The #1 Apple II Magazine

FEBRUARY 1987

Should You Get Apple’s Upgrade Kit or Is There a Better Way?

THE IIgs UPGRADE

APPLEWORKS REPORT
Annotated Bibliography, Power Print, and Keyword Searching

EVERYBODY’S PLANNER
Project Planning and Management

IIgs COLOR MONITORS
Analog RGB Monitors and Other Options

QUICK TAKE
Review of Uptime

APPLE II TENTH ANNIVERSARY, PART II

$2.95 US
$3.95 CANADA, FOREIGN
COVER STORY

34
UPGRADING TO THE IIgs
BY GARY B. LITTLE
Apple will soon provide a IIgs upgrade kit for IIe owners. But that's only one way to step up to the power of the IIgs. No matter which approach you prefer, you can take many of your old peripherals and software programs along with you.

HISTORY

51
THE NEXT DECADE: AN INSIDER'S VIEW
BY JEAN-LOUIS GASSÉE
Jean-Louis Gassée, Apple's vice president of product development, gives a glimpse into the future of personal computing.

45
APPLE'S FIRST TEN YEARS, PART II
BY THOM HOGAN
In the second of two parts honoring Apple's ten-year anniversary, we look at the people who made the products possible. Although most of the original crew of renegades has moved on to other ventures, a new breed of renegade leads Apple today.

SOFTWARE

60
EVERYBODY'S PLANNER
BY IVES BRANT
Project management for almost any small business

48
BACK IN TIME
BY LISA RALEIGH
Apple's first decade has been an eventful one. This timeline hits some of the highlights.

UPTIME

67
BY RUSEL DEMARIA
This disk-based magazine for Apple II users adds animation and interaction to your reading.

COVER PHOTOGRAPHY BY CARTER DOW
EDITOR’S PAGE

THE LEARNING CURVE
BY DAVID D. THORNBURG
To upgrade or not—that is the question for educators.

SPEAKING OF GRAPHICS
BY ROBERTA SCHWARTZ
AND MICHAEL CALLERY
Color on the Apple IIGS—palettes, color mixing, and dithering

TELECOMMUNICATIONS
BY RUSSELL LOCKWOOD
This month Russ recalls predictions he made last year and makes a few more for 1987.

PRODUCT SPOTLIGHT
Envoy Disk Controller, Roland keyboards, Apple IIe numeric keypad, Voice Master, PS Series, Graphics Tool Kit, Type!, Perfect College, and Graphics Scrapbook

A+ APPLEWORKS REPORT
What’s the best AppleWorks book for you? Take a look at this month’s AppleWorks bibliography. This month’s department also explores keyword searching, reviews Power Print, and provides tips and answers to reader queries.

THOUGHTWARE
BY STEVE ROSENTHAL
There’s more to upgrading to the IIGS than simply buying hardware. The real trick may lie in attitude adjustment.

GRAPHICS GALLERY
This month’s exhibition includes a skyline, a feline, and three faces.

COMPUTER CALISTHENICS
BY MICHAEL WIESENEK
A new puzzle involving rational numbers, and the solution to November’s puzzle about palindromes.

TIPS AND TECHNIQUES
Useful hints for getting more out of your Apple II

PIPELINE
BY CAROL PERSON AND RHODA SIMMONS
New products for the entire Apple II family

RESCUE SQUAD
BY GARY B. LITTLE

GAMEPORT
BY BOB LINDSTROM
Bob interviews Chris Crawford, the author of Balance of Power, and explores what we can expect next from this gaming wizard.

LETTERS

NEWSPLUS
BY LISA RALEIGH AND CHIP CARMAN
News and views of the personal-computer industry

THAT’S ENTERTAINMENT
Following “GamePort” are reviews of Mind Pursuit, Shard of Spring, The Coveted Mirror, and Elite.

A+ MART
A+ DIRECTORY
INDEX TO ADVERTISERS
COMING SOON
UPGRADING

How current Apple II-series owners can step up

Moving up to the IIGS is a logical next step for owners of current Apple II-series computers: You get a souped-up, Macintosh-like computer that still works with most of your current software and peripherals. If you own an Apple Ile, it’s pretty obvious how you can upgrade to an IIGS—by purchasing an upgrade kit from Apple that gives your old Ile new innards. But that’s only one approach to upgrading. Even if you have a IIc or a II Plus, there is still an upgrade path for you. You can sell (or set aside) your old CPU, buy a IIGS system unit, and use it with your old software and peripherals.

Here we examine the whys and wherefores of purchasing the official Apple upgrade kit and describe what you can and can’t take along with you no matter which upgrade path you take and no matter which Apple II you’re starting with.

The Apple IIGS upgrade kit, scheduled for release later this year, will give the almost two million Ile users the opportunity to transform their computers into IIGS equivalents for only $499. The upgrade is not available to II, II Plus, or IIc owners, however, despite frequent rumors to the contrary. It simply won’t work with these computers because of lack of space inside the computer (IIc) or incompatible keyboards (II and II Plus).

The upgrade is only half the price of a real IIGS (the IIGS system unit, keyboard, and mouse cost $999). And, if you purchased a Ile from an authorized Apple dealer between July 15 and September 14, 1986, you can get a $100 rebate for an upgrade.

But is it really a good buy? Will you still be able to use all your old peripheral cards and software? Should you keep your Ile and ignore the IIGS? Or is this the time to sell your Ile, II Plus, or IIGS system unit and graduate to a genuine IIGS? These are some of the questions I hope you’ll be able to answer after reading this article.

Details of the Upgrade

The IIGS upgrade kit consists of three items: a IIGS motherboard, a metal base pan, and a manual that describes the differences between a IIGS and a Ile. The upgrade does not include a IIGS keyboard, power supply, or case—you must salvage these items from your Ile. The upgrade also does not include the IIGS mouse or a disk drive.

The kit’s motherboard is identical to the IIGS motherboard except that it has two additional connectors: one for the Ile keyboard and one for the optional Ile keypad. A new base pan (which includes the back panel) is needed because the Ile base pan does not have openings for the IIGS’s built-in port connectors.

According to Apple, the upgrade kit must be installed by an authorized Apple dealer, but the $499 price does not include installation charges. Installation doesn’t take long, however, so these charges should be low—some dealers may even do it free. Unfortunately, you are not allowed to keep your Ile motherboard; dealers must ship these back to Apple.

Installation is relatively simple and involves the following steps:

- disconnect the power supply, keyboard, and speaker cables from the Ile motherboard
- remove the base pan from the plastic casing of the Ile and save the speaker
- insert the IIGS motherboard and the new base pan
- reconnect the power supply, keyboard, and speaker cables.

The computer you end up with is functionally no different from a real IIGS—it just has a different keyboard and a different case. Thus, you will be able to take advantage of all the IIGS-specific software that will begin to appear in 1987, notably graphics and sound applications. One caveat: Most of this new software will probably require a mouse and 3.5-inch disk drives, but these are not part of the upgrade kit. You might need to budget a few hundred dollars more for these items.

Hardware Compatibility

A major factor in deciding whether to buy the IIGS upgrade is whether you can protect your existing investment in peripheral hardware. In other words, will all those nifty interface cards you’ve grown to know and love still work on the Apple IIGS?

Keep in mind that the IIGS has several built-in I/O ports, so you won’t even need some of your old cards in the first place. That’s nice because you can conceivably recoup part of the upgrade price by selling your redundant peripherals to II Plus users or to Ile users who aren’t upgrading.

Built into the IIGS are two serial interfaces, a mouse interface, analog RGB and composite video ports, and a SmartPort controller for 3.5-inch
TO THE IIgs
to the power of the IIgs

and 5½-inch disk drives. The GS also has an internal battery-operated clock, a music/speech synthesizer, and 80-column-display circuitry. It seems pointless, therefore, to use cards that simply duplicate these functions.

You may want to continue using an interface card instead of the corresponding port, however, if the firmware on the card lets you issue useful commands that the IIgs does not. For example, some printer-interface cards, such as the Serial Grappler and Alphabits, contain advanced screen-printing utilities. And most clock cards give you the time and date in a variety of formats if you use a few simple Applesoft commands, unlike the IIgs clock.

You may also want to use a card instead of a port to avoid the expense of (or the hassle of making) a new cable for a printer or modem you already use. It’s quite astounding, but it seems that every time Apple releases a new computer, it dreams up a new I/O connector. The serial connectors on the IIgs are 8-pin circular connectors, not the ones used on the IIc or on any peripheral card I’ve seen for the IIe or II Plus. These connectors are used on the Macintosh Plus, however.

Most (but not all) Apple II peripheral cards that plug into an I/O slot (not the IIe auxiliary connector) can work on the IIgs. The cards that definitely cannot work are multifunction cards that use “phantom” slot techniques (where an I/O de-
vice appears to be in a slot different from the slot in which the card is inserted, such as the Street BusinessCard, AST Multi-I/O, and the Prometheus VersaCard. These types of cards simply can't cope with the 16-megabyte address range of the 65816 microprocessor of the IIGs. Multifunction cards that don't use phantom slots, notably the RC Systems Slotbuster, can work.

Generally speaking, single-function cards work fine on the IIGs—the list includes serial and parallel printer-interface cards, internal-modem cards, disk-drive controllers, and memory cards compatible with the Apple II Memory Expansion Card (such as the Applied Engineering RamFactor and the AST Sprint-Disk). There are exceptions, so you should ask the manufacturer of any given card whether it will work, before you upgrade.

Apple recommends using a fan if you install more than two expansion cards in the IIGs, to avoid heat-related damage to components. Apple sells an internal IIGS System Fan, but it won't fit inside an upgraded Ile case—use something such as the Kensington System Saver instead.

Two important exceptions relate to drive controllers. The interface card for the Apple ProFile hard-disk drive doesn't work properly on the IIGs—in fact, if you tried to use it, you could lose data. Apple has published a simple hardware fix to solve this problem, however. Older versions of Central Point Software's Universal Disk Controller won't work either, but, again, Central Point will make you a simple fix for a small charge. Eight-bit accelerator cards don't work on the IIGs at all, which causes no problems, because the IIGs already operates up to 2.8 times faster than does a standard Ile. (Note: Applied Engineering is working on a 16-bit accelerator designed to increase the speed of the IIGs.)

Any card designed for the auxiliary connector on the Ile definitely cannot work on the IIGs, because the IIGs has no auxiliary connector. So you can say goodbye to 80-column/memory cards such as MultiRAM and RamWorks. Many people also buy RGB video adapters for these cards that drive digital RGB color monitors. Unfortunately, the IIGs generates analog RGB signals, so you can't connect a digital monitor to the RGB port of the IIGs. (See "The IIGs Shows Its Colors," in this issue.) So say goodbye to your digital RGB monitor, too.

**WHAT THE UPGRADE GIVES YOU**

**OUTSIDE:**
You will get an Apple IIGs logo to stick on your Ile, and a manual that describes the differences between a IIGs and a Ile.

**INSIDE:**
The $499 Apple Ile-to-IIGs upgrade kit includes a metal base pan that has the new back panel and a IIGs motherboard. The kit's motherboard is identical to the IIGs motherboard except that the kit has the connectors for the Ile keyboard and Ile keypad.

**BUT HOW MUCH WILL IT REALLY COST YOU?**

**FOUR SCENARIOS**

No matter which old Apple you own, there's a way to carry over some of your previous investment (in terms of peripherals and software) to a IIGs. If you own a Ile, you can upgrade by swapping out the motherboard. Or, with the II Plus, Ile, or IIC, you can set aside or sell your old system and plug in a new IIGs box in its place—amid your old disk drives, modems, printers, and such.

But, (and this is a formidable but), if you want to step up to the G5, chances are you'll also want to buy the peripherals that allow you to take advantage of the fanciest features of this system. To use G5-specific software, you'll need 3.5-inch disk drives, and to appreciate all those beautiful graphics, you'll probably want an analog RGB monitor. Here's a snapshot look at four sample situations—and their approximate costs—in which an Apple owner upgrades or sells an old system in order to move up to the G5.

**SCENARIO #1**

Approximate cost: $500

John is an Apple Ile owner who takes the simplest route: He buys the upgrade kit from Apple and continues to use the printer, modem, 5¼-inch disk drives, software, and composite monitor he already has.
Software Compatibility

Apple has made a concerted effort to make the IIgs compatible with existing Ile software. As a result, almost all Apple Ile software works with it without modification, including such standards as AppleWorks, Apple Writer, MouseWrite, The Print Shop, and Pinpoint.

A few programs cannot work on the IIgs at all, however. The biggest culprits are communications programs that bypass the serial-port hardware and communicate directly with the port's hardware registers. Many such programs understand only the 6551 chip of the Super Serial Card, but the IIgs uses the Intel 8330 chip. (This is the same chip the Macintosh uses; Apple used it to permit the IIgs to connect easily to AppleTalk networks.) Point-to-Point was designed to work with the IIgs. Others, such as ASCII Express and CommWorks, were upgraded after the announcement of the IIgs last September. Contact the publisher of your software for upgrading information if you have an old version.

Some software may work on the IIgs but only at normal speed (1 MHz). This category includes any software that relies on precise timing loops, primarily music software and some games. You can use the IIgs Control Panel desk accessory to switch from the fast speed (the IIgs default) to normal speed.

Programs that use the cassette port on the Ile won't work on the IIgs because the IIgs has no cassette port. Few users will lose sleep over this restriction because programs that require such a port are rare.

Apple has distributed a software compatibility chart to dealers, but I wouldn't rely on it too much. It's just too difficult to keep accurate track of so many versions of so many programs. If you really want to be sure your program works, sit down in a dealer's showroom and try your software on a IIgs. You should also contact the software publisher to verify compatibility and inquire about special IIgs versions. All major publishers are taking prompt steps to make their programs work on the IIgs if they don't already.

Decision Time

I'm convinced that if you own an 8-bit Apple II and you're not using a lot of oddball software or hardware that won't work on the IIgs, you should move up to a IIgs, either by purchasing the Ile upgrade or buying the IIgs itself. It's just too good a deal to turn down.

Gary Little is the author of Point-to-Point, a communications program for the Ile, IIC, and IIgs published by Pinpoint Publishing.

However, if he later wants to use the more powerful GS software, he'll need to spend another $500 or so to buy a 3.5-inch drive and a mouse.

SCENARIO #2

Approximate cost: $650

David has an Apple Ile with 128K of memory, two 5¼-inch disk drives, a composite monitor, hard-disk drive, printer, multifunction card, and modem. For $750, he sells the system with its additional memory, one of the drives with the controller card (he keeps one to run his old software on the GS), and the multifunction card (since it won't work on the new system). The rest of the peripherals he keeps to use with the GS, and he also buys a 3.5-inch drive so that he can take advantage of the new software. The suggested price for the IIgs (which includes a mouse) plus disk drive is $1398, so with the amount David receives for his old system, his net out-of-pocket expense is $648.

SCENARIO #3

Approximate cost: $900

Elizabeth owns an Apple IIe with a composite monitor, second disk drive, printer, and modem. She sells the system unit with its built-in drive for $500 and keeps all her other peripherals to use with the GS. Besides buying the IIgs system, she also buys a 3.5-inch drive, for $1398. Subtracting the $500 she gets from selling her IIe, her total outlay is $898.

SCENARIO #4

Approximate cost: $1150

Ron has an Apple II Plus with two 5¼-inch drives, printer, modem, monochrome monitor, hard-disk drive, accelerator board, and multifunction card. He sells the system unit, one drive, the monitor, and enhancement cards for $750 and then buys a GS with 3.5-inch drive and RGB monitor for the suggested price of $1897—his net cost is $1147.
IS THE IIgs UPGRADE A SCHOOL'S BEST BUY?

It's a question of your students' needs

Last October I participated in an educational-computing conference in California that drew more than 2000 educators. Two questions cropped up frequently:

1. What did I think about the new Apple IIgs?
2. Should schools rush to upgrade their Apple IIe computers?

Easy One First

As someone who has long been critical of the original Apple II sound and graphics, I find the IIgs to be a refreshing sign that Apple is willing to provide people with the improvements they deserve.

The lowly Atari 400 (remember it?) ran circles around the old Apple II in the areas of sound and graphics, and the Commodore Amiga provides even richer capabilities in these areas. Quite frankly, some of us were beginning to wonder when Apple was going to wake up to the computers of the 80s.

By providing enhancements in graphics and sound while retaining compatibility with the massive installed base of Apple II programs, Apple seems to have achieved the best of both worlds, and the future of the Apple II line looks secure.

Of course, my personal interests influence my views. My office is littered with music synthesizers and graphics tools, and I spend much of my spare time tinkering with them. As a result, my enthusiasm for the Apple IIgs comes from the freedom this computer gives me to play in the domains that are of greatest interest to me.

What About Education?

As I look at the role of the Apple IIgs in education, I have a hard time separating my personal enthusiasm for this new machine from my perspectives on how computers are functioning in classrooms today and the challenges facing creators of educational software are challenges of the spirit, not of technology.

how they may serve in the future.

I agree with those who argue that educational software needs to take advantage of better graphics and sound tools. If you look at the history of educational software, you may conclude that software developers have not (with few exceptions) fully used the tools at their disposal. Few pieces of educational software exploit those capabilities that distinguish computers from books.

Yes, many new programs do show a willingness to accept the computer as a medium in its own right, but these programs have arrived nearly ten years after the introduction of personal computers.

The challenges facing creators of educational software are challenges of the spirit, not of technology. I doubt that the simple introduction of a new computer into the marketplace can make the quality of educational software take a giant leap forward.

Opening the Toolbox

In addition to new graphics and sound capabilities, the Apple IIgs includes a set of toolbox routines with which software developers can create software with some of the look and feel of Macintosh programs. This toolbox may be the most significant distinguishing feature of the Apple IIgs.

ILLUSTRATION BY LARRY CARROLL

A+ MAGAZINE/FEBRUARY 1987
Although some computer users feel that command-line interpreters are preferable to visual displays of "desktops" and that typing RUN PROGRAMNAME is better than double-clicking a mouse on an icon, the visual user interface is steadily gaining converts and is convincing people that you don't have to know anything about computing to use a computer.

The education market is one where this feature is probably more important than anywhere else. Teachers do not have the time to waste through massive manuals just to learn how to load a program. Have you ever seen a second-grade teacher tell a student who is using a Commodore 64 to type LOAD "8,1"? It is not a pretty sight.

By creating a uniform and highly visual user interface—and by providing toolbox routines to encourage developers to write software that uses this interface—the Apple IIGs promises to allow the creation of educational programs that are easy to learn and easy to use. Most important, as with most Macintosh programs, users will find that commands that behave in a certain way for one program will behave the same way for another. The benefit of a well-designed user interface is that it gets out of the users' way, and this unobtrusiveness is part of the promise of the Apple IIGs. I believe the Apple IIGs (in the hands of the right programmers) will be a showcase for some excellent educational software.

And Now for Question 2

All of which brings me to the second question: Should schools rush to upgrade their old Apple Ile computers to the Apple IIGs?

My guess is that, over the long term, Apple will phase the Apple Ile out of production as soon as demand falls and that the Apple IIGs will become its logical successor. The IIGs' ability to use existing peripheral cards and equipment is essential to this transition.

To show just how compatible the IIGs really is, I connected a 1979 Apple II disk drive (with a new connector) to the disk-drive port of the Apple IIGs, and it worked perfectly. Such attention to compatibility is unprecedented in the personal-computer industry.

Still, it might be wise to wait a bit before rushing to purchase the upgrade. For one thing, there isn't much software that requires the IIGs yet, although this situation is sure to change soon.

Cloning Around

Second, you can spend the money elsewhere. Even with special institutional discounts, upgrading the Ile to the IIGs is going to cost several hundred dollars.

A few months ago, a friend dropped by to show me a Laser 125 with a built-in disk drive and all the printer and communication ports you could ask for. He'd paid about $370 or so for this Apple II-compati-