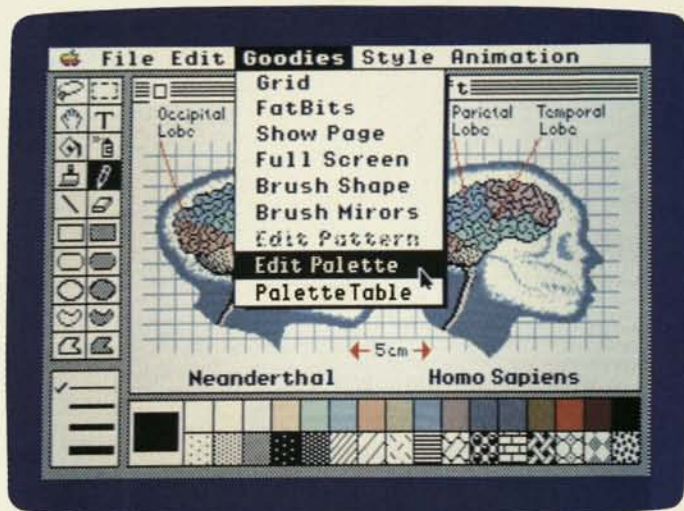
And print the results on a single printer.

The Apple IIGS. Another giant step in the evolution of the Apple II.

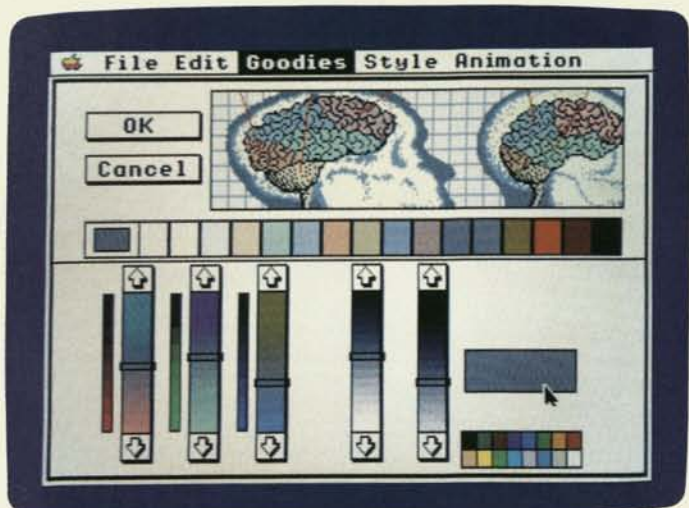




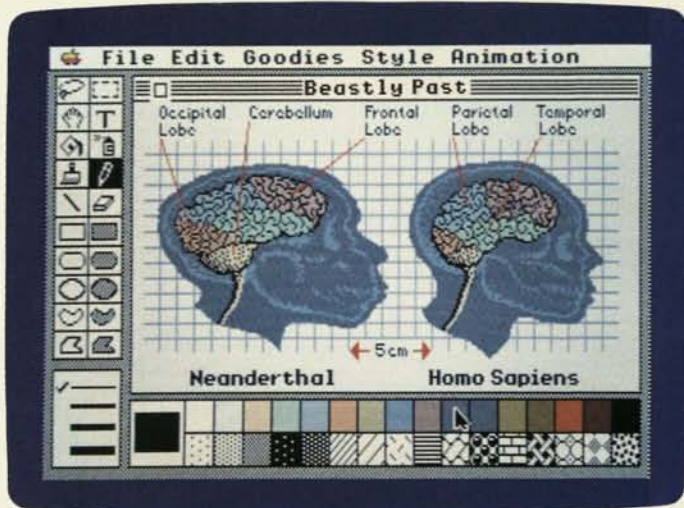
Thanks to the mouse, all the power of our color graphics is at your fingertips.



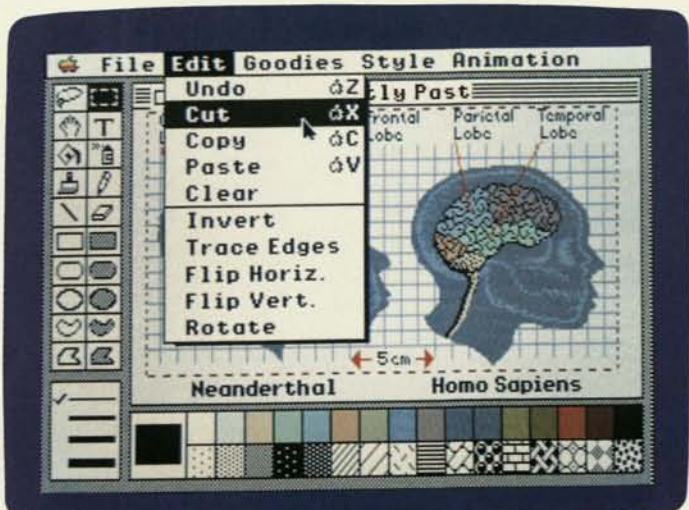
Begin by choosing the appropriate command from the pull-down menu.



Now use the mouse to change the color mix and eliminate the parts of the original image you don't want...



... so you can literally get inside someone else's head.



But that's not all. With a little cutting and pasting...



... you can transplant these brains yourself.

Forward.

It's easy to understand why the Apple IIgs™ is the biggest step forward in the 10-year evolution of the Apple® II family.

Just take a look.

You'll see an Apple II that lets you create crisp, clean, near-photographic-quality images, with colors ranging from electric red to delicate violet—altogether, 4,096 colors to work with. Images so true to life that comparing them with those of ordinary personal computers is like comparing a page from *Life* magazine with one from a comic book.



The Apple IIgs is the only personal computer equipped with the most advanced digital sound synthesizer. You've never heard sound reproduction this real from something that's not a piece of quality hi-fi equipment. Listen.

It's quite an earful.

But the Apple IIgs isn't only the most remarkable computer you've ever seen.

It's also the most remarkable computer you've ever *heard*.

Because it reproduces sounds as faithfully as it reproduces sights.

From pounding surf to mellow jazz.

And human speech so clear, so natural, an Apple IIgs can read your kids a bedtime story. Or, better yet, teach them to read it themselves.





This fall,
we're making it
a lot easier for people
to choose an Apple II.



Apple II CPU Selling Guide

But a little harder
to choose which one.

This fall, your customers will have one easy decision to make—and three tough choices. All because your store will be selling a bigger, better family of Apple® II personal computers:

The astonishing Apple IIgs™. The newly expandable Apple IIc. And the always popular Apple IIe.

Now that the Apple II family offers more choices, it's more likely to be what your customers are looking for.

That is, if they're looking at the right Apple II.

Which is why we ask you to study this selling guide with a little extra care. Because the key to selling more Apple IIs—especially now—is knowing how to introduce the right customer to the right computer.

Once you do, there's only one decision your customers may really need to think about.

“Will that be cash or credit?”

**Introducing the
most powerful,
most colorful,
most sellable
Apple II ever.**



Apple IIgs

The moment the first new Apple IIGS is plugged in at your store, it will immediately start drawing a crowd.

But then, what else would you expect from a computer that combines all the best traits of the Apple II family (software, expandability, and color) with the outstanding qualities of a Macintosh™ computer (power, speed, graphics, and a mouse-driven interface).

Quite simply, the new Apple IIGS is the ultimate Apple II. It's powered by a new, 16-bit microprocessor. It's expandable in countless ways. It's compatible with most Apple II peripherals. And not only will it run virtually all Apple II software, but it'll do so up to 280 percent faster than the IIe and IIc.

Hold on, there's more.

The Apple IIGS comes equipped with 256K of standard memory. Which can easily be boosted by as much as 8 megabytes when higher-capacity chips become available.

The IIGS is capable of creating sharp, highly detailed graphics resembling those of the Macintosh—but enhanced with a seemingly endless palette of 4,096 colors (any 16 colors may be used at a time). And its 32-oscillator sound chip produces music, special effects, and even human voices with incredible realism.

A new, low-profile mouse is included. As are a system disk, a built-in clock, and an AppleTalk® connection.

The detached Apple IIGS keyboard sports an ergonomic curved shape, and a built-in numeric keypad.

And as you read, dozens of leading software developers are putting the final touches on a wide variety of new programs for the Apple IIGS. Programs that take full advantage of its graphics, color, sound, pull-down menus, windows, and desktop environment.

Once they've seen it in action, customers who want nothing but the best will want nothing but an Apple IIGS.

Key Features

▶ Runs virtually all Apple II software, because it's compatible with the 65C02 microprocessor

▶ The most powerful Apple II: 16-bit 65C816 microprocessor
▶ 256K of standard memory

▶ Expansion features: 7 expansion slots; 1 memory expansion slot; 7 peripheral ports, including built-in AppleTalk connection

▶ Two new graphics modes—640 × 200 and 320 × 200 dots—offer 4,096 colors

▶ Built-in, 32-oscillator sound chip

▶ Built-in speaker and standard output jack for external speakers and headphones

▶ Advanced, interface: mouse, icons, windows, and pull-down menus

▶ Detachable keyboard, with Apple Desktop Bus™ ports on left and right sides

▶ Other built-in features

▶ Excellent in-box support

▶ Designed and styled with a platinum finish

Customer Benefits

▶ Provides over 10,000 titles to choose from, covering virtually every subject.
▶ Runs the same educational software your kids probably use in school.
▶ Lets current Apple II owners upgrade, or trade up, without sacrificing their investment in software.

▶ Runs nearly all Apple II software up to 2.8 times faster than a IIe or a IIc.
▶ Allows you to run advanced software programs, and work with larger documents (spreadsheets, data bases, and so forth).

▶ Lets you easily expand its memory by as much as 1 megabyte, using the Apple IIGS Memory Expansion Card.
▶ Permits expansion by up to 8 megabytes of memory when higher-capacity chips are available.
▶ Provides a virtually unlimited growth path.
▶ Allows connection of the AppleTalk network to an AppleTalk port to drive a LaserWriter® or ImageWriter™ II printer.
▶ Eliminates need for adapters—both RGB and composite color monitors plug directly into the Apple IIGS.
▶ Runs most Apple II peripherals.

▶ Lets you create highly detailed, richly colored graphics animation for home, school, business, or just plain fun.
▶ Enables new Apple IIGS software to take full advantage of its graphics capabilities for improved educational and productivity uses.

▶ Lets you compose for and play up to 15 different instruments at a time.

▶ Permits the sounds of music, games, educational software, and even human voices to come across with startling realism, by combining the system's sound chip with external speakers or headphones.

▶ Makes learning to use the Apple IIGS almost intuitive, even for a child.
▶ Facilitates learning, because like Macintosh software, most new Apple IIGS applications operate in much the same way. (So once you've learned one application, you've learned the basics of them all.)

▶ Lets you position the keyboard on your desk, in your lap, wherever it feels comfortable.
▶ Lets you connect the mouse to either side of the keyboard.
▶ Allows daisy-chaining of several Apple Desktop Bus input devices.
▶ Provides a consistent hookup for Apple Desktop Bus devices.

▶ Features a real-time clock/calendar that stamps files and programs with the date and time.
▶ Offers slot override capability—each peripheral port may be overridden by an expansion slot to allow use of standard peripheral cards.
▶ Provides AppleSoft BASIC; it's built into the ROM.

▶ Comes with disk tutorials that let you use the Apple IIGS as you're learning it.
▶ Makes it easy to find answers to your questions, because manuals are written in simple, straightforward language.
▶ Eliminates need for technical experience.

▶ Matches the finish of the new Apple peripherals.

Key Features

▶ CPU, keyboard, and disk drive built into one unit

▶ 128K RAM, expandable to over 1 megabyte in increments of 256K (for your new customers as well as the installed base of Apple IIc owners)

▶ Six built-in peripheral ports

▶ Runs most of the over 10,000 programs in the Apple II software library

▶ Built-in, 16-color graphics

▶ Compact design

▶ The industry's most complete set of disk tutorials

▶ Platinum finish on keycaps and disk-drive door

Customer Benefits

- ▶ Eliminates need to deal with complicated setup—just attach a monitor, plug in your peripherals, and go.
- ▶ Comes as a complete system, with features already built in (80-column card, graphics, modem connection, disk drive) that other computers charge extra for.
- ▶ Eliminates hidden costs. Once you own a IIc, a monitor, and a printer, you may never need another piece of hardware.

- ▶ Lets you work with the most powerful programs, create larger documents, data bases, and spreadsheets.
- ▶ Lets you access even large documents instantaneously, by installing the Apple IIc Memory Expansion Card.

- ▶ Makes adding peripherals as easy as putting a plug into a socket.
- ▶ Lets you put together a system that matches your customers' needs perfectly.
- ▶ Provides a very flexible growth path that includes monitors, printers, modems, external disk drives, a mouse, and more.

- ▶ Gives you thousands of titles to choose from, covering virtually every subject.
- ▶ Runs the same educational software your kids probably use in school.

- ▶ Lets you create colorful, professional graphics for home, school, business, or just plain fun.

- ▶ Takes up a minimum of space on your desk or dining table.
- ▶ Travels anywhere you do—around the house, out of town, or to and from the office—because its light weight and built-in handle make the IIc easily transportable.

- ▶ Eliminates the need for technical experience.
- ▶ Facilitates learning, because its interactive format means you'll actually use your IIc as you're learning about it.
- ▶ Provides instruction that's so complete and easy to follow, you may never use your manual.
- ▶ Gets you up to speed after just one evening of use.
- ▶ Includes a "sampler" introduction to AppleWorks™ and BASIC software.

- ▶ Matches styling of new Apple peripherals.

While the new Apple IIgs seems tailor-made for those customers who want the most, the newly enhanced Apple IIc is ideal for those who want a little less.

Less size, less setup time, and less cost.

But make no mistake. Even though the IIc is the entry-level Apple II, it also happens to share its family's most important benefits.

Like the world's largest, most diverse software library. A variety of useful accessories. High-quality color graphics. And of course, the Apple II's legendary easy of use.

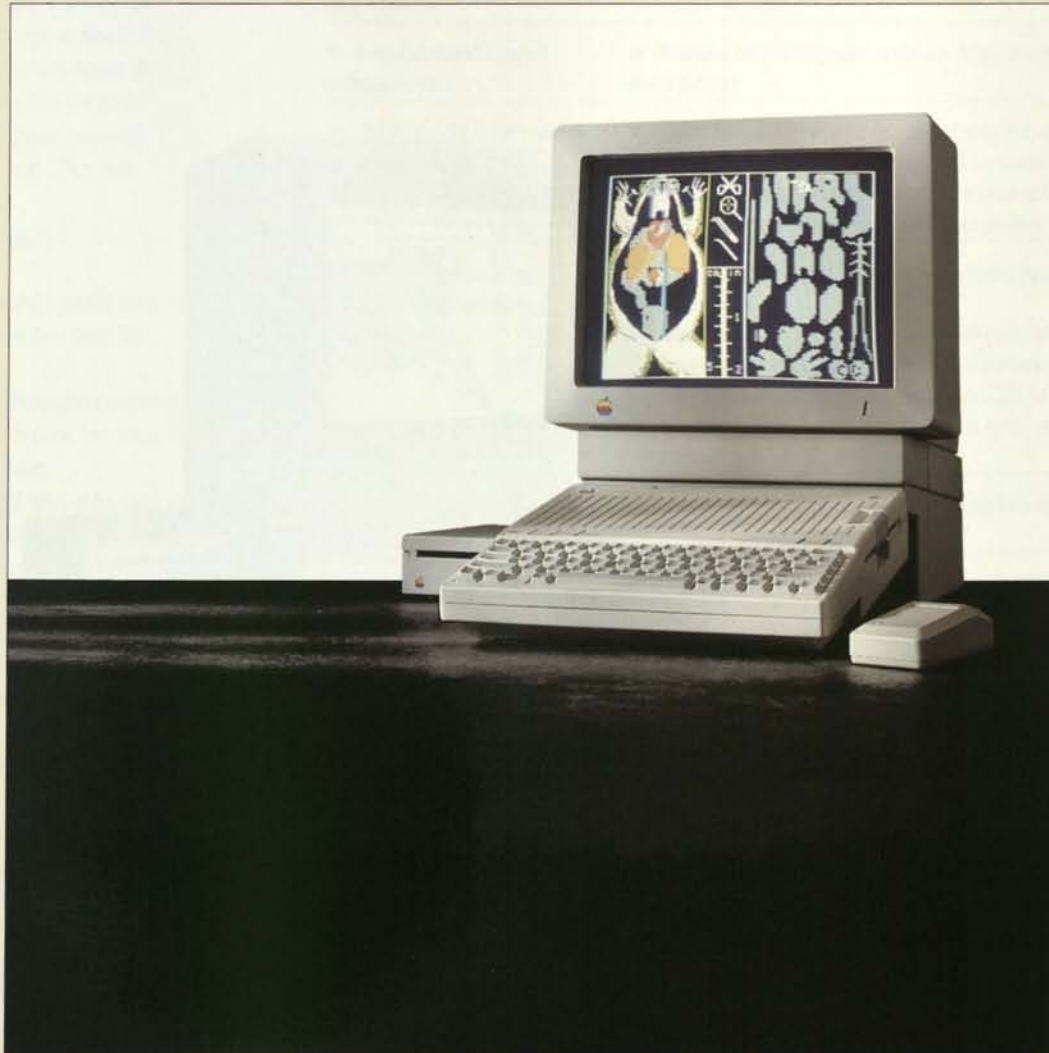
What's more, the IIc now boasts another family trait: the ability to expand its RAM. Any Apple IIc—including all IIc's in the installed base—can increase from the standard 128K to over a full megabyte.

To all that, add the fact that the Apple IIc fits a full-size keyboard, disk drive, processor, and six peripheral ports into one compact, lightweight, elegantly designed package. It really is the world's most logical solution for first-time buyers who want an uncomplicated system that'll just "plug in and go."

And that, in a nutshell, is the Apple IIc.

Our smallest personal computer, perhaps. But packed with more customer value than you'll find in most computers twice its size.

**We've made our
smallest computer
an even bigger
value.**



Apple IIc

The computer
for people who
don't want
too much of
a good thing.
Or too little.



Apple IIe

There's a mighty big difference between the capabilities of an Apple IIGS and an Apple IIc.

A difference filled nicely by the Apple IIe.

Believe us, it's no accident that the IIe remains the world's most popular personal computer. People still trust in it. They still believe in it.

And yes, they're still buying it.

By the thousands.

A fact we expect won't change much even after your store introduces the two new IIs.

Why? Three reasons:

First, because there will always be customers who can't afford an Apple IIGS now, but want the option of upgrading to one later.

Second, because there will always be customers who appreciate the economy of an Apple IIc, but want the flexibility of expansion slots.

And third, because there will always be customers who simply love the Apple IIe.

That's no surprise. After all, the Apple IIe has a track record of reliability that no other computer comes close to. It's endlessly expandable, with literally hundreds of accessories and peripherals to choose from. It's used by more schools than all other personal computers combined. And it just happens to run more software for education, productivity, home management, and entertainment than every other computer on the market.

Except the other Apple IIs, of course.

Key Features

- ▶ Runs the world's largest software library
- ▶ The Apple IIe is the number one computer in schools
- ▶ Virtually unlimited growth path—7 expansion slots
- ▶ Built-in graphics and sound
- ▶ Runs Catalyst and mouse-based software
- ▶ Easily upgradable to an Apple IIGS
- ▶ Excellent in-box support

Customer Benefits

- ▶ Provides over 10,000 titles to choose from, covering virtually every subject.
- ▶ Offers familiarity, because this is probably the very same computer your kids are already using—or soon will be using—at school.
- ▶ Runs thousands of the very best educational software titles, for every level from preschool to postgraduate studies.
- ▶ Lets you plug in any of a dozen high-quality Apple peripherals and accessories.
- ▶ Lets you choose from hundreds of third-party add-ons.
- ▶ Permits expansion of the available 128K memory with the Apple II Memory Expansion Card, by anything from 256K to over 1 megabyte.
- ▶ Allows you to customize your Apple IIe to do exactly what you want it to do—no more, no less.
- ▶ Lets you create colorful, professional graphics for home, school, business, or just plain fun.
- ▶ Makes the process of learning and using the IIe as intuitive as with a Macintosh.
- ▶ Simplifies operation with its mouse, icons, windows, and pull-down menus—makes things easier for kids, more efficient for adults.
- ▶ Lets you start out within your budget now, then upgrade when you're ready, and still use most of your Apple II software and peripherals.
- ▶ Lets you increase the powers and capabilities of your Apple by leaps and bounds (see Customer Benefits table for the Apple IIGS).
- ▶ Eliminates need for technical experience.
- ▶ Provides disk tutorials that let you use the Apple IIe as you're learning it.
- ▶ Makes it easy to find answers to your questions, because manuals are written in simple, straightforward language.

The best Apple II is the one your customer needs.

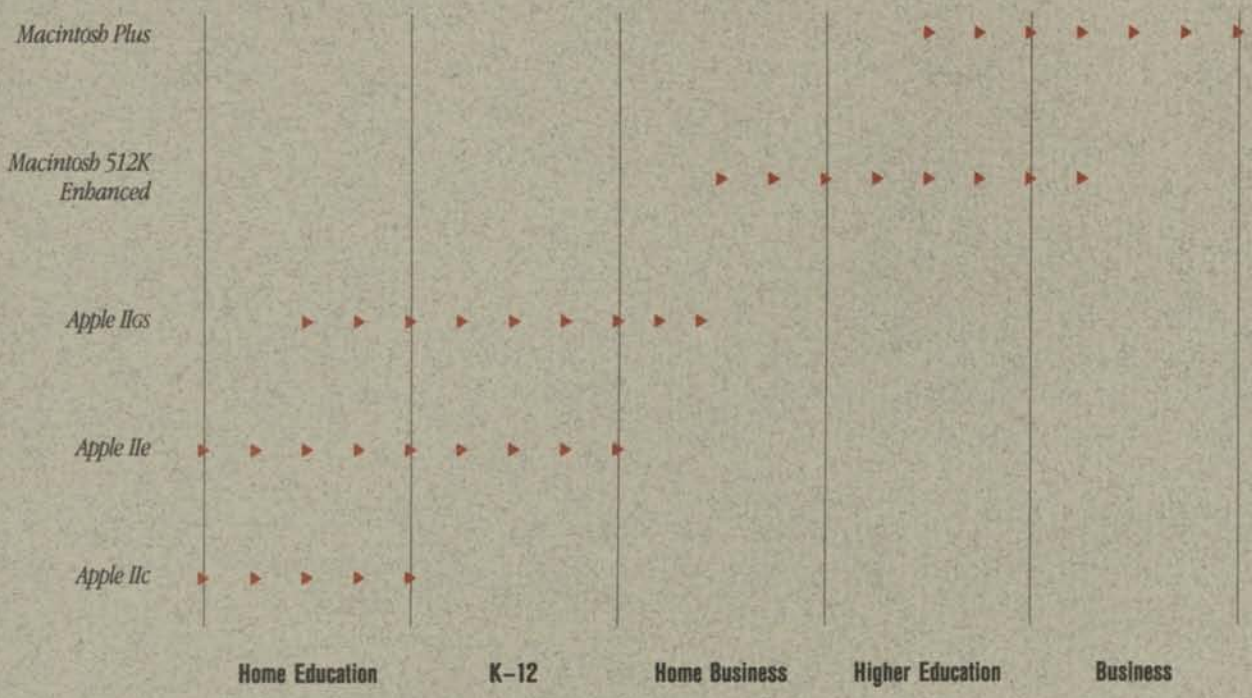
Every person who walks through your door has a different set of ideas about the kind of personal computer he or she needs.

Some customers want state-of-the-art technology. They'll be quickly convinced that the best Apple II is the new IIGs. Others want the very same computer their kids use at school. For them, the IIe is best. And still others want to get into computing as painlessly as possible. Certainly they'd insist that there's no better computer than the Apple IIc.

It's like we said from the start: the key to selling more Apple IIs is knowing how to put the right customer in front of the right computer.

Make a good match, and you'll probably win the business. Make a wrong match, and you'll probably lose the customer.

So in the spirit of successful matchmaking, we present this handy Apple Positioning Chart—a quick reference to the whos, whys, and whats of successful Apple selling.



Customer Profile

Apple IIc

People who are looking for a computer:

- ▶ That can be used for their children's education.
- ▶ That is affordable.
- ▶ That is compatible with the computer used in their children's school.
- ▶ That is easy to set up and use.
- ▶ That is designed for entry-level computing.
- ▶ That can display color.
- ▶ That is for the whole family.

Apple IIe

People who are looking for a computer:

- ▶ That is the same computer their children are using in school.
- ▶ That can be expanded as their needs expand.
- ▶ That can display color.
- ▶ That is for the whole family.

Apple IIes

Families with children:

- ▶ Who are interested in family computing.
- ▶ Who want a high-performance computer.
- ▶ Who are technology and growth-path oriented.
- ▶ Who want a computer to educate their children.

Single people and families without children:

- ▶ Who want a high-performance computer.
- ▶ Who are technology and growth-path oriented.
- ▶ Who are looking for breadth of software.
- ▶ Who are interested in color graphics.

Families with children and a home business:

- ▶ Who are looking for strong productivity and business management solutions.
- ▶ Who are interested in color graphics.
- ▶ Who want a high-performance computer.
- ▶ Who are technology and growth-path oriented.

Macintosh 512K Enhanced

Home business users:

- ▶ Who are looking for ease of use/learning.
- ▶ Who want to use high-performance software.
- ▶ Who are looking for an entry-level productivity tool.
- ▶ Who are looking for a computer that's compatible with their office computer.
- ▶ Who are looking for a compact and transportable computer.
- ▶ Who are interested in graphics capabilities.

Higher-education students:

- ▶ Who want to use word-processing and productivity software.
- ▶ Who want to use Macintosh courseware.
- ▶ Who are looking for ease of use and learning.
- ▶ Who are interested in graphics capabilities.
- ▶ Who are looking for a compact and transportable computer.

Macintosh Plus

People in business and higher-education administrators and faculty:

- ▶ Who are looking for a powerful productivity tool.
- ▶ Who are looking for ease of use and learning.
- ▶ Who are looking for a growth path to more power.
- ▶ Who want to use high-performance software.
- ▶ Who are interested in graphics capabilities.
- ▶ Who are interested in networking and data communications solutions.
- ▶ Who want to use Macintosh courseware.
- ▶ Who are looking for a compact and transportable computer.

Suggested Demonstration Configurations

Apple IIc

UniDisk™ 3.5
AppleColor™ Composite Monitor
ImageWriter II
Apple IIc Memory
Expansion Card
AppleMouse™ IIc
Dazzle Draw or AppleWorks

Apple IIe

UniDisk 3.5 (2)
ColorMonitor IIe
ImageWriter II
Apple II Memory
Expansion Card
AppleMouse IIe
AppleWorks with Catalyst 3.0

Apple IIgs

Apple 3.5 Drive (2)
AppleColor RGB Monitor
ImageWriter II
Apple IIgs Memory
Expansion Card
Apple Desktop Bus Mouse
PAINTWORKS PLUS or
AppleWorks

Macintosh 512K Enhanced

Macintosh 800K External Drive
ImageWriter II with SheetFeeder
Appropriate software

Macintosh Plus

Apple Hard Disk 20SC
LaserWriter Plus
Appropriate software

**Sometimes,
what your customers
want most
doesn't come in
a box.**

Being computer professionals, we all tend to get so caught up in the technical side of selling—the ROMs and RAMs, bytes and buffers—that we sometimes forget about the human side.

Research tells us that many customers feel the support behind a computer is as important as the computer itself.

Fortunately, nobody has a stronger support story than you, the authorized Apple dealer.

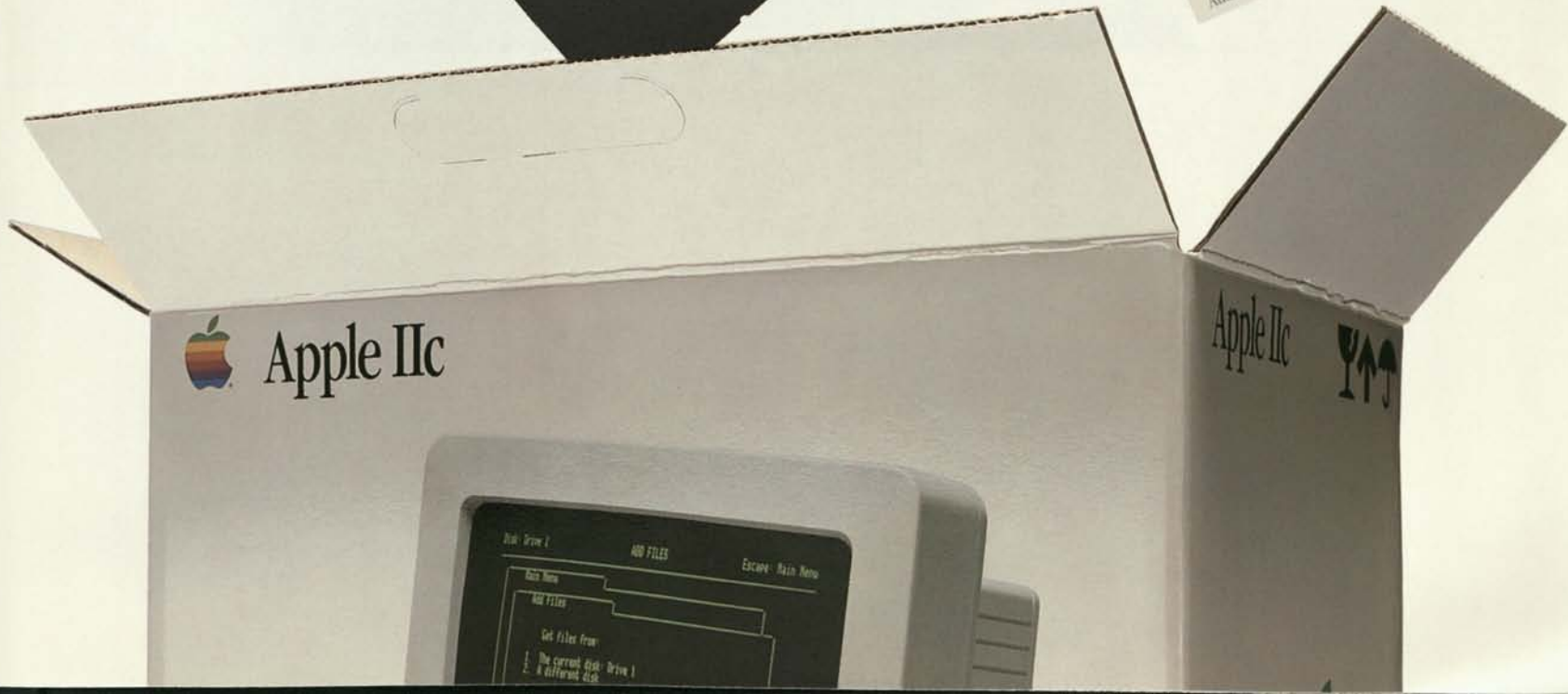
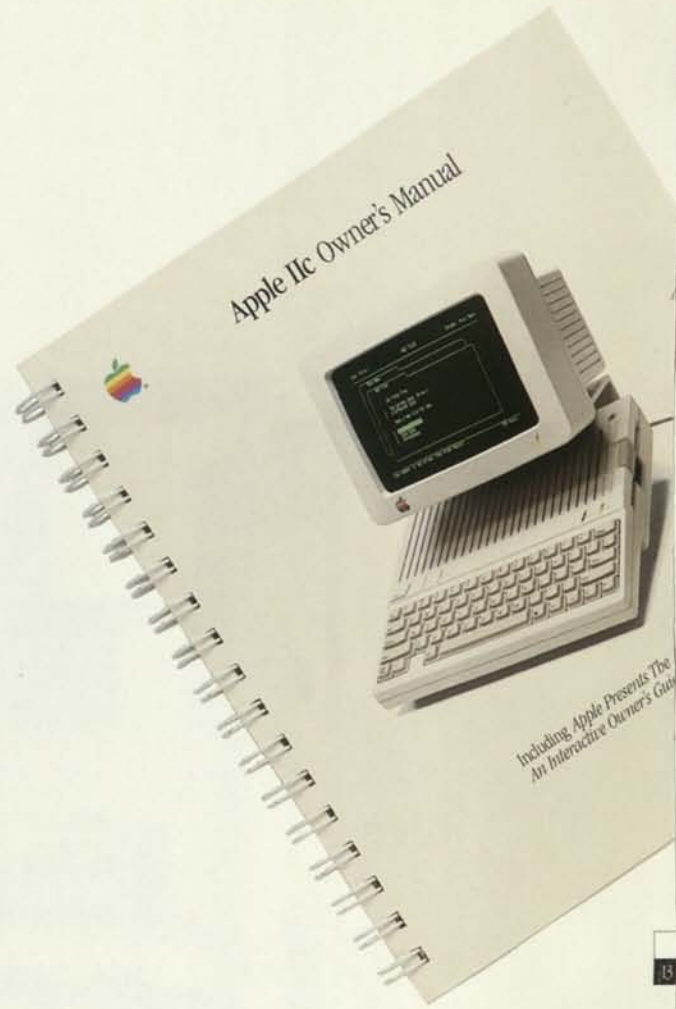
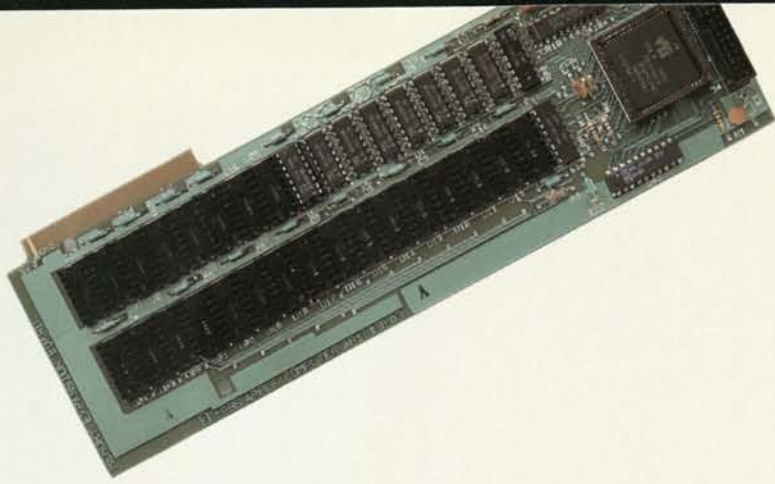
Your customers will be impressed by the many potential benefits that come with owning an Apple. Like the added security of an AppleCare® service plan. The convenience of Apple Credit. The technical support available via AppleLink.™

Customers who buy an Apple IIc or IIc will discover an in-box flyer that'll help put them in touch with an Apple User Group. Customers who purchase an Apple Personal Modem with their computer will receive introductory offers to a number of on-line services such as CompuServe, and Dow Jones News/Retrieval. And every customer is sure to find something of interest in your display of Apple magazines, books, and software directories.

Support also comes in the form of all the options, accessories, and peripherals your store can supply for a customer's new Apple II. There are hundreds to choose from, far more than for most other personal computers.

Granted, what's inside the box makes the Apple II a great computer.

But what's outside makes it an even greater value.





How to build your store's sales force.

Relax, we're not suggesting you rush out and hire more people. We just want to help you make the most of a few resources you may have been overlooking.

Namely, your own four walls.

We refer, of course, to the huge sales potential of a well-designed, aggressively promotional store environment.

So dig out your copy of the *Apple Merchandising Catalog*. In it, you'll learn how creating an Apple Department in your store can build traffic, sales, demonstrations, and profit margins.

Meanwhile, we're doing our part to support your Apple II products in a big way. With new brochures, posters, merchandising panels, data sheets, co-op materials, and demo disks.

Combine all this with the exciting new lineup of Apple II products you'll be selling, and who knows?

You may have to rush out and hire more people after all.

You haven't heard the half of it.

As you now know, we're introducing a big addition to the Apple II family of personal computers.

But that's just half the story.

Because at the same time, we're also presenting our most extensive line ever of Apple II peripherals and accessories.

So don't stop now. Spend a few minutes with our new *Apple Products Selling Guide*. Get to know the new Apple II consumer brochures, flyers, and data sheets. Maybe even come back to this brochure and review it again.

Then get some rest.

Chances are, you're going to need it.



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With expanded
peripheral vision,
you can see
a lot more.



Apple Products Selling Guide

More business.

We've seen, for a long time, what the right peripherals can do for your business. And we're not just talking about margins.

The right assortment of peripherals can help you provide solutions for just about every consumer. Leading to an increase in business you wouldn't have otherwise. From customers you wouldn't see otherwise.

You remember what happened last year, when we added the greatest number of peripherals in our history.

This year, you can watch your profits soar again. With an even further expanded line of Apple® peripherals, inspired by growing consumer needs and our revolutionary new Apple IIGs™ CPU.

This year, we're introducing a whole new array of cross-compatible, backward-compatible peripherals. Giving you the power to transform any Apple II—making it grow any which way. Which, in turn, will make your business grow every which way.

For customers with memory needs that say "IIE," but a budget that says "IIC," you can save the day with our remarkable new IIC Memory Expansion Card.

For customers with a desire for dazzling color graphics, you can dazzle away with our new AppleColor™ RGB Monitor.

And for IIE owners with a burning desire for the new Apple IIGs, you can literally become a hero by introducing them to the IIGs Upgrade—which can give any Apple IIE the most exciting technology in personal computers today.

There's more, of course. More disk drives, more monitors, more accessories, and more expansion cards. To serve more needs, bring in more business, and generate more profit.

So if you were wondering how the Apple Computer peripheral business is going to be this year, now you know. It's going to be everything you were hoping for.



AppleColor RGB Monitor

AppleColor Composite Monitor

Apple Monochrome Monitor

AppleColor RGB Monitor

Overview

Color graphics have never looked sharper! Teamed with the Apple IIgs, the 12-inch AppleColor RGB Monitor can simultaneously display high-resolution text and graphics. It also lets your customers choose from a palette of 4,096 colors generated by the Apple IIgs to create impressive color displays for presentations, reports, and more.

Positioning

The AppleColor RGB Monitor is the ideal color solution for Apple IIgs owners who want to take full advantage of the color graphics capabilities of the Apple IIgs. Home-business owners and educators will enjoy the crisp, clear color text display as well as the high-quality graphics.

Key Features

- ▶ High-resolution analog RGB color
- ▶ Direct connection to the RGB port of the Apple IIgs
- ▶ Platinum finish matches the new Apple IIgs

Customer Benefits

- ▶ Presents a full range of colors in a sharp, true image.
- ▶ Presents color text and graphics clearly at the same time.
- ▶ Makes it easy to install—no interface card is required.
- ▶ Provides a complete color solution for the Apple IIgs.

Product Details

Designed for the Apple IIgs.
12-inch screen.
80-character by 25-row display.
Displays all 4,096 colors generated by the Apple IIgs.

AppleColor Composite Monitor

Overview

The AppleColor Composite Monitor is our most cost-effective color monitor for Apple IIc and Apple IIgs owners. And its styling complements the new style of the IIc and Apple IIgs.

Positioning

The AppleColor Composite Monitor provides a solution for IIc owners who desire both text and color graphics capabilities, and is an entry-level color solution for Apple IIgs owners who don't need to use the new high-resolution modes. For high-resolution color displays that combine both text and graphics, the AppleColor RGB Monitor is recommended for the Apple IIgs. The AppleColor Composite Monitor is ideal for the home user or education customer.

Key Features

- ▶ 13-inch composite color screen
- ▶ 80-column monochrome capability
- ▶ Direct connection to the video jack
- ▶ Platinum finish matches the Apple IIc and new Apple IIgs

Customer Benefits

- ▶ Furnishes cost-effective color display for IIc and Apple IIgs owners.
- ▶ Provides a solution for customers who need both a color display and 80-column text capabilities.
- ▶ Makes it easy to set up and install—no interface card is required.
- ▶ Provides a complete color solution for the Apple IIc and Apple IIgs.

Product Details

Replaces the Apple ColorMonitor IIc.
Software that generates 80 columns of text is compatible with the AppleColor Composite Monitor. The monitor automatically switches between color and monochrome display, depending on the software. You can also use the switch on the front panel to shift manually between the two modes.

Dealer Notes

When text and graphics are combined in the high-resolution modes of the Apple IIgs, composite display technology does not provide the clear, crisp color

display that's required. The AppleColor RGB Monitor is the recommended solution in this situation.

Apple Monochrome Monitor

Overview

Designed with text-oriented applications in mind, the Apple Monochrome Monitor displays 80 columns of text in an easy-to-read format. Apple IIc owners will enjoy the new styling and larger screen display. And Apple IIgs owners who don't require color will find the Apple Monochrome Monitor to be a cost-effective solution for their needs.

Positioning

Ideal for IIc owners who want the capabilities of a larger monochrome screen display. Also acts as an entry-level solution for Apple IIgs owners who are mainly interested in text-based software solutions.

Key Features

- ▶ High-resolution, 12-inch monochrome screen
- ▶ White-phosphor text and graphics
- ▶ Platinum finish matches the new Apple IIgs and Apple IIc

Customer Benefits

- ▶ Features larger monochrome display for Apple IIc owners.
- ▶ Provides a low-cost solution for Apple IIgs owners who don't need color graphics.
- ▶ Makes the Apple Monochrome Monitor ideal for displaying easy-to-read text- and graphics-oriented programs such as Catalyst 3.0.
- ▶ Provides a complete monochrome solution for the Apple IIgs and Apple IIc.

Product Details

80-character by 25-row display.
Fits on the AppleColor Monitor Stand.
With the Apple IIgs, can display 16 shades of gray.

Apple 3.5 Drive

Overview

Small in size but large in power, the Apple 3.5 Drive stores 800K of data on a single 3.5-inch disk. And daisy-chaining additional Apple 3.5 Drives provides flexibility for Apple IIGs owners.

Positioning

The Apple 3.5 Drive is the drive of choice for Apple IIGs owners who require high-capacity storage capability at an affordable price. It's particularly attractive to customers who frequently switch between applications.

Key Features

- ▶ Uses 3.5-inch, 800K, double-sided disks that offer over five times the storage capacity of the 5.25-inch disks
- ▶ Compatible with UniDisk™ 3.5
- ▶ Operates faster than 5.25-inch drives
- ▶ Daisy-chaining capability
- ▶ In-use light
- ▶ Allows multiple programs and increased data to be stored on a single disk.
- ▶ Reduces disk swapping.
- ▶ Runs Apple II software on 3.5-inch media.
- ▶ Loads programs and retrieves data faster, which means more efficiency and productivity.
- ▶ Provides flexibility by allowing connection of up to four drives (3.5-inch or 5.25-inch).
- ▶ Indicates when drive is running.

Customer Benefits

Product Details

Designed for the Apple IIGs. Connects directly to the Apple IIGs without the need of an interface card. Platinum finish matches the new Apple IIGs.

Apple 5.25 Drive

Overview

If compatibility with thousands of 5.25-inch software programs is important, then the Apple 5.25 Drive is the answer. Additional Apple 5.25 Drives or Apple 3.5 Drives can be daisy-chained to add flexibility.

Positioning

The Apple 5.25 Drive is for Apple IIc and Apple IIGs customers who want a drive that's compatible with the thousands of Apple II software applications that are available on 5.25-inch media. It's also for those customers who want a second 5.25-inch drive to make backup and data transfer easier.

Key Features

- ▶ Uses standard 5.25-inch disks
- ▶ Daisy-chaining capability
- ▶ In-use light
- ▶ Is compatible with thousands of Apple II software programs and data files on 5.25-inch disks.
- ▶ Provides additional flexibility by allowing up to four drives (3.5-inch and 5.25-inch) to be connected to the Apple IIGs, and two drives to be connected to the Apple IIc.
- ▶ Indicates when drive is running.

Customer Benefits

Product Details

Replaces the Disk IIc. Direct connection to the disk drive port of the Apple IIc or Apple IIGs. Compatible with all Apple II operating systems. Security lock to help prevent theft. Platinum finish matches the new Apple IIGs and Apple IIc.

Apple Hard Disk 20SC

Overview

Incredible storage capacity and fast file access are now available. With the Apple Hard Disk 20SC, Macintosh™ Plus, Apple II Plus, Apple IIe, and Apple IIGs owners can have 20 megabytes of storage available whenever the need arises.

Positioning

The Apple Hard Disk 20SC is ideal for business and professional users, and educational administrators and other education users who require storage speed and flexibility. It provides a high-performance storage solution for Macintosh Plus owners and furnishes Apple II Plus, Apple IIe, and Apple IIGs owners with the largest-capacity Apple hard disk solution available.

Key Features

- ▶ Compatible with the Macintosh Plus, Apple II Plus, Apple IIe, and Apple IIGs
- ▶ 20 megabytes of storage
- ▶ High-performance SCSI parallel port
- ▶ Designed to fit under the Macintosh family of computers
- ▶ Provides a high-performance storage solution.
- ▶ Provides storage for multiple applications and files.
- ▶ Virtually eliminates disk swapping.
- ▶ Provides 25 times the storage capacity of 800K drives.
- ▶ Data is transferred up to six times faster than through the external serial port.
- ▶ Provides almost instantaneous access to applications and files.
- ▶ Allows customers to daisy-chain additional SCSI devices.
- ▶ Takes up no additional desk space when used with the Macintosh family of computers.

Customer Benefits

Product Details

Requires the Apple II SCSI Interface Card to operate with the Apple II Plus, Apple IIe, and Apple IIGs. Up to four SCSI devices can be daisy-chained on an Apple II Plus or Apple IIe using ProDOS® 1.2, or on an Apple IIGs using ProDOS 16. On the Macintosh Plus, up to seven SCSI devices can be daisy-chained. Available in both platinum and beige finish.

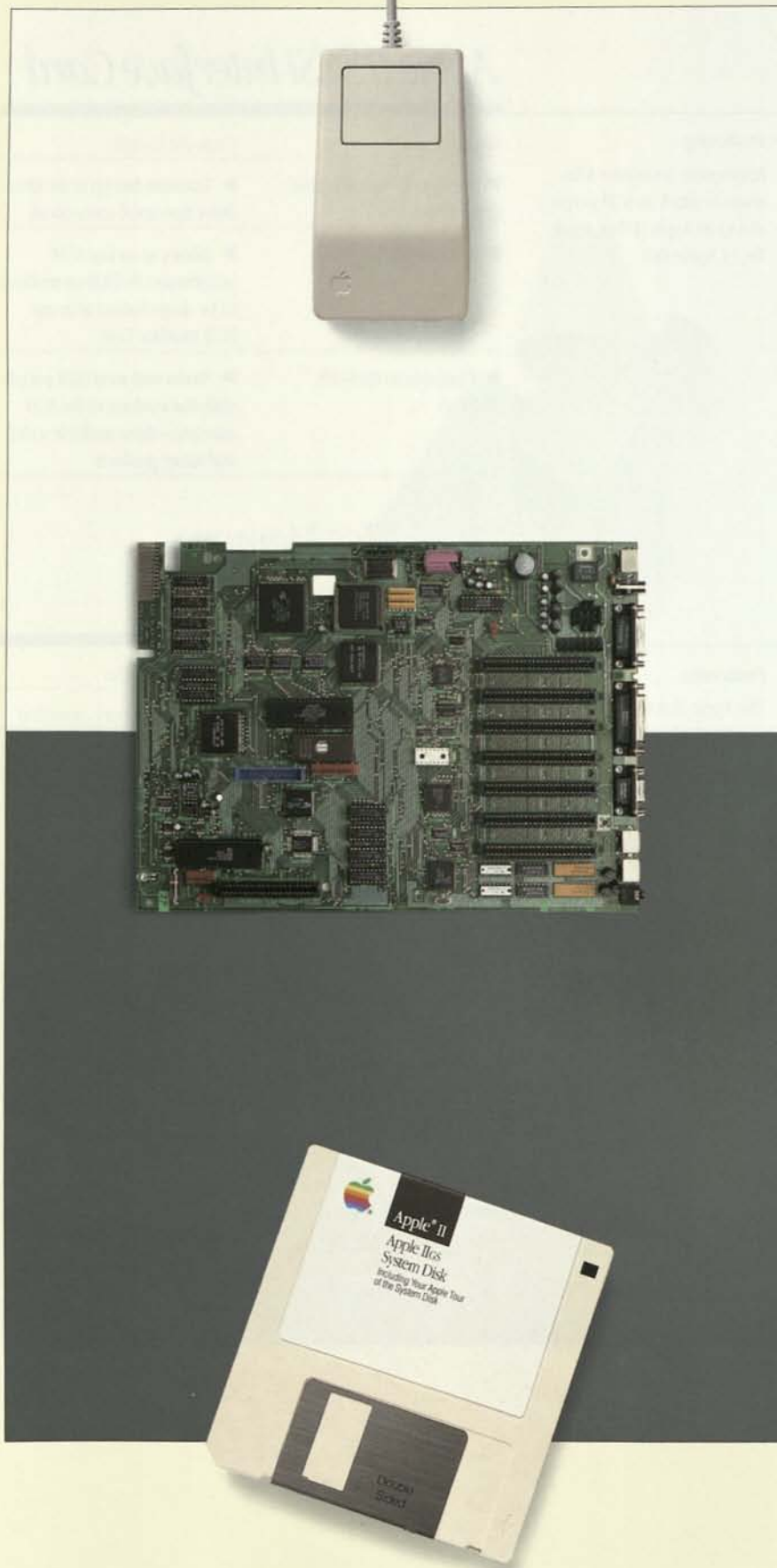
Apple II SCSI Interface Card



Apple 3.5 Drive

Apple 5.25 Drive

Apple Hard Disk 20SC



Apple Desktop Bus Mouse

Apple IIgs Upgrade

Apple IIgs System Disk

Apple Desktop Bus Mouse*

Overview

Complete the Apple IIGS upgrade—add an Apple Desktop Bus™ Mouse to enjoy all the features the Apple IIGS offers.

Positioning

The Apple Desktop Bus Mouse is designed for Apple IIe owners who upgrade to the Apple IIGS and want to take advantage of Apple Desktop Bus technology.

Key Features

- ▶ Apple Desktop Bus technology
- ▶ Low-profile styling
- ▶ Provides direct interaction with the monitor screen

Customer Benefits

- ▶ Allows daisy-chaining with other Apple Desktop Bus devices.
- ▶ Complements the Apple IIGS.
- ▶ Makes moving the cursor and entering commands as easy as pointing.

Product Details

Works with all Apple II mouse-driven programs.
Comes standard with the Apple IIGS.

Apple IIGS Upgrade*

Overview

Apple IIe owners don't have to miss out on all the features of the new Apple IIGS. By upgrading their IIe, they can have these features. And what's even better, nearly all of their Apple IIe peripherals will work on the upgraded unit.

Positioning

The Apple IIGS Upgrade is for IIe owners who wish to have the power and performance capabilities of the new Apple IIGS.

Key Features

- ▶ Transforms the IIe into an Apple IIGS

Customer Benefits

- ▶ Allows IIe owners to take advantage of all of the Apple IIGS features without having to sacrifice their investment in IIe software or peripherals.

Product Details

Only an Apple IIe can be upgraded to an Apple IIGS.
Apple IIe auxiliary slot cards are not compatible.
Does not include the Apple Desktop Bus Mouse. This mouse can be purchased separately.
Does not include the Apple IIGS System Disk. The System Disk can be purchased separately.
Detachable keyboard is not included.
This is a dealer-installed option.

- ▶ The most powerful Apple II: 16-bit 65C816 microprocessor

- ▶ Runs nearly all Apple II software up to 2.8 times faster.

- ▶ 256K of RAM, expandable to 8 megabytes when higher-capacity chips are available

- ▶ Lets your customers run advanced software programs, and work with larger documents.

- ▶ 7 expansion slots

- ▶ Permits most cards used in the IIe to be used in the Apple IIGS.

- ▶ Memory expansion slot

- ▶ Provides additional memory configuration options to satisfy your customer's needs.

- ▶ Built-in ports for RGB monitors, composite monitors, 3.5-inch or 5.25-inch drives, two serial devices (including the AppleTalk® network), and Apple Desktop Bus devices

- ▶ Provides flexibility for connecting peripherals.
▶ Allows your Apple II customers to connect to a LaserWriter® printer or other AppleTalk devices.

- ▶ Two new graphics modes: 640 × 200 and 320 × 200 dots

- ▶ Allows you to create highly detailed, richly colored graphics for home, school, business, or just plain fun.

- ▶ Built-in 32-oscillator sound chip

- ▶ By combining the 32-oscillator sound chip of the Apple IIGS with external speakers, the sounds of music, games, educational software, and even human voices come across with startling realism.

Apple IIGS System Disk*

Overview

An Apple IIGS upgrade wouldn't be complete without the Apple IIGS System Disk. The disk provides a desktop environment that enables the upgraded system to function like an Apple IIGS.

Positioning

This disk, combined with the Apple IIGS Upgrade and Apple Desktop Bus Mouse, provides the same desktop environment as the Apple IIGS.

Key Features

- ▶ Includes ProDOS 16, System utilities, AppleTalk support, and desk accessories

Customer Benefits

- ▶ Provides identical desktop environment and utilities to those of the Apple IIGS.
- ▶ Allows you to easily delete and copy files.
- ▶ Provides a friendly user interface.

Product Details

The Apple IIGS System Disk comes standard with the Apple IIGS.

*Product available in January 1987

Apple II SCSI Interface Card

Overview

The world of SCSI devices is now available to Apple II Plus, Apple IIe, and Apple IIgs customers. Customers who have large memory requirements can use the Apple II SCSI Interface Card and Apple Hard Disk 20SC to store 20 megabytes of information. Together, the Apple II SCSI Interface Card and Apple Hard Disk 20SC make a powerful team.

Positioning

Appropriate for anyone who wants to attach a SCSI peripheral to an Apple II Plus, Apple IIe, or Apple IIgs.

Key Features

- ▶ High-performance parallel data transfer
- ▶ Expandable
- ▶ Conforms to the SCSI standard

Customer Benefits

- ▶ Transfers data up to six times faster than serial connections.
- ▶ Allows up to four SCSI peripherals (ProDOS-controlled) to be daisy-chained with one SCSI Interface Card.
- ▶ Works with most SCSI peripherals that conform to the SCSI standard—those available today and future products.

Product Details

Compatible with the Apple II Plus, Apple IIe, and Apple IIgs.

Apple IIgs Memory Expansion Card

Overview

Need to create larger documents on the Apple IIgs? Want to effectively utilize the new memory-intensive programs on the Apple IIgs? The answer is simple—add the Apple IIgs Memory Expansion Card. Any time your customers need additional RAM, they can add from 256K to one megabyte.

Positioning

The Apple IIgs Memory Expansion Card allows Apple IIgs owners to enhance the power and performance of the Apple IIgs when they need to. It allows Apple IIgs owners to work faster, to work with more advanced applications, and to work with bigger data files. Most new Apple IIgs software applications will require this card.

Key Features

- ▶ Up to an additional megabyte of RAM in increments of 256K
- ▶ Customers can take advantage of the newest high-performance software
- ▶ Non-copy-protected programs can be loaded directly into the Memory Expansion Card

Customer Benefits

- ▶ Allows memory expansion to be tailored to your customers' needs.
- ▶ Allows the creation of larger documents, spreadsheets, data bases, and other files (using software designed for the additional memory).
- ▶ Provides instantaneous access to information—no waiting for disk drives to read information from floppy disks.

Product Details

Most new Apple IIgs software applications will require the Apple IIgs Memory Expansion Card. This card should be highly recommended to Apple IIgs customers.

Unlike the Apple II Memory Expansion Card, the memory on the Apple IIgs Memory Expansion Card is addressed linearly.

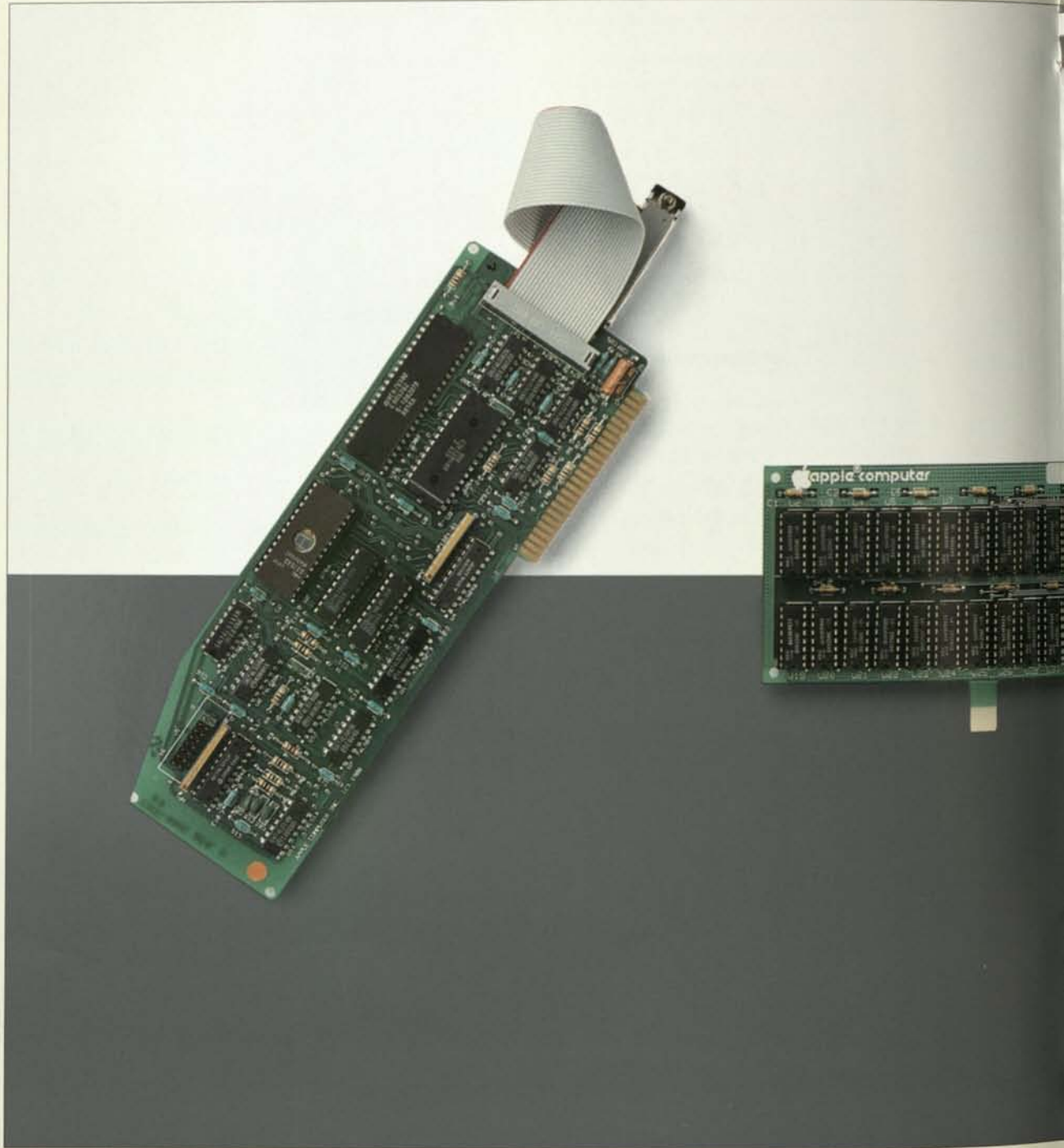
Most Apple II software that works with the Apple II Memory Expansion Card will also work with the Apple IIgs Memory Expansion Card.

The basic card contains 256K of RAM. Additional memory can be added in increments of 256K with the Apple 256K Memory Expansion Kit to give your customers up to a megabyte of additional memory (see *Dealer Notes*).

Designed to work exclusively with the Apple IIgs.

Dealer Notes

Apple does not recommend configuring the Memory Expansion Card with 768K. The Memory Manager will not properly address this configuration.



Apple II SCSI Interface Card

Apple II SCSI Interface Card

Apple IIGS System Fan

Overview

Expanding your Apple IIGS? In the process, it's important to maintain the proper internal case temperature. The Apple IIGS System Fan is the answer.

Positioning

The Apple IIGS System Fan is for Apple IIGS owners who add three or more cards to their system.

Key Features

- ▶ Helps maintain proper internal case temperature
- ▶ Low current requirement
- ▶ Aerodynamic fan-blade design

Customer Benefits

- ▶ Prevents possible heat-related damage to internal components.
- ▶ Eliminates need to modify or change the power supply.
- ▶ Provides quiet operation.

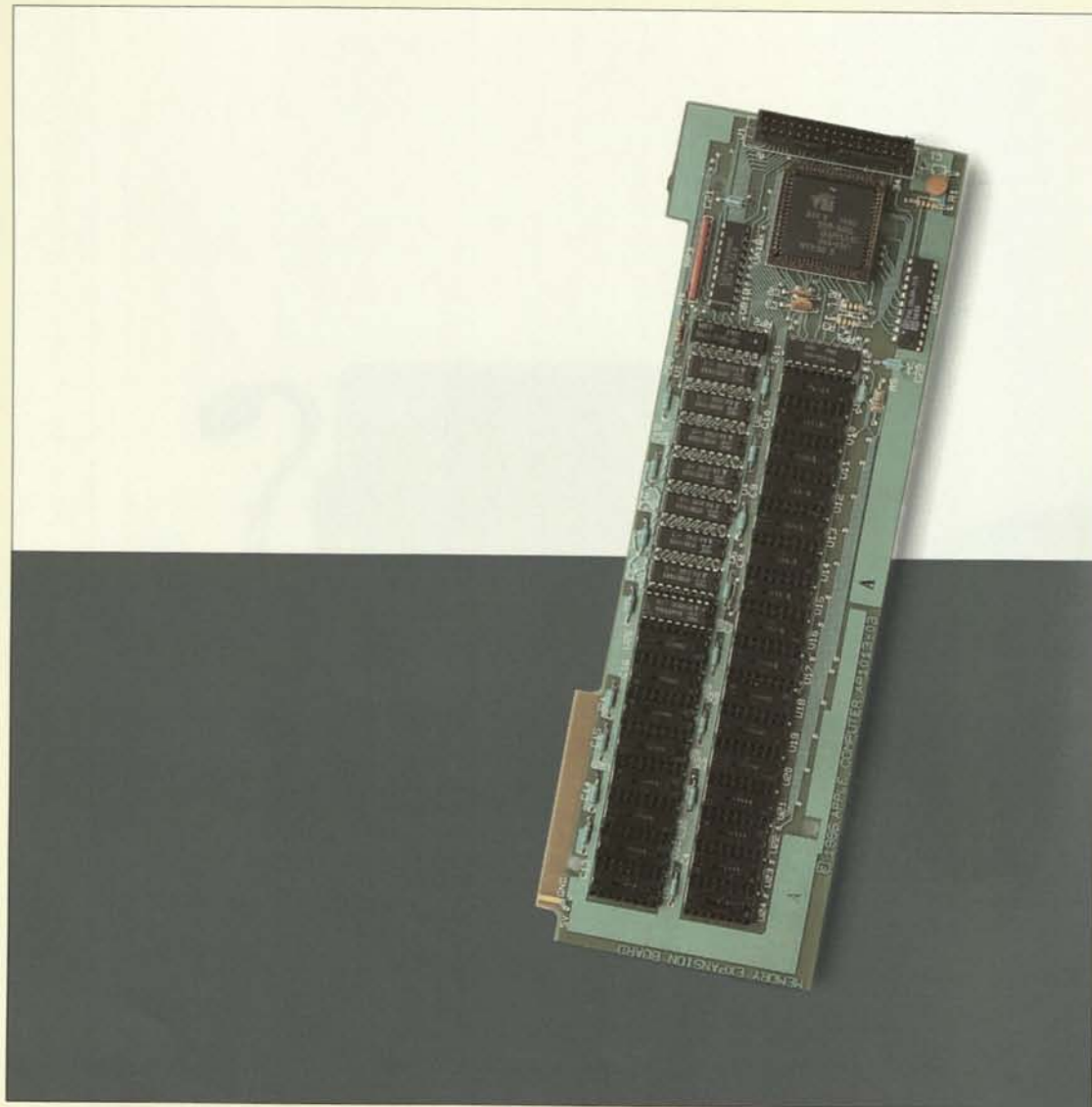
Product Details

Required when three or more cards are placed in the expansion slots.

Not compatible with the Apple IIGS Upgrade (for the Apple IIe).

Snaps onto power supply.

This is a user-installed option.



Apple IIc Memory Expansion Card

Apple IIc Memory Expansion Card

Overview

Memory constraints are no longer an issue for Apple IIc owners! Now the Apple IIc Memory Expansion Card can be added to any Apple IIc system. In increments of 256K, your customers can add up to an additional megabyte, enabling them to use even the most memory-intensive applications.

Positioning

The Apple IIc Memory Expansion Card provides Apple IIc owners with the ability to enhance the power and performance of the IIc when they need to. It allows IIc owners to work faster, to work with more advanced applications, and to work with bigger data files.

Key Features

- ▶ Up to an additional megabyte of RAM in increments of 256K
- ▶ Customers can take advantage of the newest high-performance software
- ▶ Non-copy-protected programs can be loaded directly into the Memory Expansion Card

Dealer Notes

Two models are available: the Apple IIc Memory Expansion Card, for owners of the newest IIc (with the platinum keycaps); and the Apple IIc Memory Expansion Kit, for owners of older IIc's (with beige keycaps).

Customer Benefits

- ▶ Allows memory expansion to be tailored to your customers' needs.
- ▶ Allows the creation of larger documents, spreadsheets, data bases, and other files (using software designed for the additional memory).
- ▶ Provides instantaneous access to information—no waiting for disk drives to read information from floppy disks.

Product Details

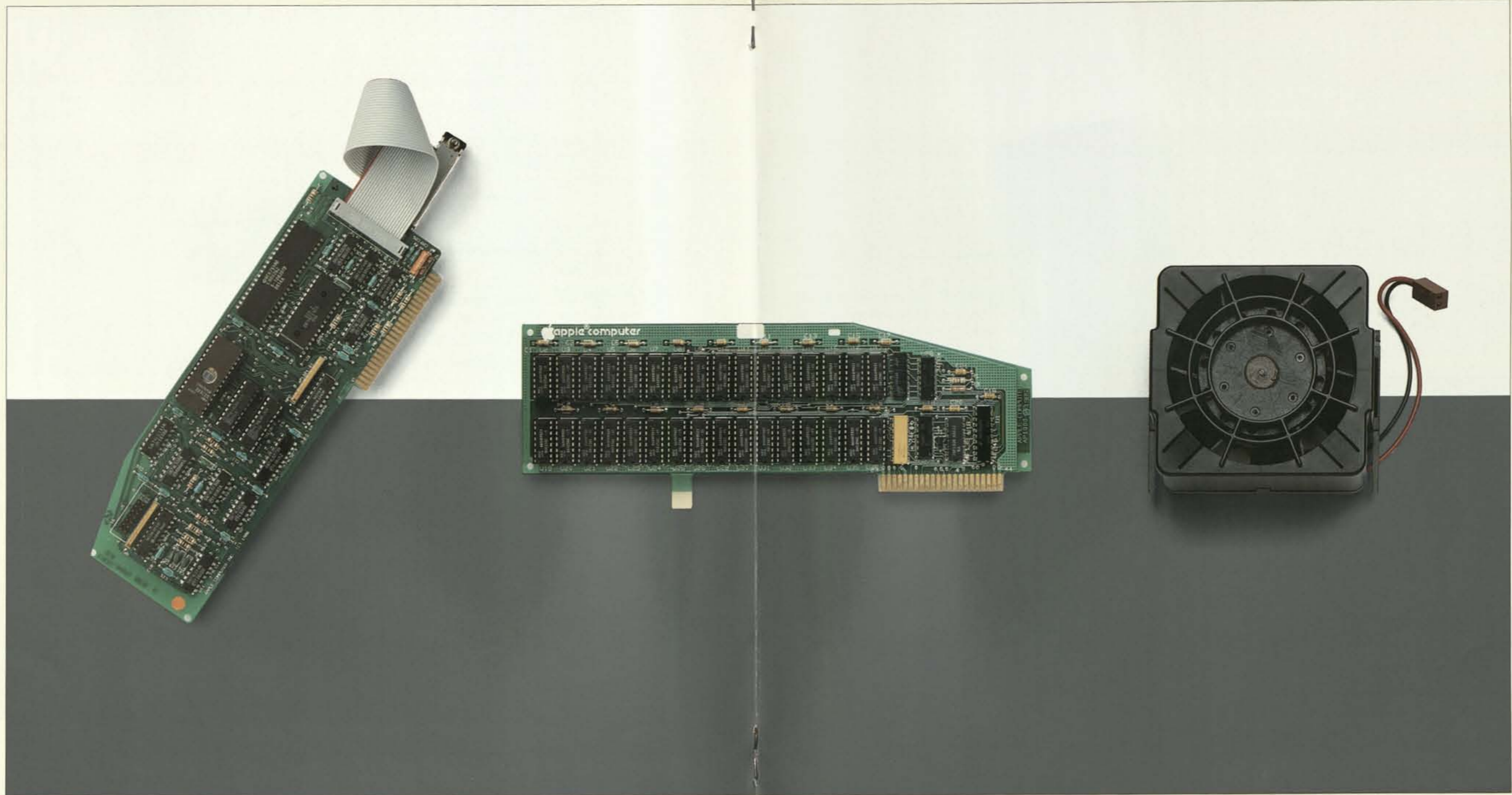
Most Apple II software that works with the Apple II Memory Expansion Card will work with the Apple IIc Memory Expansion Card.

Most Apple II software works with the Memory Expansion Card.

The basic card contains 256K of RAM. Additional memory—up to a full megabyte—can be added in increments of 256K with the Apple 256K Memory Expansion Kit.

The Apple IIc Memory Expansion Kit includes the Apple IIc Memory Expansion Card and new Apple IIc logic board.

This card is dealer installed.



Apple II SCSI Interface Card

Apple IIgs Memory Expansion Card

Apple IIgs System Fan

AppleWorks (Version 2.0)

Overview

The best-selling software program has been made even better! With the new AppleWorks™ mail-merge feature, data from the data-base application can be automatically inserted into a form letter or other word-processing document.

But that's not all. Now AppleWorks takes full advantage of any Apple Memory Expansion Card. And advanced spreadsheet features for the power user have also been added.

Positioning

AppleWorks (Version 2.0) provides Apple II owners with the three most popular elements of productivity software—word processing, data-base management, and spreadsheet analysis—in one powerful and easy-to-use tool. Apple II owners who frequently create customized letters will enjoy the new built-in mail-merge capabilities, which will allow them to select information from a data base and insert it into form letters. And power-conscious users will be happy to know that AppleWorks now takes full advantage of the Apple II Memory Expansion Cards, 3.5-inch drives, and program-selection software.

Key Features

- ▶ Compatible with the Apple IIe, IIc, and IIgs
- ▶ New mail-merge capability
- ▶ Takes advantage of all Apple II Memory Expansion Cards
- ▶ Integrated word-processing, data-base, and spreadsheet functions with many new features

Customer Benefits

- ▶ Runs on the entire current Apple II family of computers (if you change computers, the software will still work).
- ▶ Makes it easy to incorporate data-base information quickly into a word-processing document.
- ▶ Lets you create and work with larger files on the desktop at the same time.
- ▶ Facilitates switching between applications, and integrating information.
- ▶ Saves time and increases productivity.

Product Details

Requires a minimum of 128K of RAM.

Replaces AppleWorks 1.3.

Available on 3.5-inch and 5.25-inch media.

Includes many important features:

Memory

128K RAM; 56K with desktop; 2,250 lines with word processor; 1,350 records with data base; 2K/row with spreadsheet

With additional memory: 250 to 1012K with desktop (*depends upon the size of the memory card*); 7,250 lines with word processor; 6,350 records with data base; 10K/row with spreadsheet.

Application Details

Spreadsheet

Complex logic statements
Look-up tables
Cell protection
Rounding
Ability to copy resulting values or formulas to other spreadsheets

Word processor

Headers/Footers
On-screen page breaks
Centering
Proportional spacing
Indentation

Data base

Group totals/subtotals
Calculated categories
Compound data-selection rules
30 fields/records
Prints table or label reports

Mail merge

Selected data-base information can be used in word processing documents.
Choose to print or delete blank fields.

AppleWorks 5.25-inch

AppleWorks 3.5-inch



Apple® II

AppleWorks™ Program Disk

ProDOS® based
© Apple Computer 1983-1986

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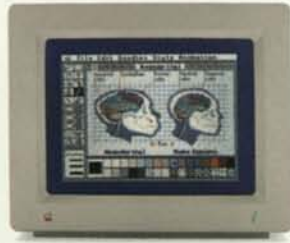
Apple® II

AppleWorks™
Startup, Program and
Sample Files

Once your customers
buy an Apple II,
they can always
change their minds.



Apple IIcs



AppleColor RGB Monitor



Apple Monochrome Monitor



ImageWriter II



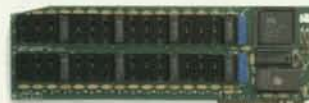
Apple IIe



ColorMonitor IIe



Apple II SCSI Interface Card



Apple II Memory Expansion Card



Monitor II



Apple IIc



AppleColor Composite Monitor



UniDisk 3.5



Apple 5.25 Drive



Apple IIc Monitor with Stand



Apple Monochrome Monitor

We think it's wonderful when plans change.

Like when a customer buys an Apple II for the kids. And then discovers it can run a business, create fine art, analyze investments, or even compose music.

Whenever plans change, every Apple II can accommodate them.

So regardless of how or when your customers' needs change or grow, you can show them these products.

And give 'em an eyeful.



Apple 3.5 Drive



Apple II SCSI Interface Card



LaserWriter



Apple Hard Disk 20SC



Apple Personal Modem



Apple 5.25 Drive



Apple IIcs Memory Expansion Card



Apple IIcs System Fan



AppleMouse IIe



Apple Hard Disk 20SC



ImageWriter II with SheetFeeder



Apple Personal Modem



UniDisk 3.5



UniDisk



Apple IIcs Upgrade



32K Memory Option



ImageWriter II



Hand Controllers



Apple Personal Modem



Joystick



Apple IIc Memory Expansion Card



AppleMouse IIc



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professionally speaking

An Information Service For Consultants And Accountants

Volume 1 No. 2

Local Personal Computer Networks Increase Office Flexibility

By Suzanne Weisenberger

Until recently, local networks were only available on large minicomputer systems. Now local personal computer networks are promoting flexible system growth with low-cost, easy access computing power. And users are enjoying expanded capabilities in sharing data, computer-to-computer communication, and cost-sharing of expensive peripherals (printers and mass data storage devices).

Local networks consist of many "personal work stations" connected together by cable. A typical personal work station includes a personal computer, a monitor screen, and a mass storage device such as a disk drive. The work station also has provisions for resource sharing.

Local minicomputer networks often have one central processor (computer). But as more users tie into the network, the central processor has less time for each — thus, a system that runs fast with four users barely drags along with forty.

In a personal computer network, each new work station adds an entire computer. The "distributed-processing" nature of these new networks lets each user experience fast, interactive responses, independent of the number of stations on line. Economical computing power is dedicated to the work station, enhancing each user's overall effectiveness and productivity.

The work station is a multi-functional tool that serves the needs of one individual. It has the versatility to address a user's personal computing needs as it stands alone, except when performing some network-level command. This concept gives the user instant availability and personal control at all times.

Types of Networks

A local network is one that serves a well-defined and generally self-enclosed area. A network that runs

through an office building is considered a local network. Most local networks are limited in the distance each work station can be placed from the master station, with approximately a thousand feet being the average maximum separation. Most local networks require that the station communicate by a cable, meaning that they must be physically linked.

A network that needs to cover a wider area usually links stations via standard telephone lines. This offers the advantage and flexibility of being able to place stations almost anywhere in the country, allowing geographically divided offices to communicate easily with one another.

Currently, there are several ways to link personal work stations in a network. In a "star" configuration network, each station is linked only with the master work station, and all communication between stations is handled by the master station. This method is relatively low-cost, but since all communication must go through the master station, overall speed decreases as the number of stations increases. Star networks are



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Apple III
New Products Section
Apples In Auditing

Auditing With An Apple

By Tony Dirksen

As more companies have computerized their financial records, the firms that audit them have had to adapt their testing procedures to keep pace with the new technology.

Arthur Young & Company has been a leader in adapting to computerized auditing, and among the first to recognize how personal computers could help their auditing procedures. "In the past, we've depended only on outside service centers or run our audit software directly on the client's system," explains Rick Richardson, Arthur Young's national director of computer auditing. "But the software can't be compatible with every system, and, even when it is, the client can't always provide the necessary computer time to run it."

Today, an Apple III is helping Arthur Young perform audit testing more efficiently and effectively. Integrated into a larger system called the AuditComputer™, it's the latest development in the "Big Eight" accounting firm's commitment to the increased use of microcomputers.

Here's how it works: Arthur Young's computer-trained auditors transfer selected financial data from the client's computer system onto the AuditComputer's "hard disk." The information on the disk is then analyzed

(continued page 12)

therefore a good choice only when there's a relatively small number of stations.

Work stations can also be linked by tapping into a loop of wire. This is called a "ring network." As information is carried around the loop, each station must constantly check to see if the information being passed has its address. The advantage of a ring network is that communication between computers occurs directly and flexibly, without being limited by the capacity of the master station.

A third method of linking stations, called "common bus," consists of linking a master station directly to a length of cable. Each work station is hooked into the cable and monitors the transmissions destined for it. The common bus structure is similar to the ring network, except that common bus systems do not close the loop of cable.

Apple Compatible Network Systems

Commercially available local networks of personal computers are typically multi-user, multi-function systems; the entire system does not have to be dedicated to just one user or one application. Each user in the network gets an individual work station with local computing power, but shares disk storage and other expensive peripheral devices. By partitioning and sharing disk storage, it is possible for different users to run various applications simultaneously. Current applications being used on local networks include: accounts

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Nestar

Nestar's Cluster/One Model A™ system, a typical personal computer network, was designed to provide sophisticated local networking and resource-sharing features for Apple computers. This type of design allows station-to-station communications without going through a central storage device, or computer station. Because control of the network is distributed over many stations, instead of through one centralized controller, the chances of total network failure are virtually eliminated.

Apple IIs and Apple IIIs, including IIIs interfaced with the new ProFile 5-megabyte hard disk (see *New Products*), can be freely intermixed as workstations in the Cluster/One Model A network. The Apple III is fully supported within the network in both its native SOS operating system, as well as its Apple II emulation mode. The ability to combine IIs and IIIs within the same network introduces expanded features and capabilities to the professional and business local area network user.



The Cluster/One network will economically support up to 65 Apple stations on a single network. Apples are connected by a 16-line flat ribbon cable and network interface card, for distances up to 1000 feet.

Each Cluster/One Model A network has several Apple II server stations which act as managers. Server stations, outfitted with the Nestar Server Function program, provide direct services to all other stations on the network. Commonly used servers include: file server (manages shared access to floppy and hard disk files

for all users), Print Server (unspools files from the disk and prints out on a queue basis), communications server (manages remote terminal and main-frame access), data base management server, and file transfer server (transfers files within and between networks).

By adding the Nestar hardware and software programs, a stand-alone Apple II becomes a network user or server station. Peripheral devices used by an individual station, such as floppy disks, lower-cost printers, or graphics tablets, can continue to be used without interference from the network.

Apple stations can easily communicate with any other station in the network. Most station-to-station communication is managed by the file server. The file server software accepts file transaction requests from client stations on the network and then, in turn, communicates with the mass storage devices. A built-in set of commands are used by the file server to create and maintain disk directories and files within the directories.

Using the file server's Password-Protection mechanism, data files can be password-protected and usage-protected. The file server can require a password before allowing access to a particular file so that only one designated user or group of users may use it.

The file-server station also includes a real-time clock/calendar which maintains the time (hour/minute/second), date, day of the week, and month of the year for all stations on the network. This date-stamping feature is essential in applications such as banking transactions, reservation systems, and on-line data collection.

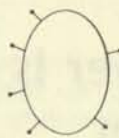
Print service is provided by a network station with one or more printers interfaced to it. The print server accepts print requests from the network and, handling requests in order received, finds a file on the specified file server and prints it on the specified printer. Typically, a print server has several printers attached to it: one for drafts and listings, others for letter-quality copy.

Nestar has recently introduced a new software and hardware option to their network system. Now, daily storage back-up of all file information can be quickly accomplished by a high-speed cartridge tape drive. The tape drive requires no more than 10 minutes to create or restore a back-up

Local Area Networks



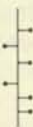
Loop



Ring



Star



Bus

tape on Nestar's 16.5-megabyte hard disk.

The Nestar network will support as many as two, 16.5- or 33-megabyte Winchester hard disks, allowing fast, easy access to important information. Thus, the Cluster/One Model A network makes significant dedicated computer power and storage available to the user at a low-cost.

Corvus

Corvus System's Constellation™ and Omninet™ network systems bring mass storage, increased speed and multi-user capabilities to the Apple. Both of the Corvus systems operate as interactive networks with full computer power at each station.

Constellation and Omninet are both multiuser/multifunction network systems. This basically means that the entire system does not have to be dedicated to one application. The Corvus hard disk can be divided so that users can run several applications simultaneously.

The Constellation and Omninet systems can connect different models and brands of computers. These computers and their operating systems are interfaced to the disk drive through an interface card placed in the computer. Typical operating systems supported are single user, file-oriented types such as BASIC and UCSD Pascal.

Each individual computer in a Corvus system can operate without restriction on assigned areas of the disk. All computers with common operating systems can share those

portions of the data base assigned to them and can communicate with each other in a fully interactive mode. However, they cannot communicate interactively with computers using a different operating system.

The Constellation is a back-end local network in which up to 64 computers are connected in a star configuration. In a star back-end network, the computer structure surrounds the central storage and gives the Apple direct access to the large shared data medium, the hard disk drive. The central storage is accessed directly by each computer without going through another computer.

The Omninet local network uses shielded twisted pair cable for connections and can easily accommodate up to 64 users. Total network length is limited to 4,000 feet, which is typically more than enough to cover a multi-story building or office complex. The mass storage medium for the network consists of a 5-, 10-, or 20-megabyte hard disk system which runs existing Constellation software for multiple users on the system.

Networking Today and Tomorrow

It is imperative today that managers and executives have fast access to information for decision-making. The power and versatility of the personal computer enables them to manipulate, integrate, and analyze important information quickly and effectively. ☐

Letter From The Editor

Your response to our first edition of *Professionally Speaking* was truly gratifying. We sent copies to managing partners of major accounting and consulting firms, and included extras for distribution, but we weren't sure how much exposure the newsletter would actually get. Well, it seems to be getting a lot!

Over the past three months your letters have poured in, and almost without exception they've been enthusiastic and positive. Some of your comments were:

"I was impressed with its content, particularly the critique of software products. Additionally, the newsletter was particularly timely, since we recently bought an Apple. . ."

"It appears to be an informative update about a segment of the computer industry that is becoming an important area of our practice. . ."

"The idea of having a publication devoted to professionals is terrific. . . Hopefully the publication can be a much-needed, written moral support for us, as well as a source of encouragement to try to give our clients the very best service possible. . ."

We're pleased that you like *Professionally Speaking* and that it's proving to be a useful resource. By the way, we'd appreciate any suggestions for subjects you'd like us to cover, and if you're interested in writing an article, please contact me directly.

Also, if you have not already bought a personal computer and are comparing what's available, or if you have any questions relating to Apple Computer, Inc. and the microcomputer industry, please address your inquiries to me. One section in future issues will specifically address those questions. We'll try to answer as many as we can.

Again, thanks for your support! ☐

Barbara Blumenthal
Manager, Executive Programs

IRS Rules Program Developer Is Income Tax Return Preparer

The Internal Revenue Service has issued a letter ruling, No. 8111071 (Dec. 17, 1980), telling an individual who developed a program to calculate tax returns that he will be considered an "income tax return preparer" and subject to all the regulations of the Internal Revenue Code.

According to the IRS, the individual owns a microcomputer and has developed a program which he plans to license to taxpayers, who will enter their own figures in filling out Form 1040, Schedule A or B, or Form 1040A. The program is user-oriented in that it explains each entry so that the taxpayer who has never used a computer before and knows very little about income tax rules can still use the program.

The IRS pointed out that the Internal Revenue Code (Section 7701(a)(36)(A)) defines an income tax preparer as anyone who prepares an income tax return for compensation; the regulations state that an individual who furnishes a taxpayer enough information and advice so that completing the return is really a mechanical or clerical matter is considered an income tax return preparer.

The IRS distinguished the computer program from those computerized tax services that provide only computational services to taxpayers who have already determined what should or should not be included as income and which items can or cannot be deducted. This new program, said the IRS, "is user-oriented in that it explains each entry to be made . . . the substantive decisions are made by you [the programmer] when the computer indicated line by line what entries are to be made on the form," and therefore the inquirer's service is an income tax return preparer.

CLTR Comment: It seems likely that this ruling puts an end to the service this individual was going to provide. Income Tax Regulations Section 1.6695-1(b) requires a manual signature by the preparer on the tax return except in three circumstances which don't seem to apply in this situation. As we read the

IRS ruling, the program is designed for mass distribution, and obviously customers would not be interested in providing the developer with a copy of their income tax returns. Since the penalty for the preparer failing to sign the return is \$25, each time, it seems unlikely that the program is very marketable.

This ruling is another example of how government can create roadblocks in the development of computer services, even when the service can be useful. This is why the application developers should consider getting professional advice before putting programs and services on the market. Someone familiar with the regulatory environment in the application being considered may save thousands of dollars pointing out legal traps for the unwary.☐

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ProFile: Apple's Hard Disk for the Apple III

By Kathy Krueger

Apple's new ProFile™ Personal Mass Storage System for the Apple III has a capacity of 5 million bytes of data – the equivalent of about 1500 typed, single-spaced pages of text. An advanced, 5.25-inch, hard disk using Winchester technology, ProFile is housed in a compact case styled for the Apple III, and comes complete with demonstration software, Apple III interface board, and cables.

Designed for professionals with large-scale data storage needs, ProFile provides rapid data access (it's approximately 10 times faster than conventional floppy disk drives), and a central storage system for budgeting, forecasting, or accounting

files. It uses the Apple III's Sophisticated Operating System to advantage and lets you combine and organize files as one large file, many small files, or a combination of large and small files.



With the ProFile/Apple III system, financial planners have total control at their fingertips and can respond to management's toughest "What if?" questions within minutes. A division of one medium-size company integrated all its planning activities into a single plan, using an Apple III and ProFile, and DESKTOP/PLAN III software. (This division has a multimillion dollar monthly sales volume and a headcount of more than 225 people.)

In this division's case, having one, central, mass storage location has greatly reduced planning time and added new capabilities. Before, data for department and division budgets had to be kept on a number of separate floppy diskettes, and couldn't be chained together automatically. Now all the different aspects of planning can be summarized, and even automatically rolled into a profit and loss statement.

Loaded on ProFile are the division's entire two-year sales plan, its 18-month departmental budgets for 25 departments, the complete divisional P&L statement per month, and summaries of headcount, consolidated expenses, capital outlays, key ratios, and finished goods inventory. All this data occupies only about 50 percent of ProFile's huge capacity.☐

Case Study:

Apple Personal Computers at Arthur D. Little, Inc.

By Norman Weizer

Arthur D. Little, Inc. (ADL) is a large, diversified, management consulting firm with home offices in Cambridge, Massachusetts, and branch offices around the world. With a total staff size of over 2500 individuals, the firm consults in such diverse areas as Biological/Environmental systems, Chemical Management Consulting, Food and Agribusiness, Information Systems, Life Sciences, and Telecommunications Sciences.

ADL's administrative and accounting computing needs are handled by an IBM 4300 mainframe. ADL also uses large word processing and printing systems, from various vendors, to handle its most important product, paper.

The Information Systems section of ADL primarily deals with data processing, information processing, and office automation strategies, plans, and systems for providers and users of these types of systems. It is composed of two vice presidents, 55 professionals, and 22 support staff. Many of the professionals are highly skilled in the use of mainframe data processing systems, with up to 30 years of experience on mainframe computers of various types.

Distributed among the members of this section are seven Apples, and several other personal computers. Two of the Apples are company-owned, while the other computers are personally owned by staff members. One of the company-owned systems has been dedicated to the general use of the section's personnel. This Apple has been put under the care of a staff member (probably taking less than 5% of her time). It is scheduled on a first-come first-served basis and is kept on a rolling table for portability.

The general-use system is a 48K Apple II Plus with a language system, Silentype® printer, two disk drives, a serial interface card (used mainly for controlling printers), and an 11" black and white monitor. Heavily-used software packages include VisiCalc®, VisiTrend/VisiPlot®, Apple Plot, and Applesoft BASIC. The language card is used primarily as extra memory to hold large VisiCalc models, rather than to program in Pascal.

The system is financed by charges against assignments, calculated on a

per-hour basis, and set at a level at which the system can be steadily enhanced with additional hardware and software packages over a period of time.

There is a firm rule that the Apple and all of its software must remain in the office during normal business hours. We encourage people to learn how to use the Apple and the various software packages (at no charge) whenever the Apple is not needed for casework. We also encourage people to take the Apple home during non-business hours, to work on any type of personal or business project that they desire, as long as it is returned at the beginning of the next business day.

We use the Apple probably 30-40% of the time during business hours. This is fairly close to the comfortable limit for a resource intended to be available on an as-needed basis. If the Apple's use approached 60% on a consistent basis, we would consider acquiring a second one.

The system is also used at home at least one weekend a month. Sometimes a staff member becomes interested in learning how to use it and takes it home several nights or weekends in a row. Invariably, the staff member then decides to buy his or her own Apple. The home use of the section's Apple then decreases until another staff member becomes interested.

Each of the staff members with Apples use them differently. Several use a word processing package for rough typing reports. The printed versions of these reports are then turned over to the support staff for entry into our large word processing system and final preparation into full-scale ADL reports.

However, Apples are primarily used (90% or more) for financial modelling. The work generally falls into three categories: administrative, assignment-related computation, and presentation and report preparation.

In the administrative area, some of the uses include preparation of budget estimates for new assignments, generation of expense reports (especially those involving two or more different currencies on the same report), and general administrative tracking of performance measures

and backlog of various parts of the section.

The assignment related work is probably the most varied and most interesting, and is mostly carried out using VisiCalc. In some cases, our clients can exercise VisiCalc models by themselves, as part of an overall consulting assignment. One example is a VisiCalc model we are preparing for use by clients during strategic planning assignments.

The client himself can enter various operational financial data and assumptions on one part of the VisiCalc model or sheet. The remainder of the sheet then generates extrapolations of current data, various important financial ratios, and estimates of future performance, based upon the assumptions which the client has made. On the video display screen, the sheet is divided between client input and a summary of the results based on this input. We are also planning to have data oriented on the sheet in such a way that VisiCalc data can be directly inserted into VisiPlot programs, to automatically generate graphic representations.

As part of one system design assignment for a client, we developed five alternative system configurations for distributed data entry and processing systems. Some of the alternatives themselves involve the use of many Apples.

First we set up a VisiCalc model (see Exhibit 1) with all the critical parameters at the top and a summary cost comparison of all the alternatives at the bottom. We then could change any or all of the critical parameters, including number of remote stations, operational personnel salaries, etc., and determine what the effect was on all of the configurations. Using this model, we were also able to carry out a sensitivity analysis to determine if the cost differences between the various alternatives were seriously affected by reasonable changes in any of the configurations.

We have also developed simple data bases with Apples and VisiCalc. For example, we keep a history and the current status of the IBM mainframe product line on a VisiCalc model. In this model we have the

(continued page 6)

Microcomputers and Timesharing

By John C. Gazlay

The rapid growth of microcomputer sales over the past few years has probably had its greatest impact on timesharing service companies. The reason is clear: microcomputing is a direct substitute for many of the capabilities previously offered to the individual or small business only by the timesharing vendor.

To evaluate the offerings of these two providers of data processing services, let us look at the four major components of their products:

- Software
- Hardware
- Maintenance or support
- Cost

Software

The availability of good software – specifically the application packages – is the most critical factor to consider when deciding between alternatives. Both microcomputers and timesharing services offer a broad range of application software. The major difference is that where timesharing vendors typically offer one, powerful,

generalized package for any particular application, the microcomputer companies and their software supporters offer several different, but generally less powerful, alternatives.

Users can select from the many microcomputer packages the one which will come closest to his/her needs and budget, or else commit themselves to a single timesharing product. My experience with both kinds of software indicates that the timesharing packages often are more powerful than those available for processing on microcomputers, but are significantly less "friendly," and require thick reference manuals or formal classroom education to take full advantage of them. Microcomputer programs, on the other hand, are often self-teaching and offer straightforward solutions to many common data processing problems.

Hardware

Microcomputers provide the user with a complete, fairly portable system, consisting of a central processing unit, video display device, peripheral

storage unit(s) and perhaps a printer. The timesharing vendor, on the other hand, provides access to similar resources through a large mainframe computer. Timesharing hardware is also portable, because the only devices the user needs to access the timesharing system are a small terminal, a data communications device, and an ordinary telephone.

Thus, the microcomputer-based system is a complete scaled-down "big system," dedicated to the user, whereas, the timesharing service offers small slices of computer time and a share of the resources of its big system to many different users.

Service

Maintenance and support are important factors to consider if you're selecting a large mainframe computer which will store large amounts of corporate data and which would represent a major investment. While these considerations are also important when selecting a microcomputer or timesharing service, they are far less significant than software availability and other considerations.

With either alternative, timesharing or microcomputing, the most likely device to need regular support is the printer, because it is the mechanical, not the electronic, components which are most susceptible to failure. The next most likely support requirement is in the area of applying or stretching the capabilities of the software. Here, both microcomputer software and timesharing vendors provide valuable assistance, in a timely manner, and usually over the telephone.

Costs

The final evaluation criteria in choosing between microcomputing and timesharing is cost. In fact, cost is likely to be as important as the availability of good software when making a decision. If you compare costs, microcomputers will almost always be less expensive on an annual basis than timesharing in solving the same problem. This is especially true for applications requiring medium to high volumes of data storage, such as accounting uses.

For instance, a 5.25-inch diskette can store on-line about 140,000 characters of information at a cost of about \$5 (the cost of the media). By comparison, companies charge

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Timesharing or Microcomputing? The Apple does both.

about \$.50 per 1,000 characters per month, or \$70.00 per month for the same amount of on-line storage.

My own analysis of the cost trends of these two alternatives indicates that microcomputing was the more cost effective choice for our particular applications in 1980. And timesharing costs have been rising at approximately the rate of inflation for the last few years. During the same period the power of microcomputer systems has been increasing, while their costs have remained relatively stable.

One of the offsetting factors to the initial cost of a microcomputer system is that after the primary application(s) have been processed, the system is available (at essentially no cost) for other work, education and enjoyment. With timesharing, the user is charged on a pay-as-you-go basis. The more the system is used, the more it costs.

Armed with this information, it is now your turn to evaluate the efficiency and effectiveness of timesharing and microcomputing in automating the approach to your unique situation. And if you insist on hedging your bets or assuring yourself maximum flexibility, you can always buy data communications software for your microcomputer that lets you use it as a terminal with a timesharing service. ☐

About the author:

John (Jack) Gazlay is a partner and the West Region Director of Computer Auditing in the San Francisco office of Arthur Young & Company. As one of Arthur Young's senior computer auditors, he has had extensive electronic data processing experience. He currently serves on EDP committees for the American Institute and the California Society of CPA's.

new products

Apple III . . . Personal Computing For The Professional

By John Santeler

Decision makers and professionals in every field will always need to plan budgets, generate reports, make projections, and handle dozens of other tasks. The Apple III can help accomplish these goals faster, more accurately, and with more useful results.

Professional computers used to be bulky, expensive, and difficult to operate. But the Apple III is a professional computer with an important difference: it's designed for personal use.

"Personal" means that the Apple III is a computer so simple to operate that extensive and time-consuming training is not required. It is also a computer that does not have to be shared, but is always available and ready to be used one-on-one.

With its range of powerful software, the Apple III increases personal productivity in formulating and communicating decisions, creating and distributing memos and documents, and performing numerous day-to-day business functions.

Financial Modeling and Forecasting

VisiCalc III™ is an "electronic worksheet," 63 columns by 254 rows in size, for designing, editing and displaying data. It lets you link and take advantage of words, numbers and formulas required for daily decision making. Built-in functions (such as Sum, Average, and Net Present Value) simplify numerical calculations and allow you more time to concentrate on making decisions instead of working on a calculator.

VisiCalc III is easy to use and acts as a natural extension of the thinking process. It's especially valuable for tackling "What if?" questions. As information is modified in the model to reflect different alternatives, VisiCalc III calculates and displays the results instantly.

Accountants use VisiCalc to structure and prepare financial statements. Sales managers use it to develop and maintain forecasts. Administrators use it to plan budgets and allocate resources. VisiCalc III makes decision



analysis simple by organizing information into a row-and-column format and allowing for alternatives to be quickly analyzed.

Business Graphs and Charts

Graphs are often essential for understanding and communicating numerical data. Apple III Business Graphics makes generating and printing them easy.

Designed to work directly with VisiCalc III, Apple III Business Graphics provides the tools for combining and plotting information stored in one or more VisiCalc files, without having to re-enter data. With Apple III you can create, modify and print (to a monitor, printer, or graphic plotter):

- automatically scaled and numbered line, bar, and pie charts, from numerical data;
- exponential, parabolic, and sinusoidal plots;
- best-fit curves;
- sums, differences, and multiple copies of existing graphs.

Word Processing

Apple Writer III simplifies creating, editing and printing any kind of document, from simple memos to form letters or lengthy articles and reports.

Apple Writer III has several special features which help eliminate redundant typing when generating large documents. Easy-to-use commands let you quickly insert or delete words, sentences, paragraphs, or large blocks of text. Text can also be moved within a document or between documents. In addition, vocabularies of frequently used words or phrases can be stored in a "Glossary" file and inserted into text with just a few keystrokes.

Apple Writer III is designed to work with other Apple III software products. For example, VisiCalc III models can be inserted into the middle of reports, to present tabular information or simplify generation of complex financial documents. Apple Writer III can also be used with Apple III Mail List Manager to generate form letters that have a personalized touch.

With a unique feature called the Word Processing Language (WPL), you can automate frequently performed tasks by combining all of the manual keystrokes into a single program, which can then be performed at

any time with just a few keystrokes. WPL is extremely useful for automating the creation of forms such as memos, invoices, and standard notifications, and lets you effectively customize your use of Apple Writer III to simplify any redundant document processing tasks.

Mail List Management

Apple's Mail List Manager is a highly flexible software package for creating and maintaining names, addresses, phone numbers, and classified information on customers or clients.

Mailing label files of up to 960 entries can be created, edited and printed. (Larger lists may be maintained by segmenting them into files of 960 labels each.) These labels may be specified to be any format appropriate to the application, whether it be foreign or domestic mail. For modification or information retrieval, individual labels may be found by searching on individual fields, such as name and zip code, or even by approximate name (a useful feature when the exact spelling of a name is not known).

Printing with Mail List Manager is very flexible too. Mailing, phone, and other kinds of lists can be printed in their entirety or in part. When printing labels, any size and type of label on the market can be used.

Whether mailing a form letter to a large list of clients, or brochures to certain businesses within a certain zip code, Mail List Manager handles the task quickly and efficiently.

Communications

The Apple III personal computer allows you to communicate with other computers through the Access III software package. This product allows the Apple III to send or receive information from other systems, or act as a smart terminal with certain timesharing systems.

Access III uses the Apple III's built-in serial port to transmit information to and from another Apple III or a central computing system. This information can then be displayed on a monitor, and printed or stored in a disk file. This is convenient when including corporate data in making a decision or generating a report.

In addition, Access III's terminal emulation mode lets you use the Apple III as a terminal in any system

that supports asynchronous communications. This reduces equipment costs by allowing the Apple III to double as a terminal and a personal computer.

Professional Growth

Because the Apple III is a personal computer for professionals, it can be tailored to meet the needs of today and expanded to meet the needs of tomorrow. The Apple III is designed with growth in mind. The most common accessories (such as monitors, printers, and up to three external Disk III drives) can be plugged right into the back of the machine, without having to open the Apple III.

As needs grow and applications become more sophisticated, the Apple III's internal memory can grow too, from 128 to 256K bytes, without using any of the Apple III's four internal expansion slots. The slots allow you to quickly and easily add interface cards for mass storage (on ProFile, Apple's 5-megabyte hard disk), communications, plotters, and many other types of applications.

In addition to the Apple software, over 300 companies produce and distribute Apple-compatible products, more than any other personal computer manufacturer. Most Apple II programs can be run on the Apple III thanks to a built-in "Apple II Emulation Mode." This kind of support and upward compatibility means true security for the investment. Thus, as professional computing needs become more sophisticated, the Apple III has the essential tools to keep moving ahead.☺

Why Apple Developed SOS™ — the Sophisticated Operating System — For the Apple III

By Don Williams

In 1979, when Apple was designing the Apple III, the idea of the single-user personal computer really began to take off. By this time, Apple had several years of experience working with software developers, users, and dealers. The hardware and system software of this new computer system had to accommodate the applications, the users, and software development that would result from the exploding personal computer technology.

It was becoming apparent that the personal computer of the 1980s and beyond would require a much larger internal memory space. At the same time, the cost of massive memory was dropping dramatically.

With larger memory space, software developers could easily and quickly build more user-friendly application software that was more "goof" proof, and more easily maintainable. For it to be easy-to-use, though, it was important that the job of managing the allocation of this very large internal memory should be transparent to the application developer.

It was also becoming apparent that many new devices, such as large-capacity disk storage devices and printers, would soon be coming to market. The introduction of new, lower cost, higher performance devices would continue for years. These new devices would have to be easily integrated with the computer hardware, system software, and application software that users had purchased before the devices were available.

Finally, it was becoming apparent that most personal computer users maintained large libraries of numerous, relatively small files.

Based on these characteristics of modern technology and the habits of personal computer users, the operating system for the Apple III would have to incorporate the following:

- a memory management facility that effectively allowed you to use up to eight times the amount of memory then available on personal computers. Programmers would have to be able to use this memory without concern for the specific memory locations being used.

- a device management facility with the following characteristics:

1. Each user should be able to incorporate software "drivers" for only those devices attached to the system and required by the application.
2. As devices were to be added or deleted, it should be relatively easy to add or delete the drivers.
3. Programs operating under control of the operating system should have a common way of interfacing to these devices.

- a file management facility to allow for the creation, updating, and deletion of a number of files, limited only by the space available on the device. Additionally, the type of device being used for these files should be transparent to application programs.
- a system startup facility to let application programs be automatically initiated when a user turned on the computer.

When Apple was developing SOS, operating systems were still written for programmers. They employed the technology of the early 1970s, when inexpensive computers were a rare phenomena used mostly by technically competent programmers and engineers for writing machine language programs.

Also, memory components were very expensive in the early and mid 70s, and the common computers had only 16-32K bytes of memory. Most available operating systems accommodated a maximum of 64K of memory. The Apple III, though, was being designed for 128-256K of internal memory.

External storage devices at the time had capacities of 262,144 bytes of file storage. With this size of device, a maximum of 64 files in a device directory was more than adequate. However, the Apple III was designed to work with ProFile, Apple's Winchester-technology hard disk, with 5,000,000 bytes of file storage. Hundreds of files would be able to be stored in such a huge space.

In addition, as new peripheral devices became available, machine language programmers had to go into the computer's operating system and "shoe horn" code to drive these devices in a fixed amount of storage space.

Clearly, the available operating systems did not meet the requirements for the personal computer of the 80's such as the Apple III.

And thus was SOS born: out of the necessity to provide the architecture that would make personal computers more useable in the 1980's.

Today, SOS is shipped on a diskette with every Apple III. It is comprised of two files, SOS.KERNEL and SOS.DRIVER, and has five modules: a File Management System, a Device Management System, a Memory/Buffer Management System, an Interrupt Management System, and an Event Management System. On power-up, SOS is automatically loaded into the Apple III; thereafter it controls the operation of the entire system.

Device drivers for nearly all serial printers, the console, graphics output, disk drives, and communications are provided as part of the SOS package. Additional drivers are shipped with all Apple supplied peripheral devices. Users can customize SOS.DRIVER using the System Configuration Program supplied with every Apple III. ☐



apple resources

□ For a professional discussion of tax and legal issues affecting computer use, you may be interested in "Computer Law and Tax Report," a monthly newsletter published by Warren, Gorham & Lamont, Inc., 210 South Street, Boston, MA 02111. An information and intelligence service for computer users and their professional advisers, CL&TR reports on such topics as the patentability of software, computer standards activities and developments, professional tradeshows, and new publications.

□ "SATN, The Journal for VisiCalc Users" is another newsletter you should know about. Published by Software Arts, Inc., the creators of the VisiCalc® program, SATN is for VisiCalc users at all levels. Featured are in-depth articles on specific functions, new applications for VisiCalc, and general pointers for using the program in more efficient and effective ways. For a sample copy and subscription information, contact Software Arts, Inc., P.O. Box 527, 675 Massachusetts Avenue, Cambridge, MA 02139, (617) 491-2100.

□ *The Business & Home VisiCalc Book* should be at your favorite bookstore or computer shop by now. The softcover book is especially for those who don't have time to do their own programming, and presents financial models such as net worth statements, cost of sales, break-even point, and many other practical home and office applications. Included are a picture of each model, a listing of each program (ready to be typed into your computer), a narrative of each model's use, and suggestions about changing the programs to meet your specific needs.

□ *Depreciation Planner*™ from Dakin5 Corporation lets you use your Apple computer to keep track of depreciable assets for accounting and tax planning purposes. Designed to work independently or with the firm's *Controller* (available through Apple) or *Business Bookkeeping System*, the program incorporates old and new depreciation methods used for assets purchased before or after January 1981, respectively.

Faster than manual record keeping, *Depreciation Planner* will save you time. It'll also reduce your chances for error, and free you from excess paperwork. To run it you'll need Applesoft BASIC in memory, and two disk drives. See your dealer for a demonstration, or contact Dakin5 Corp. in Denver, Colorado.

□ Users of the Dow Jones News/Retrieval Service (see Apple's *Dow Jones News & Quotes Reporter* software package) now can electronically access transcripts from Louis Rukeyser's acclaimed national television program "Wall Street Week." Just use your Dow Jones password to call up all or part of the transcripts of the current week, or of the past three weeks' shows. For further information, call Dow Jones Customer Service Hotline: 1-800-257-5114 (or in New Jersey, 609-452-1511).



□ *TrendSpotter*™ is a new business graphics and forecasting analysis package from Software Resources of Cambridge, Massachusetts. The program generates color graphic displays, calculates and displays trend lines, performs mathematical and statistical computations, prints graphic and tabular data, and edits and updates files. It can also generate and read VisiCalc-compatible files.

□ "Have you been robbed yet?" reads the advertisement for Anchor Pad computer locks. If not, you were lucky – over a half billion dollars in office equipment was reported stolen in 1980 alone. Anchor Pads can help prevent you from becoming the next victim. Unobtrusive metal pads that anchor directly to desks or counters without marring them, Anchor Pads are maximum security locks that keep your Apples in place until you want to

release them. For more information, contact Anchor Pad, (415) 441-2593.

□ With a new hardware/software package from Micro Plus, Inc. you can transform your Apple II computer into an IBM 3270 terminal. The *Micro Plus 3270 Emulator* package lets your Apple II operate in three modes. Mode 1 is standard Apple II mode. Mode 2 is 3270 emulation mode, in which the Apple functions as a terminal, with bisync protocol, over leased or dialed-up communication lines. Mode 3 (which requires the use of a D.C. Hayes Micromodem™) is a TTY terminal mode that converts the Apple II into an 80x24 ASCII terminal.

Included in the package is a display card (either a Smartterm™ or a Bit 3 Full-view 80 Video Board™) that transforms the Apple II standard, 40x24 display into an 80x24 format. With the card installed, the Apple II will produce either display format.

Also included is a Micro Plus synchronous communications adaptor that provides the interface from a modem to the Apple II or Apple II Plus computer. The emulator software package is contained on a standard, 5.25-inch floppy diskette. A second, backup copy is also provided.

To use the Micro Plus 3270 emulator package, you'll need: an Apple II or Apple II Plus with 48K of RAM; an Apple II floppy disk drive and controller card; and a display monitor (TVs will not work). Recommended is a 12-inch green phosphor display from SMC International, but most other monitors will work as well. For more information, contact Micro Plus, Inc., 2832 LaPort Drive, Minneapolis, MN 55432, (612) 786-4514.

□ Using Saturn Systems' 32K RAM board, you can expand your Apple II's memory to 80K. Several utility programs accompany the board and allow you to use the expanded memory efficiently. An additional software package (VC-EXPAND), lets you utilize the board to accommodate larger VisiCalc models. The board is available from Saturn Systems, Inc., Box 8050, Ann Arbor, Mich., 48107, (313) 665-6416.☺

American Management Association Standardizes on Apple

By Jon Covington

The American Management Association (AMA) has initiated a program that uses Apple II Plus computers to deliver managerial training. Without understanding computers, corporate middle managers won't survive in today's competitive environment, the AMA believes.

"Computer literacy is a distinct asset when competing for promotions," says Dr. David Matthew, manager of Technological Product Development. "In the next few years, it will become a requisite for corporate survival – and that prospect has to terrify tens of thousands of managers."

"As the pre-eminent provider of practical management education in the United States and Canada, we believe the AMA has an obligation to help managers adjust to technological change, using it to grow as professionals instead of being brushed aside by it."

The AMA is gearing up by offering seminars that help managers understand computers and how they affect the corporate world. The seminars also give participants hands-on experience in "real world" simulations designed to instill confidence and reinforce new concepts.

The seminars are offered by the AMA's Finance Division and Information Systems & Technology Division. Other seminars using Apple computers in marketing, finance, purchasing, administrative sciences, and technology management will be released during 1982. And one of the highlights of the AMA's four-week management course, the Computer Management Business Simulation, is being completely revised for use on the Apple computer.

"Only the versatility, the portability, and the cost of the Apple can allow us to replicate this intense and experiential learning experience for thousands

of managers a year all over the United States and Canada," says Dr. Matthew. "The Apple's presence in the training room adds an immediacy, an impact, and a depth to the learning experience which would not be possible in any other context."

Through their publishing arm, AMACOM, the AMA also intends to release a comprehensive line of applications software, starting this year. AMACOM Manager of Special Products Phil Henry says, "Our first Apple products will be third-party business applications software which the AMA has tested extensively and on which we can comfortably stake our reputation. We believe the average business person is confused by the software marketplace today, and would welcome some credible evaluations of good general business applications."

According to Dr. Matthew, the AMA will also be introducing highly sophisticated management training packages featuring Apple-controlled delivery systems. These systems will include interactive audio-visual media training materials, such as video tape and videodisc. "I can see a bright future for the fruits of microprocessor technology and the 'new books' of the future."☐

Auditing (continued)

using special audit software developed for the Apple III, so the client often does not have to provide additional computer time for audit testing. The records can be reviewed and sampled without any risk to the information contained in the client's files.

The AuditComputer was developed so that Arthur Young auditors could directly examine and test client records produced on a wide variety of mainframe and minicomputer systems. With the AuditComputer, their

auditors have direct and easy access to all the data they need to perform their own analyses.



Arthur Young's computer auditors will typically only need the help of the client's programming staff at the beginning of the project to facilitate the transfer of information from the company's computer. The client's staff gives the Arthur Young professionals some basic information about how the computerized files are stored. Then, the information is transferred to a large-storage-capacity 20-megabyte hard disk by any of three methods: 1) direct transfer using telecommunications from the client's system to the Arthur Young offices; 2) copying from standard format floppy disks created on the client's system; 3) taking part of the AuditComputer – a large disk Z80-based microprocessor – out to the client's computer and performing the transfer on site.

Once the financial information is loaded onto the hard disk, Arthur Young's auditors use their own Apple III audit software to sample, analyze, and review it. If there's an enormous data requirement – such as reviewing millions of transactions – the analysis must still be performed directly on the client's system.

"Because it's adaptable to a variety of auditing applications," explains Richardson, "the AuditComputer gives us a tool that's both flexible and cost effective. We expect it to have a significant impact on audit testing."☐

☐ AuditComputer is a trademark of Arthur Young & Company.



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professionally speaking

An Information Service For Consultants And Accountants

Volume 1 No. 3

Computing Apple Style— The Core Concepts

By John Zeisler

If the idea of a personal computer in your office intrigues you, then you have lots of company. Over 350,000 Apple personal computers are in use in offices, schools and universities, research labs, and homes around the world.

Each segment of Apple's personal computer market has unique application needs. Small businesses usually require accounting programs offering general ledger, accounts payable, and accounts receivable options. Educators look for software that will help teach or train their students, or help them manage administrative needs. Scientific users often want programs that will assist them with complex calculations.

But there are also "core" applications common to many users across industry lines. These applications include word processing, electronic worksheet analyses, data base management, graphics, and communications.

Word Processing

Word processing simplifies the task of creating, editing, and revising any kind of document, from memos and form letters to lengthy articles and reports. Simple keyboard commands let you add or delete words, sentences, and paragraphs quickly and easily. Documents can also be stored and retrieved rapidly using the computer's disk drives. And, with the addition of a printer, you can produce letter-perfect copy every time.

Electronic Worksheet

Most of us often work with pencil, calcula-

tor, and spread sheets to prepare budgets and forecasts. Change one assumption, and out comes the eraser to revise all related numbers affected by that change.

Personal computer users find that row-and-column-format electronic worksheets simplify budgeting and forecasting considerably. Designed for the evaluation of "What if?" questions, electronic worksheets automate number-crunching tasks. As you modify information in the model, the electronic worksheet recalculates the numbers and displays the results instantly.

Data Base Management

Just as you might maintain information and records in your Rolodex® or file cabinets, indexed by client or month, data base programs permit the same sort of record keeping, but give you the power and flexibility to update and manipulate that information in various ways. For example, a small business owner might use a client list to generate several thousand mailing labels for a special promotion, and then later use the same data base to review those customers' purchases and "fine-tune" subsequent mailings.

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Using The Apple III At Ernst & Whinney

By Steven S. Weis

Contrary to popular belief, accountants are not always good at math. They are good at using and interpreting results, but only human in making basic calculations.

Last spring, a new client requested a monthly analysis of statistical data. Producing the reports entailed approximately 400 calculations. The additional requirement of having to type multiple reports made the opportunity for error unacceptably high.

Our firm decided that staff calculations should be checked 100%. We found all of the errors, but the costs associated with doing this were prohibitive. So we cut back a little.

Soon we began receiving phone calls from our new client pointing to perceived errors. Each call had to be checked to see whether the observation was correct and, if correct, whether the mistake was a typo or a staff calculation error.

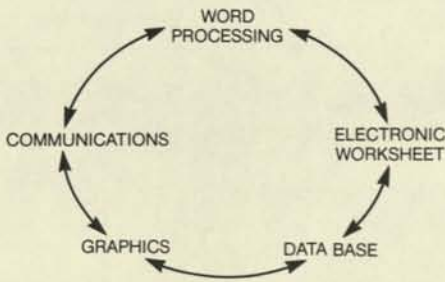
At our firm, most client time charges and billing procedures were computerized, using mainframes in our headquarters office. Locally, we didn't have significant power or programming staff.

(continued on page 3)



Computing Apple Style—

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Graphics

We're often faced with reams of computer printouts or sales figures and budgets, forecasts, and cash flows. Personal computer users can easily create presentation-quality graphics, and alter or update them quickly and easily. Pie charts, line and bar graphs and even trend analysis can be accomplished by using many graphics application packages.

Communications

Often the information we need to access is far away, either in a corporate mainframe computer or available through remote information services such as Dow Jones News/Retrieval or The Source. Personal computers offering a communications capability let us access that information over telephone lines, and print out the data at our desks for quick analysis or inclusion in reports. In addition, we can often use the same communications capability to transfer information from one location to another, using electronic mail programs.

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How Do These Applications Work Together?

Although these application programs work on a stand-alone basis, their real strength lies in the ability to share common information. Users typically are interested in incorporating the same data in multiple reports. Just as we use different types of forms in the office or home to keep track of information—invoices, letters, phone lists—the computer gives us the power to integrate often distinct types of information from various areas into a synergistic package far more powerful than its individual parts.

In a presentation to management such as a sales and profitability forecast, for instance, a financial analyst might prepare a bar or line graph to illustrate trends and forecasts. This is backed up with the numeric analysis to substantiate the model. The data that the financial analyst uses to create his trend analysis might reside on the corporate mainframe computer. Rather than keying in the sales or profitability data three separate times, once for each report, integrated software permits that manager to quickly access and manipulate that information in a variety of ways, perhaps to test or demonstrate various assumptions.

In the above example, a manager might have used the Apple III and Apple's Access III to communicate with the host computer. Then he could prepare a financial analysis of the figures using VisiCalc® III. Finally, he could turn those rows and columns of numbers into a professional-looking graph using Apple III Business Graphics Software.

In another example, a data base of client names can be used to create personalized form letters. All your records—whether they're address lists, inventories or production control, invoices and order records, accounting and employee information, shipping or receiving data—can easily and quickly be merged with boilerplate letters. This feature is especially helpful in preparing standard customer documents, such as a re-order tickler or a scheduled order acknowledgement.

Additionally, the features of one application package can be used to highlight information in another. For instance, you can use a word processor's printing options, such as boldface and underlining, to dress up final electronic worksheet documents.

What Characteristics Are Important?

Obviously, with thousands of software products available for Apple computers, not all applications share the characteristics necessary to maintain inter-

changeability. So what should you look for?

Common File Format

The information saved on a diskette has a specified format that tells the computer where and how the information is saved. The ability of another program to read the data properly is dependent on its ability to recognize and read that format properly. The Apple III, for instance, shares a common file format between most languages and applications such that data entered in most programs can be accessed by another application.

Common User Interface

If you're going to be using two or three different applications to manage information, a common user interface becomes an important consideration. These programs should use similar types of keyboard commands and program structure for typical functions such as Save, Load, Edit, and so on.

Many companies, such as those listed at the end of this article, publish families of software products that are specifically designed to integrate with each other.

DIF—Data Interchange Format

There are also "utility" programs that can change one file type into another, such as DIF (Data Interchange Format) from Software Arts. DIF was created by the inventors of VisiCalc to permit the exchange of data between programs. Prior to the release of DIF with VisiCalc, there wasn't any standard for the transfer of data between microcomputer programs.

A standard interchange is helpful when the user needs to create a custom user-written program to manipulate or format data. Additionally, many off-the-shelf programs, such as Apple's VisiCalc III and Apple III Business Graphics support the DIF capability, permitting interchange between themselves as well, as with application packages from other software publishers.

The primary advantage of a standard data interchange format is the elimination of costly, time-consuming re-entry of data which is already in use by one program. If two applications can not access the same data, but require the same information, that information must somehow be entered twice.

Where Do We Go From Here?

Software today gives us the core of a clustered system, providing users with a friendly, uniform, and easy-to-use envi-

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®VisiCalc is a registered trademark of VisiCorp.® Inc.

Computing Apple Style—

(continued from page 2)

ronment. They can enter or access information, update it, analyze it through words, numbers or graphics, and communicate the results to another individual—who can in turn access that information and update it, analyze it, and so on.

The software of tomorrow will be tightly integrated with the hardware characteristics of a particular system. A manufacturer will often provide outside software author tools to easily develop uniform software characteristics. Users will be able to run unrelated programs with little or no regard for such characteristics as common file format. For instance, you'll be able to access a remote information source such as Dow Jones or The Source; bring the information into your own computer (where you'll be able to manipulate and save the data); analyze it; and present it in written and graphic form to someone in your office, or to someone thousands of miles away.

Today the tools to permit that functionality are "loosely coupled;" that is, working together, but often utilizing different formats and commands. Tomorrow's software tools will "tightly couple" those core concepts into the building blocks of professional productivity in work and home environments.

For Further Information...

In addition to the application software offered by Apple Computer, the following companies also offer integrated software products or utilities for Apple II and Apple III personal computers:

Apple Computer, Inc.
20525 Mariani Blvd.
Cupertino, CA 95014

- Apple Writer III
- Apple III Business Graphics
- VisiCalc III
- Access III

VisiCorp
2895 Zanker Road
San Jose, Ca 95134
(408) 946-9000

- VisiCalc®
- VisiFile®
- VisiTerm®
- VisiPlot®

MicroPro
1299 4th Street
San Rafael, CA 94901
(415) 457-8990

- CalcStar®
- WordStar®
- DataStar®

Software Arts, Inc.
DIF Clearinghouse
P.O. Box 527
Cambridge, MA 02139
(617) 491-2100

- DIF™ (Data Interchange Format) ≡

®Wordstar is the registered trademark of MicroPro International Corporation.

Using The Apple III At Ernst & Whinney

(continued from page 1)



To solve our problems, we bought an Apple III, including a second disk drive, a monitor, and a printer. The cost was less than our ongoing time charges. Surprisingly, the programming wasn't that hard, even though my experience had been limited to a course in Fortran IV, some 15 years ago. Apple Business Basic was easy to use. Before I knew it, the program was finished. And it doesn't make mistakes.

A few days after our Apple III arrived, staff members began to deluge its overseer. New applications for the computer mushroomed.

Audit used it for random sampling (numbers and business days), graphic financial statements, footing trial balances, performing analytical reviews, and printing exception reports. The tax people used it for tickler applications (due dates, etc.); tracking status of returns; and making client assignments. Consulting found it helpful for monitoring project status, modeling, and budgeting.

We are now developing a database, including client and non-client data, user defined reports, and "friendly programs" for our office. The Apple III also will help in scheduling personnel, manpower utilization, and training registration.

Timesharing has, until recent years, been a cost-effective tool. However, the cost of hardware, particularly in the microcomputer industry, has been decreasing, and is expected to decrease.

As accountants, we must continue to find new cost-effective solutions to our labor intensive problems if we wish to remain competitive. Microcomputers are an important potential solution.

As one of my partners recently remarked, concerning microcomputers, "It's not a question of whether or when; it's a question of how many." ≡



About the author

Steven S. Weis is an audit partner in the Los Angeles office of Ernst & Whinney and is E & W's Western Region Partner in charge of Computer Auditing. He currently serves on the EDP Committee of the California Society of CPAs and is a co-director of the E & W Western Region project regarding microcomputers and micronetworking.

industry bulletin

Micro Purchases Give Businesses Big Tax Write-Offs

By David Needle

If you've thought the cost of buying a computer for your business is too high, you've probably not considered the tax advantages that go with such a purchase. In fact, 1982 might be remembered as the year the desktop computer became one of the most common tax write-offs for businesses.

Whether you are an employee or employer, if a computer is purchased as a business aid it may be considered a legitimate business expense.

"If you purchased a system in 1981, there are two potential tax benefits," explained Mike Costello, a tax partner in the Boston office of Laventhol and Horwath, a national accounting and consulting firm.

"First there's the investment tax credit, which is 10% of the cost of the hardware. You can claim that immediately. And secondly there's a depreciation deduction that must be spread out over a minimum of five years; 15% the first year, 22% the second, and 21% for the last three."

"But," says Costello, "if you purchase a computer this year, you don't have to spread the deduction out over five years. Under the new tax laws, you'll be allowed to 'expense' or deduct up to \$5000 in business-related purchases up front on your 1982 return (although you sacrifice the 10% investment tax credit when you do this.)"

Costello explained that the key consideration for the tax benefits is making sure you can demonstrate need to the IRS. If you only plan to use the computer for your business 50% of the time, then legally you're obligated to only claim a 50% deduction. You may want to think twice about fudging on the deduction.

"If an IRS agent checks your software collection and finds *Space Invaders* and *Missile Command*, and you've claimed 100% business use... well, unless you're employed as a military strategist, there's going to be a problem," said Costello.

Amortize Deductions

As an example, let's suppose you purchase a \$5000 computer system for your business in 1982, and your income for the year is between \$29,900 and \$35,200 (which puts you in a 33% tax bracket). If

you're claiming 80% business use and you want to amortize the deductions, you'd be entitled to the 10% investment credit on your 1982 return—in this case \$400 (80% of \$5000 is \$4000 and 10% of that is \$400).

Then you'd follow the five year deduction schedule (15%, 22%, 21%, 21%, 21%) on the same \$4000 basis as your investment-credit claim.

Assuming a 33% tax bracket, the taxpayer over a five-year period will recover over \$1720 of his initial cost through tax savings—\$400 as an investment credit and \$1320 due to depreciation deductions.

"You may have a good reason for spreading the deductions out, but now (for a 1982 purchase) you also have the option of claiming the whole \$5000 or whatever percentage of that applies to your business," explained Marc Elfman, an attorney and CPA with Laventhol.

Now what about software?

If the software comes bundled as part of the original system purchase, then the whole package, hardware and software, is eligible for investment credit and depreciation deductions.

"Software purchased separately may either be amortized or expensed in the year of purchase depending on its cost and estimated useful life," explained Allen Sneider, a partner with Laventhol and Horwath.

Again, showing a business purpose is the most important consideration. It doesn't matter what the business is or what kind of system you purchase, as long as you can demonstrate business use. An author who purchases a computer for word processing is entitled to the same credits and deductions as a store owner, as long as the writer can demonstrate the computer is being used in his line of work.

"It has to be clear that it's an ordinary and necessary business expense," Sneider said. "It would be difficult to claim 100% business use for the computer if the business-related purpose is minimal." An example of a minimal business-related application is for preparation of your

income-tax returns.

Employee Also Can Claim

An employee who buys a computer to use either at work or home for business purposes is also entitled to tax benefits. "But it's a good idea to check it out with your employer first. If an IRS agent ever questions the deduction, a letter from your employer backing up your claim will be important evidential matter," explained Sneider.

Vernon Jacobs, a tax specialist and author of the book *How to Get A Free Desk Top Computer*, thinks that more people will try to claim a tax deduction for a micro-computer as an educational deduction, if they can't get it for business purposes.

"Employees may claim an educational expense if it maintains or improves skills required by the individual in his employment. The biggest problem is to convince an IRS auditor that learning to use a computer is a trial-and-error process that actually requires practice on the equipment rather than formal classroom-type training," said Jacobs.

Finally, if you are unfamiliar with the tax laws, depreciation, credits and so on, talk to a qualified tax advisor before you run off to buy a system. This article is not the definitive word on writing off your computer.☐

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The Personal Computer: For Fun And Profit

By Larry Diamond

The personal computer is rapidly becoming an invaluable management tool for businesses of every size and in every field as well as for professional firms, educators, doctors, stock brokers and farmers. Builders are no exception. They too can use this remarkable instrument for fun and profit.

The personal computer offers high-speed computer power, yet is as easy to use as a hand-held calculator. As quickly as a builder can scratch out the details of a real estate project by pencil, the personal computer can run a projection and make changes on the spot.

At the same time, the personal computer—often referred to as the microcomputer—can handle complex tasks from analyzing many economic factors influencing a project to controlling job costs.

To help our clients take full advantage of this exceptional management tool, Kenneth Leventhal & Company (KLCO) has purchased Apple computers for each of its offices nationwide. Our computer experts have surveyed most microcomputer software available to determine how it can best be used in the building industry.

Consultants On Personal Computers

As a data processing tool, the personal computer offers unique advantages to builders and other businesses. Because of its extremely low cost (about \$2,500), the personal computer provides computer power to building companies of virtually any size. Moreover, a company doesn't need a data processing expert on staff to take advantage of the benefits. We train members of a client's staff on the computer in two to four hours.

KLCO has offices in Los Angeles, San Diego, San Francisco, and Newport Beach, California; New York, New York; Washington, D.C.; Columbus, Ohio; Dallas and Houston, Texas; Phoenix, Arizona; and Miami, Florida. Our computer experts are available in all of our 11 offices nationally to:

- demonstrate the Apples we have purchased;
- advise on personal computer hardware available on the market today and what type would be best for your operation;
- work with you on selecting the software—the program applications—which are best suited to your company—including KLCO programs

written for residential, commercial, and industrial projects;

- develop special programs that are not commercially available;
- train your staff members to use the personal computer and analyze real estate projects.

This will insure the personal computer gets maximum use.

For further information, call our Los Angeles office, (213) 277-0880.



Real Estate Industry Programs

KLCO is familiar with most software packages available on microcomputers for assisting clients in the development of real estate projects. We are also modifying several of our own "Big Red" real estate models to make them compatible with the smaller memory and storage capacity of personal computers.

Many general business applications can be easily adapted for use by residential, commercial and industrial developers of all sizes. In addition, we specifically recommend software tailored to help builders control costs and develop project and financing strategies.

Accounting Operations:

Microcomputer software will handle accounts receivable, accounts payable, payroll, and general ledger. The systems automatically print financial statements, trial balances, journals, and checks. They will help you find input errors and will display information on the screen without lengthy printouts.

Feasibility Analysis:

Builders can plan projects using a variety of strategies to determine what is most economically feasible. These programs will answer "What if" questions relating to changes in the economy (such as interest rate fluctuations) and the result of various

mixes of product for a development.

Real estate models adapted to the microcomputer allow builders to plan housing projects, shopping centers, hotels and other commercial developments, and industrial parks.

Job Cost Accounting:

These programs will help builders control or reduce project costs by providing continuous analysis of contracted costs versus actual costs. This software will help you manage your cash flow and equity investments, analyze gross profits, or show profitability of various types of products. For instance, a homebuilder can determine what model will be most profitable.

In addition, we can use these programs to forecast how loan draws will match the projected cash expenditures on a project, and whether there will be a cash shortfall.

Financing:

Microcomputer software is also being used to analyze various financing strategies for real estate developments in commercial, residential and industrial fields. For instance, the personal computer will show the comparative yields on alternative structures in financing arrangements such as syndications and joint ventures.

Property Management:

Owners of income property can keep track of rental receipts and expenses, compute common-area expenses and percentage rents, as well as maintain lease abstracts. In addition, this program will generate monthly operating reports showing details of current month and year-to-date income and expenses to budget.

Word Processing:

Microcomputers offer word processing that will allow writing, revising, and printing documents. This can include letters to tenants, joint venture partners and investors, billings for common-area expenses, or mailing labels.

Tax Planning:

Highly sophisticated programs are available to analyze the results of various tax strategies. This software will calculate the lowest tax using a variety of methods, including income averaging. It will adjust for deductions, tax credits, filing status, short- and long-term losses, and other variables.

(continued on page 6)

The Personal Computer:

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Data Base Management:

Companies can create and store information quickly and inexpensively. For instance, lease abstracts, portfolio material, telephone and address directories and client records can be stored. Data bank information can be quickly retrieved and organized into a variety of reports for use by management.

Graphics:

Charts and graphs can be created on the screen or printed into professional reports almost instantly.

Stock Portfolio Management and Information:

These programs allow for storage and continual updating of stock portfolios, while providing access by telephone to quotes on more than 6,000 securities. In addition, information is available through the Dow Jones News/Retrieval Service, the *Wall Street Journal*, *Barron's* and major exchanges.

Affordable Data Processing

The personal computer represents a breakthrough in data processing costs. Companies of every size are investing in microcomputers; so are private consultants, engineers, and scientists.

Hardware costs will range from \$2,000 to \$3,000, excluding a printer which could range from \$300 to \$3,000 depending on the type and quality selected. Most software can be purchased from about \$100 to \$300, although some specialized individual programs may cost as much as \$1,500.≡



About the Author

Larry Diamond is a partner in the National C.P.A. firm of Kenneth Leventhal & Company and has been with the firm for eighteen years. The firm specializes in the real estate industry. Mr. Diamond heads the national consulting practice and has directed the firm in its efforts to use the Apple computer to solve real estate industry problems.

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The Choice Challenge:

Finding The Financial Tool That's Best For You

By June Bower

So you bought an Apple computer with the expectation of writing and using financial models? You made one right decision so far—to buy an Apple system. But a challenge remains: what financial modeling software should you buy? There are now more than 20 financial packages on the market from which to choose.

This article is intended to help you make that decision by providing you with some general information about financial software tools and some pointers on which software handles which applications best.

Unstructured And Structured Packages

There are two main categories of financial software packages—unstructured and structured. The distinction between the two is important because each is used for very different applications.

For example, VisiCalc, the most popular of the financial software packages, is often times stretched way beyond its means. When an application arises that calls for a structured tool, many VisiCalc users tend to rely on the program even though it is an unstructured tool. As a result, the application or model will take more time than necessary to design, use machine space less efficiently than it ought to, and be harder to use than if it had been developed using a structured tool.

Unstructured packages are commonly referred to as a way of doing "quick and dirty" calculations. They look like an accounting spreadsheet and allow the manager to use the software like an electronic scratch pad to arrive at quick answers.

In addition, the unstructured tool is not designed to easily enable you to use a model over and over. The software is "personal"—you may be the only one who understands your model and probably the only one who uses it. You need a fast cost calculation? By using an unstructured package you're able to get it.

Structured packages, on the other hand, leave you with a documented and formalized model that can be read and understood by people other than the person who created it. Even the creator may come back to the model after a month and still understand the model and all the assumptions behind it.

Structured software is also conducive to consolidation. It allows models to be joined together, pulled apart, and restructured with very little time. Even

two models that are structurally different can be merged.

Blue Ribbons For Both

The question here is not which is best, unstructured or structured, but rather which type will best suit your needs. The following two columns compare the features of unstructured and structured financial tools.

Unstructured

Structured

Bottom line-oriented for a quick result

Process-oriented

"Quick and Dirty"

Provides formal reports and documented assumptions

For personal use

Software and printed output designed for printed use

Use the software often

Use the software sporadically

Use each model only once or twice

Use one model many times

One model represents the entire financial scenario

Models can be consolidated across diskettes

User must be design-creative

Helps the user design efficient models

Some Final Hints

Now that you've done your homework and understand the basics of financial software, you're ready to spend some time with your local computer dealer. Take a look at the software that interests you. Talk to the dealer about it and read literature the store may have on the product.

If, after a couple of hours of looking at software, you feel overwhelmed, go home and relax. Think about an application or model you might use. Go back to the computer dealer in a couple of days and try out your idea with the packages that interest you. When you're done, you'll know which is best for you.

The time and effort you spend to find the financial tool that is right for you can be considered a valuable investment. Once you start using your new software, you will begin to see the return in better financial information—achieved more quickly and easily than ever before.≡

Warning:

Little-Known Disease Discovered Among Apple Users

By Philip A. Harmon

I have contracted an illness which seems to be limited to users of Apple II computers.

It started a little over two years ago when I began noticing personal computer advertising and heard more people talking about the "revolution" they were creating. Always interested in new gadgets, I wondered what it would be like to have one of my own for games and doing some useful work. The question was, would I spend that much money?

The thought of having such a truly powerful gadget at my fingertips intrigued me. I maintained control by reminding myself that I should be able to delegate duties such as programming and key-punching to people more qualified to do those tasks.

One of the EDP experts at the office told me of the kinds of things he was already doing with his Apple II and sketched out ideas about what he planned to do in the future—things like projecting his charge hours by client, and week, and changing them as often as circumstances changed; keeping track of his credit card charge slips for his extensive travel expenses; maintaining a wine inventory; entertaining visitors with arcade-like games; analyzing investment opportunities; personal budgeting, and financial reporting.



It all sounded pretty good to me, but I didn't want to spend a lot of time learning to program or sitting at a computer punching out unintelligible computerese. If I wasn't going to use it, I couldn't justify buying a personal computer, especially since it would take a pretty convincing argument to use family funds.

One evening I was at the EDP expert's house and "just for fun" I asked to see his

Apple. I dragged my wife in also, and we saw a few VisiCalc applications and a few games. That night I knew I was hooked.

I went out and bought an Apple II with 16K memory, a cassette tape player, and a small color television (to make the games—educational ones, of course—more attractive to the kids). Within a few months, I had purchased more memory, a disk drive, and the VisiCalc program.

At first we used the Apple for home budgeting, menu planning, educational games, and even some entertainment games. But soon I wasn't happy with the limits of the software I had. I also was finding that the lack of a printer was annoying. I began gathering information about word processors, data management systems and printers—all items I eventually ended up acquiring.

Next, I found myself thinking of applications in my work. For a time, I was successful in suppressing most of these thoughts. But when the office purchased an Apple II and several fellow employees purchased their own as well, I could no longer control the effects of the "disease".

People in our office are coming up with all kinds of ideas, such as cutting down on the use of timesharing services by using personal computers; offering individualized forecasting packages to some of our emerging business clients; automating some of our schedule preparation; helping in analysis of client accounts; even taking their computers to clients for use in our audits, tax planning, and other client service areas. Why is all this happening?

Sometimes I wonder if the diabolical people at Apple Computer are using an advanced form of chemical warfare on consumers like myself. I believe they may have placed something addicting on the surface of the keys! It seems that the more I touch them, the more I want to use the computer and the more it occupies my thoughts. For now, I'm just continuing to use the machine as much as I can, hoping that whatever was placed on the keys will wear off.

Warning

Before you are dragged into the mire with me, listen to your senses! Be skeptical! Heed your spouse when you're told to be more practical! Buy a new dishwasher instead. Refuse offers to see how easy it is to use personal computers.

If you have any thoughts on how I might find a cure, please contact me soon. I'll

be continuing my research both at home and at the office. I must learn more about the new modem we just purchased. Also, how do I get more of my software to use the extra 16K memory card we now have? How can I justify buying a Z-80 card? Where will I put a letter-quality printer when I have it? Do I really need an 80-column display enough to warrant the cost of an extra board? Would an Apple III solve my capacity problems? Is a hard disk and/or another memory card a better solution? What other publications should I read? What software will allow me to? ≡



About the author

Phil Harmon is an audit manager in the Los Angeles office of Deloitte, Haskins and Sells. He has been an Apple II owner for over two years and still considers himself a novice in the use of microcomputers.

new products

Senior Analyst Offers The Quick And Structured Approach To Financial Modeling

For most professionals, preparing business plans is a part of the job. Business plans can range from simple computations to highly complex models. Now a powerful new financial modeling program for the Apple Computer, Senior Analyst, can assist you in developing business plans necessary for making timely business decisions, including financial models, budgets, and forecasts.

Senior Analyst simplifies work otherwise done with a columnar pad, calculator, and pencil. Your time is spent more effectively working with results, rather than grinding through complex calculations.

"What if?" scenarios are quickly created with Senior Analyst to see how changes in assumptions can affect budgets, profit and loss reports, cash flow projections and much more. Revisions are no problem, because numbers are automatically recalculated and displayed as you experiment with various scenarios.

Designed with the user in mind, Senior Analyst uses easy-to-follow commands that are always visible on the screen. In addition, there are 20 built-in functions that make it easy for you to perform complex calculations. When needed, you can also develop your own calculation rules.

Senior Analyst models can be spread

over nine pages, with each page storing 800 values in 20 columns by 99 rows. Pages may stand alone, or be linked together horizontally or vertically to share values, calculation rules, or row-and-column definitions.

Senior Analyst also offers several other powerful features, including:

1. global commands which allow you to borrow and consolidate information from other Senior Analyst models stored on different disks;
2. multi-tasking features which let you simultaneously print comprehensive reports while developing new financial models, on the same system. ≡



The Single-Card Solution To Serial Communication

Now you can use one card to exchange data with other computers, modems, printers, terminals, and accessories that employ the industry standard, bi-directional, RS-232C serial format.

The new Apple II Super Serial Card supports access to a wide range of local and remote computer equipment.

The Apple II Super Serial Card features an on-board switch that lets you easily operate either a printer or modem port. This switch eliminates the need for special connection cables, such as modem

eliminators.

Baud rates can be selected either through software or an on-board selection switch. When operating as a modem port, the Super Serial Card rapidly transfers data, either by telephone (through a modem) or directly, at speeds from 50-19.2Kbaud.

The Super Serial Card's advanced circuitry and extensive resident software make it the single-card solution for all your serial communication needs. ≡

Individual Tax Plan

Aardvark's *Individual Tax Plan* provides a flexible and comprehensive way to determine the tax calculations for a variety of user-defined situations. Up to five alternatives for one year, or projections of up to five years, are possible with this system. Ninety-one potential inputs are available, allowing the following automatic computations:

- Federal tax liability for tax years 1981 through 1984 (using appropriate tax tables or rate schedules, income averaging, maximum tax on earned income, and the "Special Rule" for Post 6/9/81 qualified net capital gain), with selection of the lowest tax due.
- Minimum and alternative minimum tax, including the 1981 limitation on qualified net capital gain.
- Ten-year averaging or lump-sum distributions.
- Two-earner married couple deduction for 1982 and thereafter.
- Allowable limitations on charitable contributions, medical expense, capital loss, investment interest expense, and appropriate carryovers.
- Capital gain deduction.
- Indexing for tax years 1985 and thereafter.

Plans can be made to structure financial transactions in a way that produces the desired tax result for any given year. *Individual Tax Plan* provides the planner with the ability to:

- Immediately see the tax effects of changes in income and/or expense items.
- Print input.
- Display results on the computer screen or print results in a letter format suitable for presentation to clients.
- Save tax plans on diskette for later change or review.
- Change input and recalculate immediately.

(continued on page 9)

Individual Tax Plan

(continued from page 8)

JOHN JONES OCTOBER 13, 1981		PAGE 1			
1981	ALTERNATIVE 1	ALTERNATIVE 2	ALTERNATIVE 3	ALTERNATIVE 4	
FILING STATUS	JOINT	JOINT	JOINT	JOINT	
EXEMPTIONS	0	0	0	0	
WAGES, SALARIES	30,000	30,000	30,000	30,000	
INTEREST AFTER EXCLUSION	0	0	0	0	
DIVIDENDS AFTER EXCLUSION	0	0	0	0	
CAPITAL GAIN/LOSS	14,000	32,000	48,000	84,000	
PARTNERSHIP INCOME/LOSS	2,000	2,000	2,000	2,000	
OTHER INCOME/LOSS	-5,000	-5,000	-5,000	-5,000	
TOTAL INCOME	41,000	59,000	75,000	81,000	
ADJUSTMENTS TO INCOME	0	0	0	0	
ADJUSTED GROSS INCOME	41,000	59,000	75,000	81,000	
DEDUCTIONS					
MEDICAL & GENERAL EXPENSES	0	0	0	0	
STATE & LOCAL INC TAXES	2,000	2,000	2,000	2,000	
OTHER TAXES	0	0	0	0	
CHARITABLE CONTRIBUTIONS	10,000	20,000	30,000	40,000	
CASUALTY LOSS	0	0	0	0	
MISCELLANEOUS	0	0	0	0	
TOTAL DEDUCTIONS	12,000	22,000	32,000	42,000	
TWO BRACKET AMOUNT	3,400	3,400	3,400	3,400	
EXCESS ITEM. DEDUCTIONS	8,600	16,600	26,600	38,600	
TAX TABLE INCOME	34,400	40,400	46,400	53,400	
EXEMPTIONS TIMES \$1,000	4,000	4,000	4,000	4,000	
TAXABLE INCOME	30,400	36,400	42,400	49,400	
TAX - TAX TABLE/RTS	6,297	8,578	11,117	13,818	
TAX - CHAR. CAP. GAINS	8,905	16,138	24,000	32,000	
TAX - INCOME AVERAGING	4,282	8,177	10,073	12,192	
TAX - MARRIAGE TAX	** N/A	** N/A	** N/A	** N/A	
TAX SELECTED	6,282	8,177	10,073	12,192	
ADDITIONAL TAXES	0	0	0	0	
GROSS REGULAR TAX CREDITS	6,282	8,177	10,073	12,192	
NET REGULAR TAX	0	0	0	0	
KINSHIP TAX	0	0	0	0	
ALTERNATIVE KINSHIP TAX	0	25	4,677	10,050	
OTHER TAXES	0	0	0	0	
TOTAL TAX LIABILITY	6,282	8,200	14,750	22,250	
FEDERAL PAYMENTS	5,000	5,000	5,000	5,000	
BALANCE DUE (REFUND)	1,282	3,200	9,750	17,250	
TAX BRACKET	** N/A	** N/A	** N/A	** N/A	

** NOT APPLICABLE

Estate Tax Plan

Aardvark's *Estate Tax Plan* allows the estate planner to enter a variety of factors affecting the gross estate, allowable deductions, and disposition of the client's assets via trust arrangements or bequests. The program will then calculate the related effects attributable to changes in one or more of these items.

Estate Tax Plan can construct a comparative analysis of four data alternatives simultaneously. It permits you to examine the estate planning effects of:

- Various dates of death for the client and spouse;
- Various valuations of the client's asset inventory;
- Selected marital deduction formula clauses in the client's will (e.g., maximum, "zero-tax," and equalization clause formulas);
- Split interest bequests to selected beneficiaries, including the useful Charitable Lead Trust, Charitable Remainder Annuity Trust, and Charitable Remainder Unitrust;
- Available death tax deferral under IRC Section 6166;
- Available special use valuation under IRC Section 2032A;

- Available redemptions of closely-held stock at capital gains rates under IRC Section 303;
- Growth rate assumptions concerning property passed to the surviving spouse;
- Present value analysis relative to impending death tax liabilities;
- Cash needs and liquid assets available at death.

Calculations performed by "Estate Tax Plan" result in seven different reports, each used in part of the estate planning process. In the GROSS ESTATE report, all elements of the estate are displayed, including adjustments for gifts made within three years of death, marital deduction transfers, and reduction of value of special use property.

With the ESTATE TAX LIABILITY, the allowable deductions reduce the gross estate to the taxable estate. The correct tax liability is determined, and credits for gift and state death taxes are applied. (The tax rates and unified credit calculations used are for 1982 and, thereafter, as defined in the Economic Recovery Tax Act of 1981.)

Using PRESENT VALUE ANALYSIS OF DEATH TAXES, a rate determined by the planner is used to calculate the present value of the estate tax payment or payments between the date of analysis and the assumed date of death.

DEFERRED PAYMENT OF DEATH TAXES displays the extent to which death taxes may be deferred as a result of ownership of sole proprietorships, partnerships, or IRC Section 6166 corporations.

DEFERRED PAYMENT SCHEDULE shows the installment payments for the deferral of death taxes.

LIQUIDITY ANALYSIS displays estate liquidity. Liquid or cash needs that are not part of the estate are included.

Lastly, IRC SECTION 303 CAPITAL GAIN calculates the extent to which stock in a closely-held corporation can be redeemed.☐

Training Managers By Simulation

By David C. C. Matthew Ph.D.

The most effective computer-based training programs for managers are simulations. They produce a scenario which imitates, in as many particulars as possible, the real world of work. They are in essence giving "mapped education," creating a map of the world in which the trainee will soon be asked to travel. Just as the best maps are those which contain the greatest physical detail, the best training simulations are those most carefully crafted to encompass the greatest number of details from the actual work environment.

What are the common characteristics which mark the line between information processing reality and information processing simulation? There are at least four clear points of demarcation:

Flexibility

An instructional program must be designed with particular commitments in curricular design. It reflects a design philosophy, both in content and in the format of the presentation of that content. A good "pure" applications package is extremely flexible; if it has a format, the format will be so general as to permit wide latitude in adoption of that format. The empty row-and-column formats of VisiCalc and Senior Analyst are good examples of very flexible formats.

Adaptability

An instructional program may be designed to teach a certain skill or discipline, and may improve the delivery of information related to that skill by choosing a specific situation to simulate on the computer. For example, in order to teach cash flow analysis, the Compucourse program "Planning Cash Flow" uses a model of a small manufacturing company. While this is a legitimate choice to accomplish the instructional objectives of the program, if someone purchased this product and attempted to use it to predict the actual cash flow for a service business, the user would be disappointed. The program was not designed to be adapted to a different industry. An applications program should be as non-industry specific as possible.

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