Quality Computers

A QUALITY COMPUTERS PUBLICATION
VOL. 1 NO. 2 - MAY/JUNE 93
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CELEBRATING THE APPLE II

II ALIVE

CELEBRATING THE APPLE II

- Copyrights in the Multimedia Age
- Interview with Jim Carson
- Super Printers

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- The Manager
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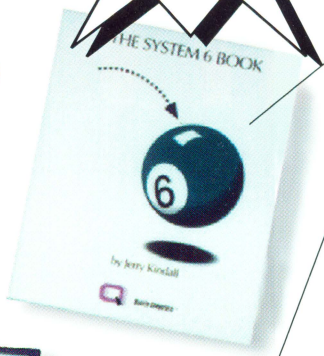

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FlashBoot. What is faster than a speeding disk drive? A RAM disk. FlashBoot lets you automatically set up a super-fast, super-convenient RAM disk.

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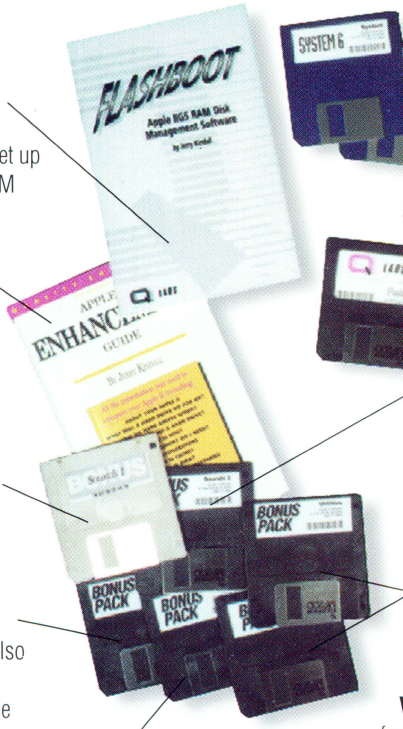

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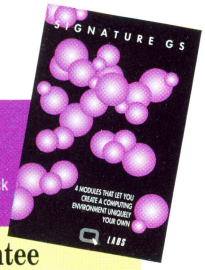

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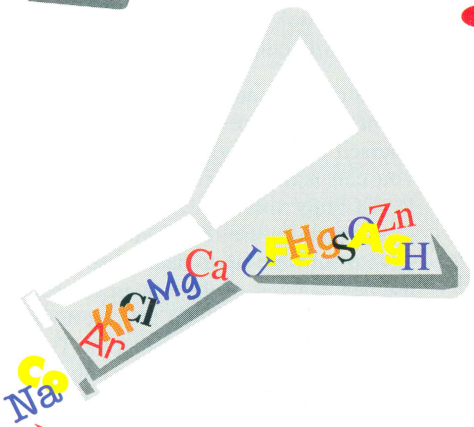

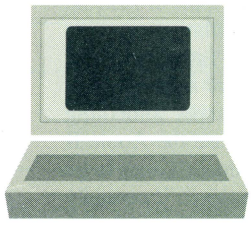

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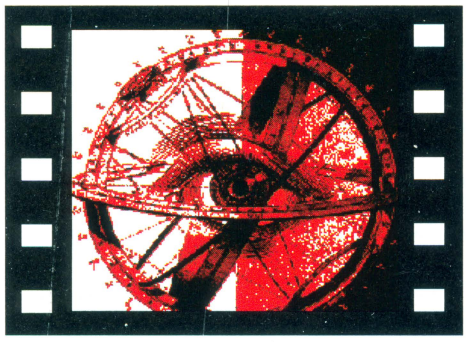

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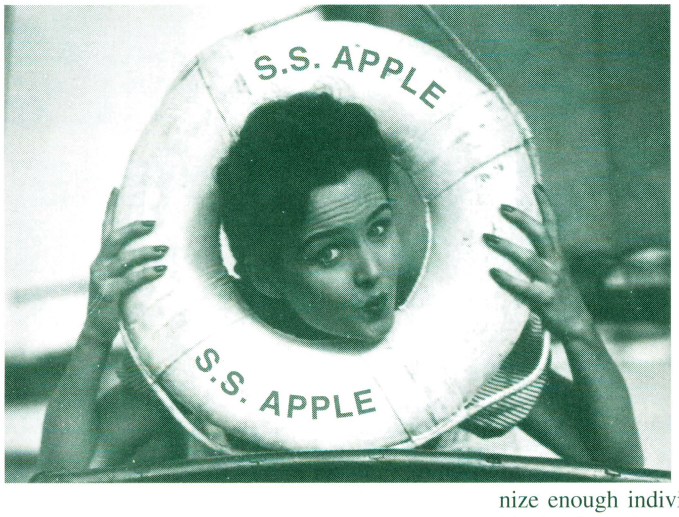
HOW TO SAVE THE APPLE II

JERRY KINDALL, EDITOR

PEOPLE OCCASIONALLY ASK ME WHAT they can do to help "save" the Apple II. Usually, these people are thinking in terms of some letter-writing campaign they can join or a phone number they can call to complain to Apple about their "mistreatment" of the Apple II.



But although you can call Apple and complain about the way they've treated the Apple II, and although the Apple employee you speak to will be polite and maybe even sympathetic and—if they're an Apple II owner—may actually agree with you, you can't change Apple's corporate mind about the Apple II. Apple's attention has been focused strictly on the Mac since 1984, and shifting this focus at this late date is impossible.

The Apple II community has experienced the ineffectiveness of letter-writing campaigns. We've seen the futility of trying to organize enough individual users to buy a sizable block of Apple stock in the hope of having a voice in Apple's boardroom. The computer community at large has not suddenly been enlightened to the merits of the Apple II by the letters sent to various magazines. Without exception, every single grass-roots campaign to "save" the Apple II, no matter how well-intentioned, has failed, usually by collapsing under its own weight or by just plain petering out when results aren't immediately forthcoming.

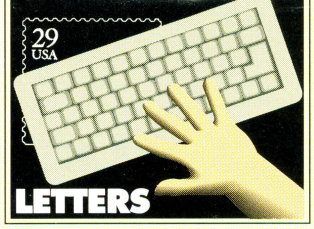
It's not surprising. Most people are not activists. And even activists, disillusioned with the seeming lack of progress, become increasingly cynical with each new campaign. Getting ordinary people involved in any cause is difficult—getting them involved in "saving" a computer is next to impossible. Not every Apple II owner loves the machine in the fanatically devoted sense that the activists seem to love it.

Now that Apple has officially closed the book on the Apple II, another letter-writing campaign is pointless. Consider doing something more useful with your time. Rather than starting another campaign to "save" the Apple II, channel your energy into *helping people*. The most important part of the phrase "Apple II community" isn't "Apple II" or even "Apple"; it's "community." Start (or become active in) a user group. Learn to program and/or publish some software. Write some articles for a magazine or newsletter to share something you've learned with others.

If you can't do any of those things, then help the people who are trying to help you. Educate yourself about how your computer works so you can make informed buying decisions. Don't copy software illegally. Pay for the shareware you use. Keep your computer and system software up-to-date so developers can use new features of the system software without having to worry that their customer base won't be able to use their program. This means enhancing your IIe if it's not enhanced, and getting System 6 if you have a IIGS.

There's only one thing wrong with the question, "What can I do to help save the Apple II?"—it assumes the Apple II needs to be saved. Unlike the whale, the Apple II is in no danger of extinction. Its population remains strong at well over six million. Literally tens of thousands of active users have subscribed to this very magazine, which proves something about how many people still use the Apple II daily. And the Apple II also doesn't need to be "saved" in a religious sense, since it certainly is guilty of no sin.

The Apple II is already saved. We're all saving it together—software publishers, mail-order retailers, programmers, user groups, and individual users. We've been doing it for years, and we can keep going for as long as we need to. It's time to leave the campaigns behind us and get busy using our Apple IIs for great things and sharing information on how we're doing it. That's the best support we can give the computer—and each other. And, actually, it always was. ■



Dear II Alive,

In the first "real" issue there was a question regarding the IEEE-488 card. Your honest response ("I don't even know what that is") appealed to my sensibilities, so I offer this information for your consideration (from the latest Apple II Technical Notes):

"The IEEE-488 bus standard is a well-defined eight-bit parallel, byte serial asynchronous data transfer interface. The standard has been thoroughly documented, with the most complete description available from the Institute of Electrical and Electronic Engineers (IEEE) in New York. Standard cables are manufactured by many companies, and are usually advertised as IEEE 488, General Purpose Interface Bus (GPIB), or Hewlett-Packard Interface Bus (HPIB) cables.

"IEEE-488 cards do not support Apple firmware protocols, so an assembly-language driver must be used to access the cards from high-level languages (see Appendix F of the IEEE-488 Interface User's Guide)."

Hope this is of some use. I don't know where to find one, either.

Steve Gozdiewski
via GEnie

Steve: Thanks for the information. Boy, those Apple II Technical Notes can be useful, can't they? Everyone should have a copy. Many user groups and online services can provide you with copies on disk, and of course the folks who pay to be in Apple's developer programs also get them.—Editor

Dear II Alive,

Send me your magazine! I'm anxious to get more help and support for my computer. Anything on macros would be useful to me. I have The *UltraMacros Primer,* by Mark Munz, and still find it hard to figure out the jargon. Same thing with *ProTERM 3.* It looks like *ProTERM 3* has a good macro-writing program but the manual is written as if it were intended for macro experts who just need to be familiarized with *ProTERM's* unique commands.

Daniel Wozniak
Otisville, MI

Daniel: We hope to be able to help you with those pesky macros. In this issue you'll find Will Nelken's introduction to UltraMacros programming for AppleWorks, and we plan to take a close look at macros in telecommunication in the Modem Nation column pretty soon. A lot of the things you want to know about macros are really things you want to know about programming. A macro language is just a specialized programming language, and once you learn how to program in any programming language, learning a second (or third, or fourth . . .) language is pretty simple. The concepts remain the same; only the way those concepts work in a particular language change. We hope to run an article on the basic concepts of programming in the next issue.—Editor

Dear II Alive,

I just read your article on the ImageWriter II ("No Excuse For Ugly Output, Part 1"), and it was the best I've ever read. Your instructions are so good I feel I could actually take my print head out, clean it, and put it back by myself and have no problems doing it! If all your future articles are this good, you'll have me as a subscriber for as long as I own my Apple IIGS! I'm looking forward to the next issue and more useful information that I can use.

Cassie Smith
Abescon, NJ

Dear II Alive,

This is the kind of magazine I've been looking for! I've been a subscriber to *inCider/A+* for three years (maybe more), but lately they seem to be talking to us IIGS owners less and less. I'm most interested in your Q&A column—I've got questions! Like, can I install RAM chips myself?

C.E. Murrell
North White Plains, NY

Dear II Alive,

I just received my first issue of *II Alive* and let me tell you something, it's fantastic! I thought the world had forgotten about the Apple II user, but not so. Your publication is just the thing we've been waiting for.

J. F. Hinojosa
Pasadena, TX

Dear II Alive,

Thank you for *II Alive!* Your commitment to Apple II users saved me, in the nick of time, from pumping $2500 into a new computer. With you around, I don't need one!

Larry Sherbondy
Charleston, SC

Cassie, C.E., J.F., Larry: Thanks for the praise. I can heave a great big sigh of relief now that I see that what we're doing

Continued on next page

LETTERS

Continued from page 7

with II Alive is, in fact, what people want to see. We had a hunch we were heading in the right direction, but it's great to hear confirmation from real people.

We even had a phone call from one subscriber (sorry, we forgot your name) who mentioned that—while he found our "Dear John" cartoon humorous—he didn't feel as angry as he used to at Apple's management for their handling of the II line. Apple Computer, Inc., he reminded us, has had very little to do with the Apple II for many years now—and II Alive is just another example of how the Apple II community supports itself. We couldn't agree more.

By the way, C.E., we didn't explicitly mention it in our "RAM On The Run" article in the last issue, but RAM chips are very, very simple to install. If you can change a light bulb, you can install RAM chips. You just have to know where to put the chips and what direction they should face—questions which should be answered in the manual for your memory card or your computer, or sometimes even on the memory card itself.—Editor

Dear II Alive,

How can we get ahold of the programs mentioned in "Shareware Spy" if we don't belong to an online service like America Online, GEnie, or CompuServe? I'm particularly looking for a version of *AppleWriter II* which will run on an Apple II+ and can be used with the Videx UltraTerm via its pre-boot disk (the pre-boot disk will not work with the IIe version of AppleWriter). Really, I'm looking for any *AppleWriter II*-like word processor that will run in 80 columns on a II+. I'm not just being cheap, I'm trying to provide a word processing solution for my son using equipment I have on hand.

Joseph Fulford
Pacifica, CA

Joseph: Many user groups have those programs available—you'll also find user groups a good general support resource for your Apple II+ (See our listing of Computer Clubs on page 58). The AppleWriter that was released by GEnie's Lost Classics project, though, is ProDOS and definitely requires a IIe. The one you need for use with the UltraTerm is the slightly older DOS 3.3 version. I don't have any specific advice for you on your search, but I hope printing your letter here will help. (Hey, it worked with John Sidley's quest for Word Handler in the last issue!)

Unlike the Rumormonger, we don't make any of this stuff up. Send your letters to us at: *II Alive*—Letters, 20200 Nine Mile Rd., St. Clair Shores, MI 48080. We can also be reached electronically via GEnie at QC, via America Online at QualityCom, and via the Internet as jerry@pro-quality.cts.com. Or you can even call our BBS directly at (313) 774-2652, or our voice mail system at (800) 777-3642, Extension 839. All letters and messages become the property of *II Alive* and are subject to editing and publication.

Info:

REVIEW EDITOR: *II Alive* is pleased to welcome Jeff Hurlburt of Houston, TX on board as Reviews Editor. Jeff has written reviews for Computist magazine and also publishes his own review newsletter, *The Product Monitor*. (The real meat of the reviews this month is our feature article on IIGS Program Switchers, so our actual review column is somewhat abbreviated. Next issue, the reviews will be back in full force, with Jeff at the helm.)

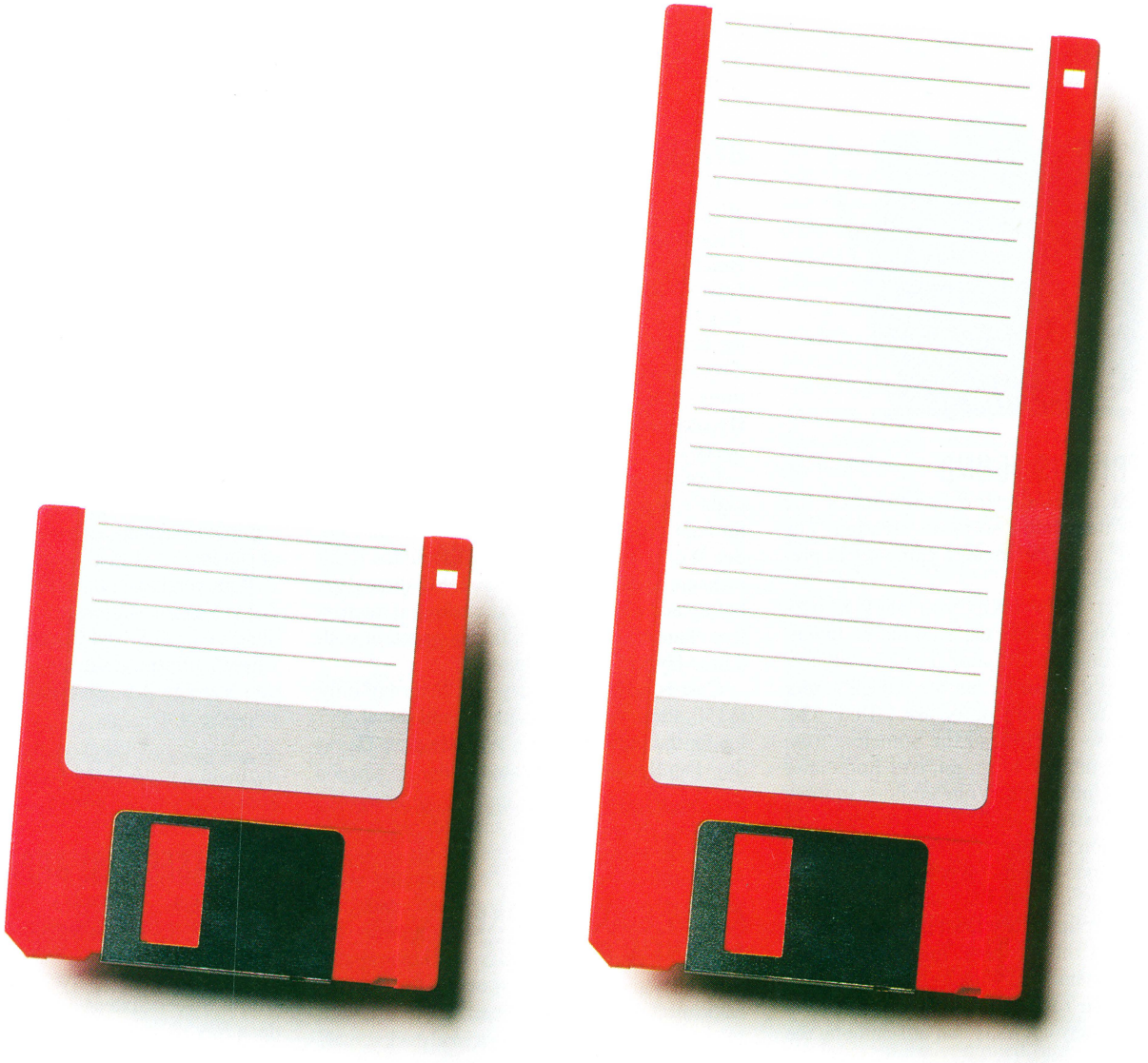
PHONE HOME: You can now sound off by phone! Call our II Alive Voice Mailbox at 1-800-777-3642 (U.S. and Canada) or (313) 774-7200 in other corners of the globe. When the Quality Computers automated attendant answers, dial 839 on your Touch Tone phone. (If you don't have a Touch Tone phone, wait on the line and ask the operator to transfer you to extension 839.)

HEAD-TO-HEAD: HardPressed wasn't released in time for our planned head-to-head review, though WestCode did offer to send us a copy for review just days before our deadline. This means that while the comparison article with HardPressed and AutoArk isn't in this issue, it will be in the next one for sure!

PUBLICATION SCHEDULE: You should receive your copy of *II Alive* no later than the middle of the cover month (for example, you should have received this issue, the May/June issue, by the 15th of May). In most cases you'll receive it much earlier, but due to the vagaries of the U.S. Postal Service, the date may occasionally fluctuate. If you think an issue got lost in the mail, please wait until the 15th of the month before calling us. For the record, our bi-monthly schedule will bring you issues in January, March, May, July, September, and November.

II ALIVE VIDEO UPDATE: In order to get our videotape duplication schedule and our publication schedule to mesh, we'll be sending you the II Alive video with your next issue—the July/August issue. (When we said in the last issue we would be sending it toward the end of May, we were thinking only of when we'd have the video itself finished, and completely forgot that the next issue to be mailed after the Apple Expo West would, in fact, be July/August.) We apologize for the delay, but we assure you it'll be worth it!

Stretch your disk space.



We all know that creating disk space isn't quite this easy.

That's why WestCode Software is introducing HardPressed,™ the ultimate in disk compression software for the Apple IIGS. It virtually doubles the space on any type of disk, including hard disks, 3.5" diskettes, and RAM disks, without doubling your investment in hardware.

HardPressed is a totally transparent, fully automatic solution to your storage problems. It provides true on-the-fly compression and decompression of files. Just specify which files, folders or disks you'd like to keep compressed and from then on HardPressed handles everything automatically as you save or open your documents and applications. And, because it's completely integrated into the GS/OS file system, HardPressed is much faster and easier to use than any other disk compression product.

All this for only $69.95. And, if you've already purchased another disk compression product, you can still trade up to the unbeatable performance of HardPressed for only $19.95. To find out more about HardPressed, just give us a call. 1-800-448-4250.

WestCode SOFTWARE

WestCode Software, Inc., 15050 Avenue of Science, Suite 112, San Diego, CA 92128 (619) 487-9200 • Fax (619) 487-9255 • (800) 448-4250.
HardPressed requires an Apple IIGS with a minimum of 1.25 MB RAM and GS/OS System 6. All brand and product names are trademarks of their respective companies, and you know who they are. © 1993 WestCode Software, Inc.

LOST TRIBE IS FOUND

Lawrence Productions announces the release of their latest software creation, *The Lost Tribe,* a unique strategy game set in prehistoric times.

The Lost Tribe takes you back before recorded history where the eruption of Belchfire Mountain destroys your primitive village. You survive the disaster but the village's ruler and his elite hunting party are killed. The elders choose you to lead the homeless tribe away from danger to an ancient homeland known only in legend. Your perilous journey will require strong leadership, strategy, and sound decision making.

Recommended for use at home and in social studies classes, children may work individually or in small groups. They must interpret ancient maps to plot their course, make judgement decisions of when and what to hunt, determine how often to rest and feed the tribe, and resolve the many conflicts that arise among the people.

Researching information from an on-screen encyclopedia, children can explore everything from the personalities of individual tribe members, the qualities of a successful leader to prehistoric animals, and much more.

The Lost Tribe has six challenging scenarios loaded with random events, over 80 photographs (using the 256 color mode of the GS), digitized music, cartoon animation, and an on-screen Prehistoric Guide to Survival with 100 entries.

For ages 8 and older, *The Lost Tribe* is distributed by Davidson & Associates, and is also available directly from Lawrence Productions.

For more information, contact Renee West at (800) 421-4157.

HYPERSTUDIO FESTIVAL

If you can't decide what to do this summer, check out Roger Wagner's First Annual HyperStudio Festival, July 8-10 at the Hanalei Hotel in sunny San Diego, CA. On Thursday, July 8, attendees can choose a Pre-Festival Workshop (Fundamentals of HyperStudio for the IIGS or Macintosh, or Advanced HyperStudio). Friday and Saturday will feature presentations on a variety of topics from dozens of HyperStudio experts (topics to be announced later).

Festival attendees are also invited to Friday night's beach party and to explore San Diego through group discounts on tours to the Zoo, Sea World, and Balboa Park. Discounted room rates are available at the hotel up to three days before and after the Festival, making it the perfect chance to combine a family vacation with a little HyperStudio excitement!

Cost is $125 for Friday and Saturday only ($150 after April 30), with an additional $95 fee for the pre-conference Workshop on Thursday. Family rates are also available.

For more information, contact: Roger Wagner Publishing, 1050 Pioneer Way, Suite P, El Cajon, CA 92020, 1-800-421-6526.

A FEW GOOD BLANKERS AND NEW PRODUCTS TOO

Quality Computers is looking for unique, colorful, dynamic screen blankers for use with Phantasm, part of its *Signature* package. If you're into IIGS graphics programming, are interested in contributing to a disk of blanker modules, and desire the technical details of writing Phantasm blankers, send a self-addressed stamped envelope to: Quality Computers, Screen Blanker Info, P.O. Box 349, St. Clair Shores, MI 48080.

Quality is interested in publishing even more new Apple II programs! If you've produced a quality Apple II utility, game, or educational program—or any other type of program, for that matter—and are interested in potential worldwide promotion and distribution, write to: Quality Computers, Attn: Tom Veselenak, P.O. Box 349, St. Clair Shores, MI 48080.

LEARN APPLESOFT BASIC

Primax Systems announces the release of *Applesoft BASIC Teacher* 3.5 and 4.0 as shareware. Applesoft BASIC Teacher is an interactive, easy-to-use, menu-driven application for beginning programmers.

Version 3.5 is the unregistered shareware version with five programming examples. This version teaches text manipulation, input and output, and math and graphics commands. Version 4.0, the registered version, includes more math, shape tables, PEEKs, POKEs, and CALLs, and other advanced commands. It also includes 15 additional programming examples, a printed manual, a free update, and one year of support.

Both versions are available on 3.5" or 5.25" disks. Version 4.0 costs $20 ($3 shipping/handling in the U.S. and Canada; $8 shipping elsewhere). Illinois residents include 8.25% sales tax. Version 3.5 is available for $4 to cover shipping costs.

For more information, contact Kevin Morgan at (708) 351-2896. Primax Systems is at PO Box 68702, Schaumburg, IL 60168.

KANSASFEST 5; APPLE II 16

Last year's conference A2-Central Summer Conference (a.k.a. KansasFest) was such a rousing success that Resource Central has decided to continue the celebration this year with a Sweet Sixteen party. In the past, attendees have raved over the sessions but were equally (or even more) enthused over the prospect of staying up all night in the dormitory, partying and hacking around with their online buddies and/or Apple II hotshots.

KansasFest 1993 will take place on Thursday and Friday, July 22-23. Sessions will run the gamut from general information to high tech programming stuff. Mark your calendars now and get ready to celebrate! Remember, it's not just for hackers—anyone who wants to get more from their Apple II can benefit and enjoy the A2-Central Summer Conference.

The conference fee is $300 ($350 after June 1). Guests may stay at Avila College in a private room for $40 a night ($45 after June 1) or in a double room for $30 a night ($35 after June 1). Avila lodgings include two meals a day. (Attendees can also stay at nearby hotels, though Avila's much more fun, and the price can't be beat.)

Call Resource Central at (913) 469-6502 for more information or to make advance reservations.

ABOUT II ALIVE RATINGS

All ratings are on a scale of 1 to 10. A score of 10 in a particular category indicates that there is literally no room for improvement in the specified area, so a program has to be pretty hot stuff to earn a rating of 10. (Likewise, it needs to be pretty dismal to earn a zero.) A nine represents "excellent," and even a six or seven may be worth a look. You should look seriously for alternatives before buying a product with an overall rating of five or less.

Typical rating categories for application programs include: Capability, Ease of Use, and Documentation. Games are usually rated according to the following categories: Playability, Graphics & Sound, and Innovation, and may also merit a Documentation category if the game is of a type that requires more than a simple instruction sheet. For hardware, rating categories can include: Installation, Performance, Ease of Use, and Documentation. Categories may be dropped (or added) based on the specific product being reviewed.

Ratings are assigned by *II Alive's* editorial staff based on comments and suggestions received from the author of each review. Overall ratings are not necessarily an average of a product's ratings in each individual category—some categories may carry more weight than others, and that weighting may change from review to review. Always read the entire review for complete information if a program's summary interests you.

Send products for review to: II Alive — Reviews Dept., 20200 Nine Mile Rd., St. Clair Shores, MI 48080, USA.

ORCA/C 2.0

by Mike Westerfield
ByteWorks, Inc.

4700 Irving Blvd. N.W. Suite 207
Albuquerque, NM 87114
(505) 898-8183

Product Summary: ANSI-standard C language compiler for Apple IIGS.

System Requirements: Apple IIGS; System 6 or later; 1.25 MB RAM (2 MB recommended); 3.5" drive (hard drive recommended). Not copy-protected; hard drive installable.

Retail Price: $149.95

Capability: 9
Performance: 7
Documentation: 8

Overall: 8

Ever since programming evolved beyond flipping front-panel switches on a computer console, programmers have argued over which programming language is the best. At one time, Assembly was virtually the only choice. Today, there are literally dozens of programming languages. C, originally developed by Bell Labs, has emerged as one of the "hot" programming languages. C might not be the best programming language for *every* job, but it does have its strengths. It's a top-down, structured language similar in construction to Pascal. But C also allows the programmer to break the rules of structure when necessary. The freedom, naturally, comes at a price—like a high-wire artist working without a net, you can easily break something if you fall.

ORCA/C 2.0 is a fully ANSI-compliant C compiler for the IIGS. Theoretically, this means that programs you write with ORCA/C will compile with only minor changes on IBM compatibles, Macintoshes, Unix workstations, and many other computers which also have ANSI C compilers. But, sadly, the kind of code contained in *useful* programs is not quite as portable as many programmers believe. IIGS desktop programs spend most of their time calling Toolbox routines—good luck translating a program like this to a computer that doesn't have the IIGS Toolbox. The Macintosh toolbox is a little like the IIGS's, but you'll still have quite a bit of work ahead of you when porting a IIGS program to the Mac. This isn't the fault of the compiler or the C programming language—it's simply an inevitability.

ORCA/C 2.0 requires System 6. Although the minimum memory requirement is still 1.25 MB, you'll want more, especially if you plan to use Prizm, the ORCA graphics-based development environment. Truthfully, any program that runs under System 6 will be happier with 2 MB or more of RAM.

The big news in ORCA/C 2.0 is pre-compiled headers. Nearly every C program uses header files which define the functions and constant values which the program uses. A typical C program might need several of these header files. With older versions of ORCA/C, the compiler re-compiled all the headers every time you built a new version of your program. Frequently it took more time to compile the headers than it took to compile the program's actual code. ORCA/C 2.0, in contrast, saves the information that the compiler generates from the header files to a special symbol table file. The next time you compile your program, the header information will be retrieved from the symbol table file, greatly improving compile time.

ORCA/C 2.0's header files are prototyped. In previous versions of the compiler, the headers defined all of the Toolbox calls, but provided no information about the types of variables passed to and returned from each tool call. Therefore, it was easy to accidentally pass the wrong type of variable to a function, causing all kinds of havoc. The prototyped headers prevent this error—but they can also be *really* annoying at first, as I soon discovered.

I decided to test the compiler on one of my own programs. There was nothing wrong with the program—it compiled fine with v1.2, and has been in actual use for a couple of years. ORCA/C 2.0 generated *over thirty* error messages during the compile! What a nuisance, I thought, to have to "fix" code that works! I had to explicitly define several type casts in order to reassure the new compiler that I really wanted to do what I was trying to do. But, upon reflection, I'd realized that the compiler had found several of my "lazy" coding practices. In the end, I had more confidence in my program knowing that the compiler had checked my function calls thoroughly.

I decided to test the speed and efficiency of the compiler for comparison with the older version. My tests were performed on a ROM 01 IIGS with a hard drive, 8 MHz Zip accelerator, and 4 MB RAM. (The results are in the accompanying table.)

I first compiled the classic "Hello" program—a simple program that simply prints the message "Hello, World!" on the text screen. The first compile time for this program was significantly longer under the new compiler,

simply because the new compiler is larger and takes longer to load into memory the first time.

I continued with a few other benchmarks, and I noted a 12% average increase in compile time with the new compiler when it is *not* using pre-compiled headers. I noticed a 5% *decrease* in compile time when using pre-compiled headers (omitting hello.cc because of the compiler load overhead), but even these are not a fair test of the pre-compiled headers. The benchmark programs only use one header file, so the time savings is minimal. In personal use on larger programs that use multiple header files, I've found that pre-compiled headers save me incredible amounts of time, sometimes as much 50%.

I also noticed an 15% average size increase in the programs generated by the new compiler. However, remember that the programs I used to test the compiler were very short. On programs of more substance, the percentage is much lower.

I was pleasantly surprised to see a significant increase in speed. The execution time of the integer math benchmark was particularly astonishing—it was reduced to almost nothing! The Byte Works definitely deserves praise for implementing the new optimizations responsible for this improvement. Usually, these optimizations do result in slightly larger programs, as noted above, but the speed increase more than makes up for the difference!

Mike Westerfield tells us that the integer math benchmark that comes with the C compiler is not really a good indication of the speed savings you will see in "normal" programming. The compiler's new optimizations just happen to work extremely well with that program. However, you'll almost always see a speed improvement in programs compiled with the new compiler, especially ones that use arrays, because the speed of the multiplication operator (among other things) has been dramatically increased.

ORCA/C 2.0 is currently incompatible with the ORCA Symbolic Debugger, one of my favorite tools for tracing programming logic. ORCA/C 2.0 is also incompatible with the Pascal 1.4 libraries, temporarily preventing you from mixing C and Pascal functions in a single program. Don't worry too much though—newer versions of Pascal and the debugger are on the way.

If you already have ORCA/C and use it to compile moderate size programs I highly recommend you get the upgrade. The savings in compile time will more than make up for the cost.

With this release of the ORCA/C 2.0, Byte-Works is showing a real commitment to providing developers and educators with the right tools. Ultimately, better development tools result in better software.

—Review by Walker Archer

ORCA/C 2.0 BENCHMARKS	COMPILE TIME V 1.2	COMPILE TIME V 2.0	W/ HEADERS PRECOMPILED	PROGRAM SIZE V 1.2	PROGRAM SIZE V 2.0	EXECUTION TIME V 1.2	EXECUTION TIME V 2.0
Hello.cc	12 sec	18 sec	16 sec	3217	4184	n/a	n/a
FIB.cc	14 sec	13 sec	11 sec	3345	4306	12 sec	11 sec
IMATH.cc	13 sec	15 sec	12 sec	3803	4627	21 sec	1 sec
PRIME.cc	10 sec	14 sec	12 sec	11551	12500	3.5 sec	3 sec

PROLINE 2.0

by Morgan Davis
Published by
the Morgan Davis Group

10079 Nuerto Lane
Spring Valley, CA 91977-7132
(619) 670-0563 (voice)
(619) 670-5379 (BBS)

Product Summary: Full-featured bulletin board system with power usually found only on Unix machines, including networking capabilities.

System Requirements: Apple IIe or IIGS; 64K RAM; hard drive; ProDOS-compatible clock card; Super Serial Card (on IIe); Hayes-compatible external modem. Additional RAM (configured as a RAM Disk) and accelerator recommended. Not copy-protected; hard drive installable.

Retail Price: $259.95

Capability: 9
Ease of Use: 7
Documentation: 8
Support: 10

Overall: 8

The ProLine Bulletin Board System is one of the few commercial BBS packages available for the Apple II today. With something as involved as a bulletin board system, you'll be glad you went commercial when you need support or wish for upgrades.

ProLine works well as a stand-alone bulletin board system, but its real power is its ability to link to the world-wide Internet, a network of government, military, commercial, and industrial computers. With ProLine, a user on one system can easily send mail to any Internet account anywhere in the world, and also has access to literally hundreds of Internet message bases, known as newsgroups.

The ProLine package includes three 3.5" disks and about 300 pages' worth of documentation in a three-ring binder for easy updating. The manual consists of three sections. First is an installation and setup guide. The second section is a 30-page user tutorial, which may be photocopied freely and distributed to your users. This tutorial is a very well-written introduction to the ProLine system from a user's perspective. The third section is the reference manual, numbering more than 250 pages, which explains the function of every single program in the ProLine system, and also includes tutorials on networking, E-Mail, the Conference System, and the Data Library. The reference manual is also available online to all callers.

The installation and setup guide begins by clearly explaining the system requirements, and includes diagrams of the cables required to connect a modem to the Super Serial Card or the Apple IIGS modem port. (The cable is slightly different from the cables required by a simple telecomm package.) The manual proceeds to a step-by-step description of the straightforward installation procedure. After the installation is complete, the manual guides you through configuring your new BBS (selecting your serial interface, clock card, modem, and so forth).

As soon as your system is configured, the manual leads you through one final step—your first login. You first create the sysop account, so your users will have someone to complain to, and also set up the conference system, the file library, and other special features that were not taken care of in the initial configuration. The entire installation and setup process takes about half an hour.

Now you're ready to customize your system. You'll probably want to add a few conferences (message bases) to the Conference System and put a few files in the data library, as well as editing your "herald" file (the message that's displayed before logon) and "motd" file (the message that's displayed after logon).

While your users will probably use Plush, ProLine's menu-driven interface, you'll want to become familiar with the ProLine C-Shell, csh, which is similar to the Unix C-Shell. A background in Unix helps, but it's not essential, since the entire reference manual is always available via the "man" command. With a little practice, you can do things more quickly in csh than from the menus, and with a little more practice, you'll soon be writing your own scripts to save yourself even more time. If you want to get even more deeply into ProLine, you can even write your own ProLine programs or modify existing ones—the entire BBS is written in Applesoft BASIC.

But networking is ProLine's greatest feature. Even with the clear documentation, however, it can take a bit of work to set up a link to the Internet, so it's a process best saved until you're fairly experienced with the software. Basically, you need to contact the sysops of one or more other ProLine systems and arrange to exchange messages with them. This involves setting up your system to call theirs

occasionally, creating login accounts if they intend to call you, and setting up a newsgroup system file that tells ProLine what newsgroups you intend to receive and where to post networked messages. You must also write a map entry that will be used to inform the other ProLine sites how to route their messages to you most efficiently. No one step is particularly complicated, but there are quite a few of them, and each must be performed correctly.

At this point, I found I needed technical support from the Morgan Davis Group. Morgan Davis runs a ProLine BBS, on which he provides support for all his products, including ProLine itself. He is also available through the Internet itself and on GEnie. Through the course of a few phone calls and several messages on his BBS, my link with the Internet was finally established. I never had to wait more than a day for a response to a BBS message, and Morgan's answers were always complete, correct, and comprehensible.

In addition to the vast wealth of information available through the Internet, being on the network offers two other advantages. First, tech support is no further than your own BBS; and second, software updates are released directly through the network to your board, a system which is both faster and cheaper than waiting for the US Mail or UPS to deliver a package.

ProLine is a deep system. As with any program of significant depth, it may take you a little while to get a handle on all of its capabilities. Don't worry. It's worth it!

—Review by Dan Brown

KANGAROO

by Brainstorm Software
Published by
Seven Hills Software

2310 Oxford Road
Tallahassee, FL 32304-3930
(904) 575-0566

Product Summary: A IIGS Standard File utility that eases the pain of switching from folder to folder and offers many other useful features inside the Standard File Open or Save dialog.

System Requirements: Apple IIGS; System 5.04 or later; 1.25 MB RAM; 3.5" drive. Hard drive recommended. Not copy-protected; hard drive installable.

Retail Price: $49.95

Capability: 9
Ease of Use: 6
Documentation: 8
Compatibility: 7

Overall: 8

I like utilities. Utility programs are to me what power tools are to comedian Tim Allen, star of the TV show *Home Improvement.* In fact, I enjoy "playing" with utilities more than I enjoy playing games. But when it really comes down to it, some utilities are more fun to play with than they are actually useful. *Kangaroo,* from Seven Hills Software, definitely does not fall into this category.

Kangaroo is a "Standard File" utility for Apple IIGS Desktop programs (including AppleWorks GS and other programs that have the rainbow-colored Apple in the menu bar). It adds itself to all the "Standard File" dialogs (Open, Save As, etc.) in every program, giving you the ability to perform tasks there which would normally require a trip back to the Finder.

Like the classic *Boomerang* for the Mac, *Kangaroo* automatically remembers the files and folders you've used most recently and allows you to select them from a menu right inside the Open or Save As dialog. So if you've saved a file in *Platinum Paint* and want to import it into *HyperStudio,* there's no more searching for the right folder—it's right there on the pop-up menu, as is the file itself. You can also designate that certain folders are to be "locked" so they will stay on the menu even if you don't use them very often. *(Kangaroo* keeps track of up to 99 folders; you specify the maximum number. When you use a folder that's not on the program's list, the folder you've used least recently gets bumped off the list.)

You can tell *Kangaroo* that certain applications are part of a group. For example, you could put *Platinum Paint, SuperConvert,* and *HyperStudio* into a group—since they're all graphics-related applications—and Kangaroo will remember the folders you used most recently in those applications. When you're in another group, such as your word processing group, you won't see those folders, but will instead see the folders you used most recently in the word processing applications.

Even handier is the "direct open" feature, which allows you to open a recently-used file directly from the File menu, without having to go to the Open dialog. A submenu of recently-used files pops up right beside the File menu for easy selection.

The program also offers a set of built-in utilities that allow you to perform tasks right inside the Open dialog that normally would require a trip to the Finder. Looking for an AppleWorks GS file that's lost somewhere in the depths of your hard drive? *Kangaroo's* Find option can find it, fast—and once it's been found, a click of a single button automatically opens it. (With the Find File Desk Accessory, you'd have to remember the file's path and retrace it when you go to the Open dialog.) You can search only for files that AppleWorks GS (or whatever program you're in) can open, eliminating a number of "false" matches, and you can also choose to search all disks or only one. You can also delete and rename files (also change their access privileges) and eject, erase, and format disks—all inside the Standard File dialog.

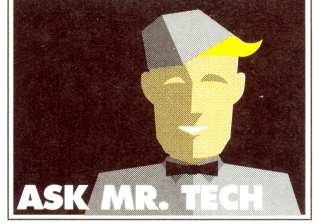
Kangaroo does have a few drawbacks. First, the pop-up menus and submenus it uses can take up most of the screen, especially in programs that use the IIGS's 320-pixel-wide screen display mode. (In fact, a couple of features take so much screen space that they are actually disabled in 320 mode.) This leads to a messy display and, occasionally, some confusion about where you should move the mouse. Hierarchical menus have long been a feature of Mac programs, but they clutter the screen even on that machine. I fear they will confuse IIGS users who aren't familiar with them.

The second annoyance is the fact that *Kangaroo,* like the IIGS Finder, leaves invisible files all over your disks to keep track of its settings. True, it only does this when the "Save positions in folders" feature is activated, but that feature is so useful that you're going to want to leave it turned on. Although I can't imagine a simple way to implement the feature without the invisible files, I also don't relish the thought of "Kangaroo droppings" all over my disks (it's even less appealing than "Finder droppings")! Luckily, there's an included program (KRemove) which will remove all the droppings (either *Kangaroo's* or the Finder's) from a disk, so you can keep them somewhat under control.

I encountered surprisingly few incompatibilities while using this program—surprising considering the things *Kangaroo* does and the parts of the System Software it has to patch to do these things. Only a couple of minor glitches (with the freeware init Two.Borders and a freeware RAM5 driver) have been reported, and Seven Hills hopes to have these problems solved shortly.

Kangaroo isn't for everyone. If you don't have a hard drive, it's going to be utterly useless. If you're generally a very organized person and know where everything is on your hard drive (and how to get to it), you might not need it either. But for the rest of us, Kangaroo might be just what we need to save ourselves untold time and frustration.

—Review by Craig Cecccarelli



QUESTION: Does leaving the computer on 24 hours a day increase or decrease its life? Does it cause too much heat to build up? What about cooling fans? I know I should turn off the monitor to protect the screen and conserve energy, but what about my hard drive?

Dan Hadley
Montrose, CO

ANSWER: The answer to the question "Should my computer be left on or off?" is generally "Yes." On the one hand, leaving it on all the time reduces the warmup/cooldown cycles that can stress solid-state components such as chips. On the other hand, leaving it on constantly guarantees that if there's a damaging power surge or spike at any time during the day, it will definitely hit your computer, which could shorten its life, to put it mildly. In our minds, the two balance each other out—in terms of how long your computer will last, you probably won't notice a difference. Today's electronics last a long time no matter what you do with them.

Leaving the computer on all the time is definitely convenient—you don't have to wait for the system to boot; just let the monitor warm up and you're ready to go. However, it does increase your electric bill slightly, and—if you're the type who cares about such things—increases pollution (and greenhouse gases if the electricity is generated by burning coal). In the end, it's your call.

Your fan question really is a separate issue. Apple II computers are designed to remain in a normal operating temperature by convection as long as the ventilation slots aren't blocked. If your computer is in an enclosed area, or if you have more than two cards in it, a cooling fan might be a good idea. (If you're experiencing curious intermittent problems with the machine, try leaving the top off for a while. If the problem goes away with the improved air circulation, you definitely need a fan.)

QUESTION: An Apple dealer here in Green Bay told me not to use WD40 to clean print heads, suggesting alcohol and a cotton swab instead. Who's correct?

Bernard Killoran
Green Bay, WI

QUESTION: I'm not sure about the WD40, but I do know from experience that alcohol is not the answer to cleaning the print head. The alcohol will act as a solvent on the adhesive that holds the jewel. (The jewel is the mask that holds the pins in alignment.) This will eventually allow the jewel to come loose. I was told that a better cleaner would be a freon-based product, which I used once and can't remember the name of now.

Jim Murphy
Cresco, IA

ANSWER: And the debate rages on. Bill Carver, who was formerly a service technician for an Apple dealer, says that he's never had a problem with his WD40 advice in literally hundreds of repairs. The key is to make sure that you expel the excess lubricant from the print head by running the printer's self-test on a blank sheet of paper without a ribbon installed. Carver admits he might have been more specific about the alcohol. Only the *tips* of the print wires should be dipped into the alcohol to prevent exactly the problem Murphy mentions. A general-purpose freon-based cleaner like Cramolin can also be used; however, it's more expensive and releases chlorofluorocarbons into the atmosphere. The alcohol or WD40 will work just as well, and you probably have some on hand.

QUESTION: For five years, I've been trying to download files from CompuServe with no success. I have an Apple IIGS, a plain old Muraphone 300 modem (no automatic anything!), and AppleWorks GS. The modem worked fine on my old Color Computer. CompuServe says the problem is with AppleWorks GS. Apple has told me the problem is CompuServe. What do I do?

CompuServe seldom mentions the IIGS in their magazine anymore. Is there an online service more in tune with the needs of IIGS users?

Chris Klemmer
Granby, CT

ANSWER: Things have changed a lot since you bought that Muraphone modem. While it may still work, eventually you reach a point of diminishing returns, spending far too much time and effort trying to get the thing to do what you want it to. I know the feeling well. I'd say the time is ripe to replace that 300 BPS modem with a 2400 BPS model—especially since you can do it for well under $100 now. Coincidentally, there's an article in this very issue of *II Alive* which may help you pick one.

AppleWorks GS seems to have problems with Xmodem downloads under certain circumstances. I know of people who have never had a problem with it, and I know of plenty of other people who have had nothing *but* problems. There doesn't seem to be a real pattern. It sure would be nice if Claris felt like finding the bug and fixing it, but they don't appear to be so inclined. While you're investing in a new modem, therefore, I suggest investing in a standalone communications program, like *ProTERM 3.0, Point-to-Point,* or *Talk Is Cheap.* A standalone communications program *always* has more features than the communications "module" of an integrated package.

Throwing money at a problem is not always the best way to solve it, but it works pretty well in this situation. If your first reaction is "I can't afford it," then think about all the times you've tried to download files in the past five years (without success). Time is money, and you've already spent five years' worth of both trying to get things going.

All of the large online services have something to offer for the Apple II. Don't be fooled by the number of times the Apple II is mentioned in the service's magazine—investigate what's really going on in the CompuServe Apple II bulletin board. CompuServe tends to be a bit pricier than either America Online or GEnie (the other two giants), which means that the people who hang out there tend to take their computing pretty seriously: power users for whom money is no object. The information you find on CompuServe tends to be very accurate and to the point. Lower-priced services tend to have more "just plain folks" on them, making up in quantity what they occasionally lack in quality. I've had great experiences on GEnie, but all the services have their merits.

QUESTION: I have an Apple IIGS with a SyleWriter printer and System 6. System 6 supposedly has a StyleWriter driver which will allow you to use the printer in "any IIGS Desktop program," according to the ad. However, I can only print to the StyleWriter printer from within the Teach word processor included with System 6—the printer doesn't work with AppleWorks 3.0. How can I get it to work?

James J. Murphy
Sunnyvale, CA

ANSWER:: The StyleWriter can't be used with AppleWorks 3.0 for two major reasons. The first reason is that the System 6 StyleWriter driver simply doesn't work with AppleWorks, because AppleWorks is *not* a IIGS Desktop program. The term "IIGS Desktop Program" refers to a program written specifically for the Apple IIGS, and furthermore one which uses the standard Apple IIGS "user interface." Most IIGS Desktop programs look a lot

like the Finder—a menu bar at the top of the screen, windows you can drag around, a light blue screen background, and so on. They're graphics-based and mouse-driven.

The Teach word processor included with System 6 is a IIGS Desktop program. AppleWorks 3.0 is not—it immediately fails the first test, that of being written specifically for the IIGS. Since AppleWorks 3.0 will also run on IIe and IIc computers, it cannot be a IIGS Desktop program, since those computers won't run such programs. It's also not graphics-based and mouse-driven. AppleWorks GS *is* a Desktop program, and would import your AppleWorks 3.0 files and print them on the StyleWriter, but it's a rather pricey solution if you just need a "print engine."

But even the fact that AppleWorks 3.0 isn't a Desktop program wouldn't be an insurmountable obstacle if it wasn't for the *other* problem, which is the real reason the StyleWriter is a bad choice if you *ever* print text documents.

The StyleWriter is a graphics-only printer. A normal dot-matrix printer can handle a simple text stream: AppleWorks sends an "A" to the printer, and the printer "knows" what dots need to be printed to make an "A" on the paper. With the StyleWriter, the printer doesn't have this "machine intelligence." The computer has to describe to the printer exactly which dots should be printed to create each letter—129,600 of them per square inch at the printer's maximum resolution. So instead of sending the printer an "A," the computer has to send it a *picture* of an "A." Worse yet, the printer doesn't remember what an "A" looks like; the computer must send the whole picture every time the letter "A" occurs in your document. IIGS Desktop programs do that as a matter of course—even on dot-matrix printers—to allow programs to print with different fonts and styles, but AppleWorks 3.0 is designed to let the printer do most of the work. And the StyleWriter simply is not equipped to handle the task.

It would be technically feasible to write a standalone program (or a TimeOut application) which would take an AppleWorks word processor file and convert it to graphics form for downloading to a StyleWriter. Such a program would probably not be very simple if it was to support boldface, underline, and all the different sizes and spacings of a real dot-matrix printer. And, to be honest, I don't know of anyone who's working on a project like this one.

QUESTION: I was looking at the "Apple II Memory Map" in the last issue and am confused by some of the numbers on it. Why do some start with dollar signs? Are you saying that 8192 bytes of memory used to cost $2000?

David Pierce
Cincinnati, OH

ANSWER: The dollar signs are an Appleism that indicates that the number is written in hexadecimal (base 16) notation. (On other computers, you'll see hexadecimal numbers notated with an H after them, or, on Unix systems, with an 0x in front of them.)

The discussion in last issue's "Ram on the Run" article about binary and how it works just like the decimal system apply to hexadecimal as well. Hexadecimal (the root words mean "6 and 10") has sixteen symbols—since there are only ten numerals, 0-9, the letters A-F are pressed into service as additional digits. (This accounts for some numbers you may have seen—like $DEAD and $BEEF—which look like words but are, in fact, numbers.) The place values (1, 16, 256, 4096...) are powers of sixteen.

Hexadecimal is particularly handy when talking about computers because it's related closely to binary. Each hexadecimal digit holds the same amount of value as four binary digits. This makes it easy to convert between hexadecimal and binary by substituting groups of four bits for hex digits. Additionally, since there are eight bits in a byte, all the possible values of a byte fit into two hexadecimal digits. And computer-related numbers tend to be "nice" in hexadecimal—for example, a kilobyte, which is 1024 bytes in decimal, comes out to a round $400 in hexadecimal. And, of course, the 8192 you mentioned is equal to $2000 in hex (as it's often called by lazy programmers).

The Apple's built-in Monitor firmware allows you to examine and change the contents of memory, all in hexadecimal. You can find details on it in Apple's technical reference manuals. ■

HEX/DECIMAL/BINARY TABLE

Use this table for converting any single-digit hex number to decimal (or binary) or for converting any decimal number 0-15 to hex. You can also use it to convert a hex number of any length to binary (just substitute the appropriate group of four binary digits for each hex digit) or any binary number to hex (divide the binary number into groups of four starting at the right and substitute the corresponding hex digits—add extra zeroes on the left, if necessary, to make sure the binary number has a multiple of four digits).

HEX	DECIMAL	BINARY
0	0	0000
1	1	0001
2	2	0010
3	3	0011
4	4	0100
5	5	0101
6	6	0110
7	7	0111
8	8	1000
9	9	1001
A	10	1010
B	11	1011
C	12	1100
D	13	1101
E	14	1110
F	15	1111

CONVERTING HEX TO DECIMAL

This technique works with any two-digit hex number (we'll use $AF).

1. Break the number into its component digits: A and F, in our case.
2. Figure the values of the components. The numbers (0-9) have the value you might expect. A=10, B=11, C=12, D=13, E=14, F=15. In our case, the A is worth 10, and the F is worth 15.
3. Multiply the first value (10) by 16. In our example, this yields 160 (the 15 is still tagging along).
4. Finally, simply add the two numbers. Thus, $AF is 175 in decimal.

CONVERTING DECIMAL TO HEX

This technique works with any number from 0-255 (we'll use 142).

1. Divide the number by 16. In this case, this yields 8.875. The 8 is the first digit of the hex number. (If the result is greater than nine, use the appropriate hex digit: A=10, B=11, C=12, D=13, E=14, F=15.)
2. Take the portion after the decimal point in the above example (.875) and multiply it by 16. In our case, this yields 14. This is the second hex digit—since it's greater than 9, we write down E.

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The Q-RAM GS2 is an economical way to add 4 MEG of memory to your Apple IIGS. It's fully compatible with all Apple IIGS hardware and software—including the IIGS RAM Disk and DMA peripherals like the Apple II High Speed SCSI Card.

The 4 MEG Q-RAM GS2 is not only affordable, but comes with FlashBoot free! FlashBoot lets you create a super fast, super convenient RAM disk on your Apple IIGS.

When you install the Q-RAM GS, life becomes just a lot easier. Programs load completely into memory at startup, eliminating disk swapping. Out-of-memory error messages disappear. You'll have memory to spare—memory to load desk accessories, or to set up a convenient RAM disk.

The Q-RAM GS2 installs easily, replacing your original 1 MEG. Apple memory board, or any other underachieving memory card you may own. But don't worry about getting stuck with a left over board that you can't use. Ask your sales rep about a RAM card trade-in. It is a terrific way to recycle your old card and save money at the same time!

Of course, since you're dealing with Quality Computers, you get an unconditional 30-day money-back guarantee and a five-year warranty. And the price is the best news of all—a 4 MEG Q-RAM GS2 costs about the same or even less than other IIGS memory cards in a 1 MEG configuration!

4 MEG Only
$199.95

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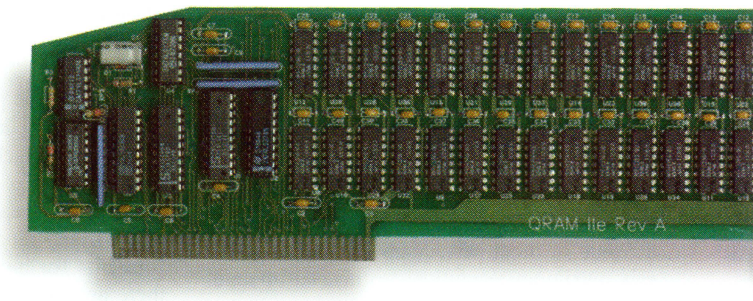
As an added bonus, when you buy a 4 MEG Q-RAM GS2, you get FlashBoot free. FlashBoot lets you quickly save and load the contents of a RAM Disk. What is a RAM Disk? Every Apple IIGS has a built-in RAM Disk capability that lets you reserve some of your computer's memory as a super-fast electronic disk drive. Set up your RAM Disk in the morning and you might not have to swap program disks all day! You can discover the speed and convenience of a RAM Disk with FlashBoot. FlashBoot offers several flexible options to boot the RAM Disk and the other drives attached to your computer, and makes loading your RAM disk easy.

Beef up your Apple IIe to 1 MEG for only $99.95 and get more from AppleWorks, too!

Snap the Q-RAM IIe into your Apple IIe, and you'll create a whole new computing experience. Programs load completely. A lot less disk swapping. A lot more productivity. All of AppleWorks, plus your TimeOut applications will completely load into RAM. That means you can concentrate on working—not waiting for disk drives. Plus with a huge 1 MEG treasure trove of RAM, you can create huge documents, and not run into a single "Out of Memory" message.

Imagine students in your school's IIe lab doing more learning and less waiting. Imagine the joy of starting AppleWorks, completing a project, and never having to go back to the disk drive. It can happen with the Q-RAM IIe.

Now imagine all of this convenience and productivity



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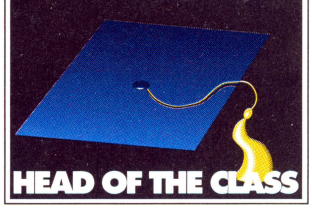


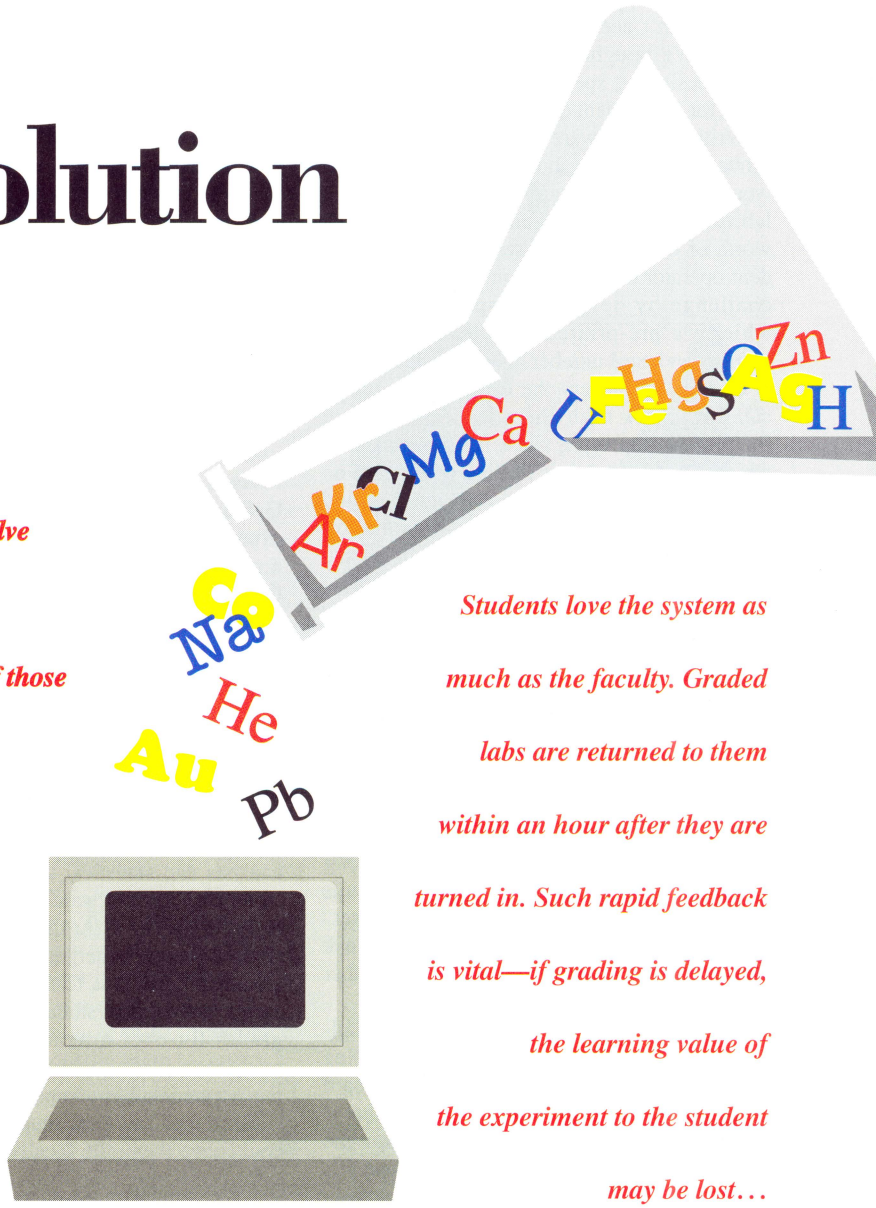
Apples In Solution

by Robert L. Myers, Ph.D.

Grading student chemistry laboratory reports is an extremely tedious and time consuming process, especially if it's done right. There's a long list of things that need to be checked. For example, did the student follow instructions and use ink? Did they include proper units for all numbers? Did they use the proper number of significant digits? Are the calculations accurate? Are the measurements themselves accurate and precise?

It's extremely time-intensive to check these things manually. When I first came to the West Virginia Institute of Technology, four sections of twenty-four students required sixteen to twenty-four hours per week—just for grading lab reports! Programmable calculators helped, but not much. Furthermore, the statistical evaluation of each experiment required even more time, and generally was simply omitted, even though it would provide valuable insights on the experiments the students were performing.

In 1980, we decided to solve the problem using "one of those new-fangled computers."



Students love the system as much as the faculty. Graded labs are returned to them within an hour after they are turned in. Such rapid feedback is vital—if grading is delayed, the learning value of the experiment to the student may be lost...

THE SOLUTION

In 1980, we decided to solve the problem using "one of those new-fangled computers." Little is to be gained by grading non-numerical experiments by computer—those must still be checked by hand because the computer simply cannot deal with the wide variety of possible student answers. In our laboratory we schedule fourteen different experiments which are appropriate for computer grading—common experiments which are found in most freshman chemistry lab manuals.

The computer was an Apple II+. The chief programmer (if you can call a person with absolutely no knowledge of programming a programmer) was me.

A project of this size requires answering many questions. What language do we use? How do we get reasonable speed? How do we get our computerphobes (both staff and students alike) to accept the new system? What about the individualistic professor who doesn't want to grade the same way others do? How does the student data get into the computer? How can we check things like use of ink and proper units of measure? What happens if the system crashes? How do we grade unknowns? How do we handle statistics for unknowns? How do we make sure that student data goes where it should?

We chose to write the software in Applesoft BASIC primarily because Applesoft was built into the ROM of the computer and was, therefore, free. We bought the Beagle Compiler (which I highly recommend) to improve the software's speed, but later, we needed even more speed. An a 4 MHz accelerator card, a RAM disk, and a large printer buffer finally provided the performance we required.

MORE PROBLEMS & SOLUTIONS

The biggest problem was entering the student lab data. Our options appeared to be to either allow students to enter the data directly into the system—which caused a serious bottleneck with the number of students we had—or to let them enter data into a separate program on computers at the library and have the main system import the data from these students' floppy disks. Neither of these options were particularly appealing. After taking the system this far, it seemed almost criminal to tie it down with slow typing or SneakerNet.

Technology came to the rescue. Our data

entry problems were solved when we discovered a mark-sense card reader manufactured by HEI Corporation of Victoria, Minnesota. The card reader was optically-based, which meant that it could read cards marked with pencil or pen. It didn't need holes in the cards or a #2 pencil. We bought one immediately and set about designing specially printed mark-sense cards for our student data.

Writing the software to read individual cards proved to be simple, but we needed a way to would identify each card uniquely (since each lab experiment would generate several cards worth of data from each student) to keep student operator error to a minimum. We met the challenge by developing special cards on which we pre-printed both the experiment number and card number. The software, which is designed to accept the cards in any order, can now check each character from the card for proper data type, since it knows exactly which data element it is dealing with based on the experiment number and card number, and produces a formatted printout showing the student exactly what was on the cards he or she fed in and reporting any errors for correction.

Students are uniquely identified by their desk number and social security number. The student enters both of these numbers on the card; the software reads the student's desk number from the card, retrieves the corresponding social security number from a file, and compares it to the social security number the student entered on the card. This eliminates the possibility of a student entering the wrong desk number on the cards and overwriting another student's results. (The student's results are stored on the computer's hard drive by section number, experiment number, and desk number, so it's important that the desk number be accurate.)

We protect our data against hard drive failure with a simple disk mirroring scheme using two hard drives. The information from the card reader is written to both hard drives so that if one crashes, we can retrieve the data from the other. (Luckily, we haven't needed to use this feature yet!)

When the time has arrived for an experiment to be graded, a simple visual scan to check for the use of ink and appropriate units takes only a moment. An entire section's worth of cards can be run in just a few minutes—even during a lab session, so students can have immediate feedback. The software lets instructors enter additional point deductions the keyboard, if necessary, to penalize the student for the things the software doesn't grade.

When the instructor wishes to print grades for a single student or a whole section, he simply responds to two or three simple questions, then lets the printer do its work. The grading program automatically reads the student data (indexed by desk number), checks it for proper use of significant figures, checks the calculations for accuracy, compares the student's results to the range of acceptable results, deducts points for errors, and prints the results. The process is completely automated and takes about four minutes per section.

Later in the semester, after grading is essentially complete, the data recorded as part of the grading process is analyzed, using special statistical routines I wrote, to detect possible problems with the experiments themselves. If a large number of students produced results outside the expected range, we may need to check the experiment or the substance that the class analyzed (the unknown). If the software flags a problem, we can re-analyze the unknown, correct the data file containing the information about the unknown, and then regrade the students affected by the change (these students are identified during the statistical analysis).

THE RESULTS

Our current solution, which evolved over several years, addresses all these concerns. Grading a 24-student section for a single experiment now requires about ten minutes for a preliminary visual scan and another four or five minutes for the Apple IIe (which replaced our II+ shortly after it became available) to grade and print reports for each student. What an improvement! Fifteen *minutes,* not fifteen hours!

We also developed a test-grading package using the same technology. Since we already had the card reader, it seemed an obvious second application. The software grades multiple-choice tests and performs a complete item analysis and statistical analysis on the results. Naturally, this software is integrated with the rest of the system. At the end of the semester, another program merges grades from the final exam, the previous tests, and the lab experiments to create the student's final grade. Letter grades for over a hundred students can be ready for reporting to the registrar an hour after the last student has completed the final exam.

Once they saw how much time the software could save them, the faculty accepted the new system instantly. We made it friendly enough for anyone to use, with menus and context-sensitive help screens. Nearly all of the grading factors fully customizable, accommodating professors who prefer to grade a little differently than others. Professors can customize the physical lab setup, the number of points to be deducted for a particular error, how many times to make that deduction before no further deductions are made, the minimum score which can be awarded, what score will produce a congratulatory message, and many other options. The software is password-protected so that only authorized users can access the grading features.

Students love the system as much as the faculty. Graded labs are returned to them within an hour after they are turned in. Such rapid feedback is vital—if grading is delayed, the learning value of the experiment to the student may be lost, because the student quickly forgets its purpose. Besides the response time, the students appreciate the fact that their results are checked by machine and, therefore, are assured that the grading is completely impartial and consistent. To them, this more than makes up for the small additional effort they expend in filling out the cards properly and the small cost (about $5) of buying the cards from the college bookstore.

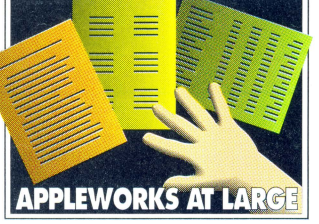
Of course, someone has to maintain the data files that the system requires—class rosters, expected results, required data formats, and so on. The faculty members themselves can keep this information up-to-date, or they can recruit a knowledgeable "technician" to assist them. ■

A SPECIAL OFFER

Our system is a completed project. None of the more than sixty major programs have been modified significantly in the last three years of daily use. And, of course, the same techniques can also be applied to other types of projects, provided that the kinds of data encountered are appropriate to computer processing.

I will be glad to provide the software free of charge to any interested party (charging only for labor and shipping costs). The magnitude of the package makes distribution on floppy disks rather difficult, so please be prepared to send me your own hard drive (any ProDOS compatible hard drive 10 MB or larger) so that I can install the software directly onto it. I can also supply cards for use with the system, as long as I'm given sufficient lead time for printing. I can be contacted at the address below:

Robert L. Myers, Ph.D.
Department of Chemistry
West Virginia Institute of Technology
Montgomery, WV 25135



Don't Fear The Macro

by Will Nelken

AppleWorks is deservedly one of the most popular programs in existence. Offering an integrated word processor, database, and spreadsheet in a single package, AppleWorks meets most users' home, school, and small business computing needs with flexibility and consistency. It's easy to learn, but behind its deceptive simplicity lurks deep and fundamental power.

No single enhancement has done as much to increase the value of AppleWorks as TimeOut UltraMacros. In its most basic use, the program merely automates repetitive tasks, memorizing your keystrokes to save you from having to retype them. Without any kind of hardware acceleration, UltraMacros can increase the working speed of repetitive AppleWorks functions dramatically. (If you do have an accelerator card or chip, you won't believe your eyes when you see the AppleWorks screens flash by!)

But UltraMacros' power goes far beyond simple automation. Its uncomplicated—yet powerful—macro programming language enables AppleWorks to do things nature never intended and empowers ordinary users (yes, even you!) to tailor AppleWorks' functions to suit their own needs. Complete application programs that run inside AppleWorks can be, and have been, created with UltraMacros. Additionally, UltraMacros adds nearly two dozen new Open-Apple commands to AppleWorks, plus a screen blanker, mouse control, and on-screen clock display.

If you're anything like me, UltraMacros sounds pretty exciting—right up to the word "programming." Maybe you weren't a straight-A math student. Maybe you think you're "too old" or "not smart enough" to learn something as "technical" as programming. Before you reject the idea out of hand, though, read these four words: you can do it! From personal experience, I know that literally anyone can write macros that significantly increase their productivity.

The programming capabilities of UltraMacros have, in fact, been known to cause seasoned hackers to drool uncontrollably. But you certainly don't need to plumb those depths to get more than your money's worth from UltraMacros. Programming in UltraMacros is significantly easier than programming in most other environments, because you already know how to get AppleWorks to do what you want it to do. That's the key. A macro just duplicates the steps you're already familiar with and performs them faster.

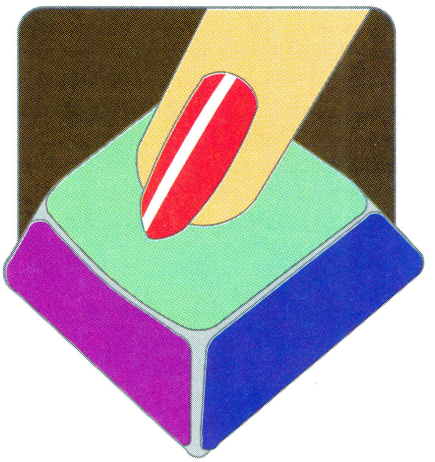
RECORDING A MACRO

Let's suppose you want to create a new document that contains your return address and today's date—in other words, a blank letterhead ready for your composition. Now, if you were doing this manually—from the keyboard—you'd do it like this:

1. Go to the Main Menu. (A shortcut for getting to the Main Menu from virtually anywhere in AppleWorks is to press OA-Q, then Escape. This works even if you're already at the Main Menu, or somewhere in AppleWorks that might require more than one press of Escape to get to the Main Menu.)
2. Select option 1, "Add files to the Desktop" from the Main Menu.
3. Select option 3, "Make a new file for the Word Processor" from the Add Files Menu.
4. Select option 1, "From Scratch" from the Word Processor Menu.
5. Enter the name for the file (for example, Letterhead), then press Return.
6. Type your return address, two carriage returns, and today's date.

If you regularly write letters, automating this sequence of actions could save you a considerable amount of time and finger exercise. It's simple to turn this procedure into a macro via UltraMacros' recording feature. With UltraMacros installed, perform the following steps:

1. Press OA-X to activate the recording mode.
2. Press the key you want to use to launch this macro. Every macro in UltraMacros is assigned a key with which you can later trigger the macro. A good key to use in this example is L, for Letterhead. (If you are using UltraMacros 4, you must select a key which has not previously been defined.)



3. Follow steps 1-6 above. Remember, since you want the macro to work from anywhere in AppleWorks, you should use the OA-Q, Escape shortcut to get to the main menu in Step 1, even if the Main Menu is already displayed on your screen. Also, in Step 6, be sure you use UltraMacros automatic date-entry feature (SA-' or SA-") instead of actually typing the date. This will force UltraMacros to read the date from your system's clock automatically, so the date will be correct whenever you use the macro again. Be careful—any mistakes you make will be included in the completed macro.
4. Hit a couple of extra carriage returns after the date to move the cursor down to a position ready for entering a letter.
5. Finally, press OA-X again to stop recording.

Now, remove the Letterhead file from the Desktop. (You just created it while recording the macro.) Then press SA-L (all macros are triggered with the Solid-Apple key plus one or more other keys) and watch AppleWorks flash through the procedure at lightning speed! Congratulations—you just created a simple but useful macro. Don't underestimate the power of simple things! 80% of the things we do are simple, and automating them is an easy way to save tons of time.

LISTING AND SAVING YOUR MACROS

Your new macro will be available until you leave AppleWorks or until you redefine SA-L for another task. In order to save it for permanent usage, UltraMacros lets you create a Word Processor document containing a listing of all the currently defined macros. This process is called "decompiling" because it converts the active macro set from compressed machine language to readable text (just the reverse of "compiling"). You use the Compiler to do this, as follows:

1 Create a new Word Processor file using the normal procedure. The name doesn't really matter; we'll call it Macros.

2 Press OA-Escape to call up the TimeOut Menu.

3 Select "Macro Compiler" from the TimeOut Menu. (If you're using UltraMacros 4, select "U4 Compiler" instead.)

4 From the Compiler menu, select option 2, "Display current macro set."

The resulting list of macros is called "source" code, because it is the original (human-readable) format of written macros. The machine language from which it was derived is called "object" code, because it is the final (machine-readable) format of your macros. Newly recorded macros are at the end of the source listing, so press OA-9 to move to the end of the document and look for the macro which begins with "L:<all"—that's your macro. It probably looks something like this:

```
L:<all oa-Q esc rtn down down rtn
rtn>Letterhead<rtn>Will Nelken<rtn>1675 Grand
Avenue<rtn>San Rafael, CA 94901<rtn rtn date rtn rtn>!
```

Macro 1

It's kind of run-together, isn't it? If you look closely, though, you can see how UltraMacros represents the text you typed (such as your name and address) as well as how it represents command keys, such as the Return and Escape keys, which are not printable but which tell AppleWorks to do specific things.

The very first element is the macro key symbol, "L", which tells UltraMacros that the macro is activated with the SA-L keystroke.

It is separated by a colon from the domain symbol, <all>, which indicates that this macro can be called from *all* AppleWorks program modules (you can design macros that are accessible inside only one of AppleWorks' modules—for example, the Word Processor).

The rest of the macro tells UltraMacros what you typed. The angle brackets, <all>, tell UltraMacros whether the text is to be interpreted literally as keystrokes—notice that my name is outside the brackets, which causes UltraMacros to actually "type" my name exactly as it appears—or as tokens representing keys or commands, like <rtn> and <oa-Q>. If you use "rtn" outside brackets UltraMacros would actually type the three letters "rtn" instead of pressing the Return key, so the brackets are pretty important.

And, finally, there's the "end of macro" symbol, "!", which tells UltraMacros that you're done defining a macro.

ANNOTATING YOUR MACROS

Once you have decompiled the recorded macro, you can rearrange its format and annotate it for easier reference.

```
L:<all:                    // LETTERHEAD MACRO
 oa-Q esc:                 // get to the Main Menu
 rtn down down rtn rtn:    // create a new AWP file
 >Letterhead<rtn:          // name the file
 >Will Nelken<rtn:         // enter the return address
 >1675 Grand Avenue<rtn:
 >San Rafael, CA 94901<rtn rtn:
 date rtn rtn>!            // date the letter
```

Macro 2

Annotating your macros will make them easier to understand, and that will help you (and others) later when you need to modify them. The style is up to you, but generally the macro is divided into its logical steps, one step on each line, with comments added as needed. Note that we added a colon at the end of each line of code—strictly speaking, this isn't *always* necessary, but the cases where it isn't are few and far between, especially with UltraMacros 4. Also, note that our comments are always inside the < > angle brackets (although the closing bracket may not follow until the next line). If they were outside the brackets, UltraMacros would interpret them as text to be typed, not as comments.

UltraMacros 3.x users must embrace their annotations with curly brackets, which tell the Compiler to ignore what lies between them, like this:

```
L:<all:      { LETTERHEAD MACRO }
```

UltraMacros 4 users may prefer to use the "double slash" to mark their comments. The two slashes (//) tell the Compiler to ignore everything to their right on that line. We used that technique in Macro 2.

Your macro source file, with comments, should be saved to disk, just like any other Word Processor file. You could also "clip" the letterhead macro and save it in a file of its own. Should you want to modify the macro (or the entire macro set), you can simply add the file to the Desktop and enter your changes in the Word Processor. Although you can always de-compile an active macro set in an emergency, you won't see the comments or careful formatting (all comments and blank space are removed by the Compiler to compress the object code).

ACTIVATING MACROS FOR IMMEDIATE USE

The macro you just recorded will stick around until you leave AppleWorks. You may want to use it in a later AppleWorks session, or you may want to use a set of macros someone else wrote. To activate a previously stored macro or macro set, add its source file to the Desktop and compile it, as follows:

1 Call up the TimeOut Menu by pressing OA-Escape.

2 Select Macro Compiler (UltraMacros 4 users should select U4 Compiler).

3 Choose #1, Compile a new set of macros.

4 Answer "No" to "Pause each line?"

5 "Compile from" the beginning of the file.

The Compiler takes over from there, scanning the source code and converting it to object code line by line. If an error is detected, the Compiler will beep and point you toward the problem. Otherwise the pleasant "No errors" message tells you that all your macros are now ready for use. Take a look through the source file and see which keys activate macros (and check for comments that will clue you in to what each macro does and how to use it).

UltraMacros also offers a feature called task files, which are essentially pre-compiled sets of macros that are saved on disk and are available without compiling—but that's a subject for another article.

CREATING A NEW DEFAULT SET

Some macros are so frequently useful that you'll want to have them available all the time. (Or you may simply want to keep a newly recorded macro from disappearing when you quit AppleWorks.) To make the currently active macro set (including any macros you have recorded in your current AppleWorks session) the *default* macro set that is activated each time you start up AppleWorks, follow this procedure:

1 Call up the TimeOut Menu and select "Macro Options" (UltraMacros 4 users should select "U4 Options" instead).

2 Choose Option 3, "Save macros as default set," and answer "No" to the prompt, "Activate auto startup macro?" (There are situations when you'll want to answer "Yes" to this prompt, which is why the question is there, but these situations are beyond the scope of this article.)

The macros, including any you have recorded, will be permanently saved in the ULTRA.SYSTEM file (under UltraMacros 4, the UM4.0.SYSTEM file).

EMBELLISHMENTS & ENHANCEMENTS

Once you've saved the source code for your Letterhead Macro, you may want to make it "smarter." As you may have noticed, the macro works just fine the first time you run it, but if you run it again while a file called "Letterhead" is already on the Desktop, the macro fails. This happens because AppleWorks interjects a warning message that says:

"You are about to have more than one Desktop file with this name. Do you really want to do this?"

The macro isn't expecting this message, so it has no keystrokes embedded in it to handle this condition. Instead, it keeps sending the recorded keystrokes blindly, even though they don't fit the screen prompts anymore. This is not only inconvenient—it's pretty unfriendly too.

To make the macro "smart," add error-checking logic, like this:

```
L:<all:                        // LETTERHEAD MACRO
 oa-Q esc:                     // get to the Main Menu
 rtn down down rtn rtn:        // create a new AWP file
 >Letterhead<rtn:              // name the file

 $3 = screen 1,24,2:           // capture the first two
                               // screen characters at the
                               // left of the bottom line
 if $3 = "Do":                 // if the warning message is
                               // displayed, the first word
                               // of the prompt will be in $3
  print "Y": endif:            // if so, answer "Yes" and add
                               // the second file; otherwise,
                               // skip to rest of the macro

 >Will Nelken<rtn:             // enter the return address
 >1675 Grand Avenue<rtn:
 >San Rafael, CA 94901<rtn rtn:
 date rtn rtn>!                // date the letter
```

Macro 3

You can further improve the macro by allowing the user to type in a unique name for the new file, instead of always creating a file named Letterhead. (We can't really assume that the user will, in fact, type in a unique name—rule #1 of programming is never to assume that the user will behave a certain way—so we'll still include the error-checking logic.) Here's how the macro looks now:

```
L:<all:                        // LETTERHEAD MACRO

 oa-Q esc:                     // get to the Main Menu
 rtn down down rtn rtn:        // create a new AWP file

 input: rtn:                   // let user enter file name

 $3 = screen 1,24,2:           // handle duplicate file name
 if $3 = "Do":                 // (see Macro 3 above)
   print "Y": endif:

 >Will Nelken<rtn:             // enter the return address
 >1675 Grand Avenue<rtn:
 >San Rafael, CA 94901<rtn rtn:
 date rtn rtn>!                // date the letter
```

Macro 4

One way to provide unique names automatically for newly-created letterhead files is to number the files, increasing the number by one as each file is created. In this case, we can safely do away with the logic that checks for duplicate files, since *we're* creating the names. (The user of this macro would probably use OA-N to rename the new file before saving it.) The macro would look like this:

Continued on next page

ABOUT OA AND SA

OA and SA are abbreviations for the Open-Apple key (the key with an outline of the Apple logo on it) and the Solid-Apple key (the key with a filled-in Apple logo on it). On some newer Apple II models, the Solid-Apple key will be labeled "Option" instead of having the filled-in Apple logo on it. The Open-Apple key on these models sports both the Open-Apple symbol and a little propeller symbol and is also referred to as the "Command" key. They're the same keys as the OA and SA we mention in the article; just mentally substitute "Command" and "Option" for OA and SA.

THE II ALIVE MACRO EXCHANGE

II Alive is pleased to announce an ongoing effort to collect the best and most innovative macros for AppleWorks. Starting with the next issue, we'll publish your macros. Send us your best and earn $10 for your trouble! All macros we publish will be placed in the public domain so all AppleWorks users will be free to use them, abuse them, and build on them.

THINGS YOU CAN DO WITH ULTRAMACROS

This list is only a small sampling of what you can do with UltraMacros. All of the applications on this list are readily available as pre-programmed macros (on the UltraMacros disk itself, from user groups and online services, or in a commercial product) or can be created all by yourself.

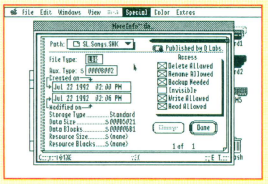
- Press one key to print a document, bypassing the "from where" and "how many copies" questions
- Provide word-wrapping in the spreadsheet
- Automate billing in a business
- Save, print, or remove all documents on the Desktop
- Locate a "lost" file on your hard disk
- Play Hangman
- Auto-hyphenate a fully justified word processor document
- Control various printer functions from the keyboard
- Add or subtract columns of numbers onscreen
- "Dump" any AppleWorks screen into a word processor document
- Write checks and manage a general ledger
- Automate TimeOut Calendar functions
- Create an outline document
- Convert text for printing in foreign alphabets with SuperFonts
- Instantly create or destroy files on the Desktop
- Print word processor documents in two or more columns
- Print two-sided word processor documents
- Print a single label from a database file
- Set an alarm clock in AppleWorks
- Create pull-down or pop-up menus
- Change the case of a word, paragraph, or document
- Instantly install a page-numbered footer
- Quickly add from or save to any drive or subdirectory
- Create a personalized dated letterhead or memo
- Enter MouseText into a word processor document
- Eliminate duplicate records in a database

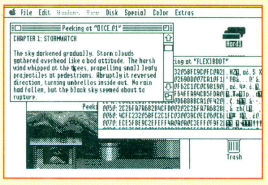
WHAT IS A MACRO?

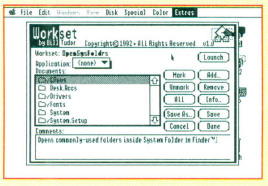
"Macro" (the root word means "big") is short for macro-instruction. Thus, a macro is a large or complex series of instructions reduced to a simpler operation, such as a single keystroke. The concept is a powerful one. A macro can compress a great deal of activity (dozens of keystrokes, decisions, and data entry) into just one macro-instruction. Some macro programs simply record keystrokes (they store a series of keypresses in memory and play them back when you request it); some allow you to write and compile macros (allowing you to include commands normally unavailable at the keyboard). Some work in multiple programs (hiding "in the background" until invoked); others, by design, work only within a specific program (allowing them to take full advantage of the environment). UltraMacros provides compiled macros specifically for AppleWorks. An UltraMacros macro can do anything AppleWorks itself can do, plus it can use UltraMacros' own commands to do even more.

There are also other kinds of macros, such as those used in assemblers and other programming languages. The basic concept is the same—reducing a complex set of instructions to only a few instructions—but the way it works is often radically different.

Six Pack







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APPLEWORKS AT LARGE

Continued from page 21

```
L:<all:                         // LETTERHEAD MACRO

 L = L + 1:                     // add 1 to a letter counter

 oa-Q esc:                      // get to the Main Menu
 rtn down down rtn rtn:         // create a new AWP file

 print "Letterhead " + str$ L: rtn:
                                // include the number at the
                                // end of the filename

 >Will Nelken<rtn:              // enter the return address
 >1675 Grand Avenue<rtn:
 >San Rafael, CA 94901<rtn rtn:
 date rtn rtn>!                 // date the letter
```

Macro 5

Some people enjoy seeing the AppleWorks screens flash by as the macro does its work, but others find it annoying. And the screen displays do actually slow down our macro. So let's get rid of the screen flashing. We can tell AppleWorks to stop updating the display while our macro runs:

```
L:<all:                         // LETTERHEAD MACRO
 L = L + 1:                     // add 1 to a letter counter

 display #off:                  // freeze the screen display

 oa-Q esc:                      // get to the Main Menu
 rtn down down rtn rtn:         // create a new AWP file
 print "Letterhead " + str$ L: rtn:
                                // include the number at the
                                // end of the filename
 >Will Nelken<rtn:              // enter the return address
 >1675 Grand Avenue<rtn:
 >San Rafael, CA 94901<rtn rtn:
 date rtn rtn:                  // date the letter

 oa-Q: display #on: rtn>! // restore the screen display
```

Macro 6

UltraMacros 4 users can eliminate the error checking and the screen flashing and simplify the code all at once, using one of the new "dot commands" in the new version of UltraMacros:

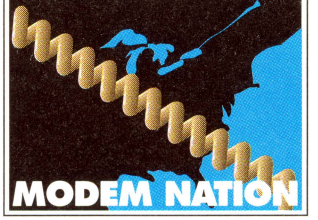
```
L:<all:                         // LETTERHEAD MACRO
 L = L + 1:                     // add 1 to number of letters

 $0 = "Letterhead " + str$ L:   // number the filename
 .NewFile $0,1:                 // create a file, no flashing

 >Will Nelken<rtn:              // enter the return address
 >1675 Grand Avenue<rtn:
 >San Rafael, CA 94901<rtn rtn:
 date rtn rtn>!                 // date the letter
```

Macro 7

This article, obviously, is far short of a full-fledged UltraMacros tutorial. We simply want to give you a taste of the power that UltraMacros can add to AppleWorks, with very little effort, and prove to you that there is, indeed, no reason to fear macros. Even if you never write or record a macro of your own, UltraMacros comes with dozens of useful macros right on the disk, and literally hundreds of others are available from macro afficionados around the globe. And besides, as we've demonstrated, creating your own macros is hardly a chore to provoke fear or dread. Tap into the power of AppleWorks and turbo-charge it for yourself with UltraMacros! ■



Picking The Pieces

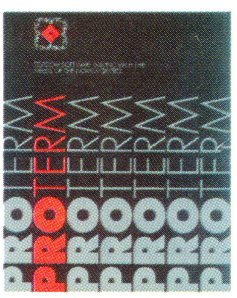
by Jerry Kindall

In the last installment of Modem Nation, we got you all excited about what telecommunication can do for you. You may have rushed out and bought a modem already. Whether you did or didn't, this article will provide you with some basic "survival skills" you need to choose a modem and make sense of the terminology manufacturers love to throw around.

WHAT YOU NEED

To get online, you'll need five main things. The first, obviously, is a modem. The second is a serial port to connect the modem to. The Apple IIc (and IIc+) and IIGS have a built-in serial port specifically designated for modems; Apple IIe owners will need a serial interface card that they can dedicate to the modem. This card, usually installed in the computer's Slot 2, should be an Apple Super Serial Card or a compatible interface. If you have a very old Apple IIc, you may need a logic board upgrade before you can use a modem due to a serial port bug in early IIc models. The upgrade is free; contact your local Apple dealer.

Third, you'll need a cable to connect the modem to the computer's serial port. Don't take the cable for granted—most modems are designed to work with a variety of computers, all with different serial port configurations, and therefore do not include a cable. (After all, which one should they include?) While modem cables and printer cables look the same, they're wired differently, so forget about using that old ImageWriter cable you've got lying around. Even if it fits *physically,* it won't work with a modem.



If you're getting a modem with data compression capabilities (MNP or v.42), you should make sure to get a cable with *hardware handshaking*—this allows the modem to tell the computer "whoa!" when information is arriving too fast through the serial port. In fact, insisting on a hardware handshaking cable isn't a bad idea no matter what kind of modem you get, since even if the modem you get now doesn't need one, you might upgrade in the future.

Fourth, you'll need some kind of telecommunications software. Telecommunications software handles the task of telling the modem what to do—what phone number to dial, how to transfer a file from one computer to another, and so forth. You may already have software that can handle a modem—for example, AppleWorks GS has a built-in telecommunications module—but you should seriously consider getting a more flexible and powerful "stand-alone" program that *only* does telecommunications. *ProTERM* (InTrec Software) is by far the most popular—it's easy to get started with, yet has all the features you'll ever need (even if you don't understand them all right now). Other popular packages include *Point To Point* (Beagle Bros), *Talk Is Cheap* (Carolina Systems Software), and *ReadyLink* (Applied Engineering).

Finally, you'll need a place to call. Most modems come with trial memberships to one or more of the major online services, so that's one place to start, but you'll probably want to find the phone number of a free local BBS to try first. Check with a local computer store or user group; they often maintain extensive lists of bulletin board systems, and some stores and user groups even have their own BBS. Friends who already have modems can also usually supply you with a number or two to get you started. (Once you get the number of one BBS, you'll usually find a list of other area systems right there on that BBS.) If all else fails, you can call Pro-Quality at (313) 774-2652 if you don't mind paying long distance toll charges.

CHOOSING A MODEM

There are literally hundreds of modems on the market that will work with your Apple II, which can make settling on *one* seem next to impossible. It's not as difficult as it looks at first if you keep in mind one simple fact: *they're all the same.* That's an oversimplification, of course, but there's a basic set of features which most modems share and which makes them largely interchangeable. Here are the basic features you should look for.

First, you need an external modem—not an internal one. If you look through *Computer Shopper* or a similar ad-packed magazine, you'll find incredible deals on "internal" modems, but when you read the fine print, you'll discover that the modem will work only in an IBM PC or compatible computer. (Even if you don't see any fine print to that effect, you can usually assume that any unbelievably cheap internal modem you see in an ad is for

the PC.) Internal modems *are* available for Apple IIs, but they're generally *more* expensive than external models due to limited demand.

Why buy an external modem? An internal Apple II modem will only work with an Apple II, but an external modem will work with any computer, including whatever computer you buy next. Internal modems have no status lights (which come in *very* handy when troubleshooting a connection), and they place additional demands on your computer's power supply. Finally, external modems are generally more compatible with a wide variety of software than internals.

Second, the modem should be Hayes-compatible. (This is sometimes referred to as being "AT" command compatible because Hayes modems use those two letters at the beginning of every command.) There aren't too many manufacturers making modems that *aren't* Hayes-compatible these days, simply because nobody will buy one that isn't. However, there are varying degrees of Hayes compatibility. Some parts of the Hayes standard are patented, and modem manufacturers must license the patented technology from Hayes to be 100% compatible. Those manufacturers who don't pay Hayes for their technology make modems which are *mostly* Hayes compatible, but which can cause obscure problems in rare circumstances (for example, failing to send a file properly to another computer when the file contains three plus signs in a row).

Finally, you should choose a modem that's 2400 BPS (bits per second—often referred to as 2400 baud) or faster. You can often find slower modems at heavily discounted prices, but no-frills 2400 BPS modems are quite affordable and are twice as fast as the next slower model. (Don't worry—a 2400 BPS modem can still communicate at 1200 BPS or 300 BPS if you need to connect to a modem that doesn't support 2400 BPS.)

Once you've narrowed the field by considering only 100% Hayes-compatible external modems 2400 BPS or faster, you'll want to look at the extras included with the modem. As I mentioned earlier, most modem manufacturers include sign-up kits for major online services (often including a certain amount of free time as an introductory offer). Others include communications software. Although this software is usually for the IBM PC or the Macintosh and will prove useless if you only use an Apple II, you may find it useful if you intend to use the modem on more than one kind of computer.

Don't forget about the warranty. It's getting more and more common to offer five-year warranties on modems, since they've proven to be a reliable technology. Don't settle for anything less. If you know someone else who uses a modem frequently, ask them about their experience with the models they've used. We're not going to recommend a specific brand here, but now that you know what to look for, your investigations should lead you to a good, reliable modem.

EM EN WHAT?

As you shop for your modem, you'll encounter a few acronyms and abbreviations which may be unfamiliar to you—like MNP, v.32, v.32bis, v.42, and v.42bis. What do they mean?

MNP was created by Microcom as a means of dealing with telephone line noise—the static you occasionally hear when speaking on the phone. It's merely annoying when you're just talking to someone, but it can be deadly to computer data. Static on the phone line during a modem connection usually shows up on your screen as lots of "{" characters. As you can imagine, it can garble your data and render it meaningless. Microcom dealt with the problem by inventing the Microcom Network Protocol, or MNP.

MNP has several "levels," each of which is compatible with the level before it. (In other words, if your modem supports MNP 5, it also supports MNP levels 1-4.) The most important levels are MNP 4, which allows modems to detect and correct transmission errors automatically, and MNP 5, which can allow modems to transmit data up to twice as fast as their rated speed under certain circumstances. (In fact, most so-called "4800 BPS" modems are really 2400 BPS modems with MNP 5.)

An MNP connection is often called a "reliable" connection—at MNP 4 or above, the protocol *guarantees* that no transmission errors will occur. If a "packet" of data isn't received correctly, the receiving modem asks the sending modem to transmit it again. If line noise becomes too severe, an MNP modem will break the connection rather than allow the noise to cause transmission errors. To use MNP, the modems on both ends of the connection must support it. The resulting connection will use the highest level of MNP supported by both modems.

Two new standards, v.42 ("vee forty-two") and v.42bis ("vee forty-two biss"), are internationally-approved versions of MNP with a couple of minor enhancements. A v.42 modem is roughly equivalent to (and compatible with) modems with MNP 4—error detection and correction, but no data compression.

A v.42bis modem is roughly equivalent to a modem with MNP 5, and again, such a modem will successfully communicate with an MNP 5 modem even if the other modem doesn't explicitly support v.42bis. However, v.42bis can double MNP 5's throughput; v.42bis modems can communicate at up to four times their rated speed under ideal circumstances. (Some 2400 BPS modems with this feature are advertised as being "9600 BPS"—buyer beware!) Furthermore, when sending a file which has already been compressed, MNP 5 can actually slow down transmission, but v.42bis does not.

Since MNP and v.42 modems are becoming more affordable—in most cases, the feature adds only $30-$50 to the cost of an ordinary 2400 BPS modem—you'll see more and more BBSs using them. Most commercial information services already support at least MNP 4 to ensure that the data you're paying for come through intact. A 2400 BPS modem with v.42bis is a wise choice and a "step up" from an ordinary modem. If it's within your budget, I recommend you give the feature serious consideration. You should insist on v.42bis rather than MNP 5, since it's the new standard and provides additional functionality.

Two other "v" numbers you'll often encounter are v.32 and v.32bis. Whereas v.42 and v.42bis are standards for error correction and data compression that apply at any transmission speed, v.32 and v.32bis are the standards for high-speed data transmission. (The 2400 BPS standard, which allows 2400 BPS modems all over the world to speak to each other, is known as v.22.) A v.32 modem can communicate with another v.32 modem at a true 9600 BPS—four times faster than a 2400 BPS modem. A v.32bis modem can communicate with another v.32bis modem at a true 14,400 BPS (or, of course, with a v.32 modem at 9600 BPS). Most v.32 and v.32bis modems also feature v.42bis, ensuring error-free transmission and allowing speeds of up to 57,600 BPS under ideal circumstances.

If you're in the market for a state-of-the-art high speed-modem, v.32bis is the way to go. You may see modems advertising HST compatibility—these are old 9600 BPS modems made obsolete by v.32. A v.32 modem cannot connect to a HST modem at any rate faster than 2400 BPS. US Robotics, the inventor of HST, sells a "dual-standard" modem with both HST and v.32bis capabilities, which you may find useful if you frequently call BBSs which still have HST modems installed.

Earlier in the article I mentioned that some modems may need "hardware handshaking" cables to connect to your computer. *Any* modem with MNP, v.42, or v.42bis will need this type of cable.

Finally, some modems include additional capabilities. Supra's SupraFaxModems and Intel's SatisFAXion modems include, as their names indicate, send and receive fax features. (There are other fax modems available, of course.) To use these features, you need special software, which most manufacturers provide for the Macintosh and the IBM—not the Apple II. Applied Engineering's DataLink Fax includes send-only fax software for the IIGS, and at least one other company is readying additional Apple II fax software for a variety of modems.

Some of these "new generation" modems also include other features—such as touch-tone decoding and voice input/output—which could allow answering machine and voice mail capabilities with proper software. The software hasn't been written yet, so while these features are nice upgrades, don't buy a modem just because it has them.

UNTIL NEXT TIME

Once you've chosen a modem and assembled all the things you'll need to use it, you're ready to go online. In the next installment of this column, we'll walk you through your first call to a BBS, from dial-in to logon. ■

Assault on Battery RAM

by R.F. Hardman

Have you ever wondered how to change your IIGS's screen colors (text, background border) from good old Applesoft BASIC? It's a question that has been tackled—and fumbled—in a certain other Apple magazine, which indicated that Applesoft itself isn't up to the task and that readers should purchase Micol Advanced BASIC. While Micol's BASIC is a fine investment, it's clearly an exotic answer to a simple question.

Applesoft is very much up to the task, thank you very much. It can temporarily change your screen colors all by itself (by "temporarily" I mean until you go to the Control Panel or reset the computer). And with a little machine language program, it can even modify these settings permanently, so they'll survive trips to the Control Panel, presses of the Reset button, and power-downs. All you need is PEEK, POKE, and CALL—and I propose to show you how right now.

We'll start with the tricky one, naturally.

THE BACKGROUND

The Apple IIGS has a built-in program called the Control Panel to tell the computer any number of neat things—how loud to beep, what pitch to beep at, what slot to boot from, how fast the keyboard repeats, and lots of other things. (The Apple IIGS Owner's Manual covers the options in detail.)

The IIGS keeps track of these settings in a special set of memory cells—RAM—the contents of which are preserved by battery power even while the computer is turned off. (That's the same battery that powers your clock, in case you were curious.) These memory cells are therefore referred to as "Battery RAM," or BRAM for short.

The IIGS's Battery RAM can be thought of as a set of index cards. Each card has a specific purpose, is identified by a unique "card number," and has a number ("parameter") written on it. (By "unique" I don't mean that the card number is special, I just mean that no two cards have the same card number.)

The Apple IIGS keeps the Control Panel settings for the screen colors on "index cards" 26, 27 and 28. Card 26 holds the text color, card 27 holds the background color, and card 28 holds the border color. The colors themselves are numbered as follows:

0 = Black	8 = Brown
1 = Deep Red	9 = Orange
2 = Dark Blue	10 = Light Gray
3 = Purple	11 = Pink
4 = Dark Green	12 = Green
5 = Dark Gray	13 = Yellow
6 = Medium Blue	14 = Aquamarine
7 = Light Blue	15 = White

When the Apple IIGS is turned on, it whips out index cards 26, 27 and 28 and sets the screen colors according to the numbers written on those cards. For example, if the numbers on cards 26, 27, and 28 were 3, 7, and 9, the IIGS would set the display to purple text on a light blue background with an orange border. Gack! The IIGS does this card-flipping bit so quickly that you probably won't even notice it's happening.

If you've ever wondered why the IIGS screen goes to white text on total blackness while Control-Reset is being held down, now you know—those are the standard IIGS colors, before the computer gets around to looking at the Battery RAM settings.

CHANGING THE CONTROL PANEL SETTINGS

Let's suppose we want to alter those index cards. The first thing we need is a machine-language program to call the Apple IIGS Toolbox and do our dirty work for us. Furthermore, the routine needs to run in the IIGS's native 16-bit mode, instead of the emulation mode Applesoft it runs in. As it happens, I have such a program fragment right here, already converted to Applesoft DATA statements and POKE commands. (If you know assembly language, take a look at the the Assembly Listing sidebar for commented source code for this routine.)

Listing 1

```
100 FOR X=768 TO 810 : READ Y : POKE X, Y : NEXT
110 DATA 24, 251, 194, 48, 244, 0, 0, 165, 254, 72, 162, 3, 12, 34, 0
120 DATA 0, 225, 104, 133, 252, 56, 251, 96, 24, 251, 194, 48, 165
130 DATA 252, 72, 165, 254, 72, 162, 3, 11, 34, 0, 0, 225, 56, 251, 96
```

Now we've got a BASIC routine to load our machine language helper into memory starting at location 768. (There are 200 bytes of memory or so starting at 768 which are unused by Applesoft and which are traditionally used for short machine-language programs like this one.) Now we need an Applesoft routine which will communicate with our machine-language routine, passing it the index card number and asking it to look up the value stored on that card and tell us what it is:

Listing 2

```
498 REM Set IC to the number of the index card to be checked before calling.
499 REM The routine returns N set equal to the number written on that card.
500 IF IC<0 OR IC> 255 THEN RETURN: REM don't try to use nonexistent cards
510 POKE 254, IC: POKE 255, 0 : CALL 768 : N = PEEK (252) : RETURN
```

We can call the line 500 subroutine to fetch the border color using a scrap of code like this:

```
IC = 28 : GOSUB 500 : PRINT "Border color is number "N
```

Finally, we need a way to change the value on an "index card". This is almost as simple, since the machine-language routine will, once again, do our dirty work for us. Here is the subroutine that will set the value on "index card" number IC to the value N:

Listing 3

```
599 REM Set IC to the number of the index card, and N to the desired value
600 IF IC <0 OR IC > 255 THEN RETURN: REM "legal" index cards only
610 POKE 254, IC : POKE 255, 0
620 IF N<0 OR N> 255 THEN RETURN: REM "legal" numbers only
630 POKE 252, N : POKE 253, 0 : CALL 791 : RETURN
```

We can call this routine to set the border color, like this:

```
N = 15 : IC = 28 : GOSUB 500 : REM set border to white.
```

Yes! It's just that simple. If you know which "index cards" hold the values you want to alter, and the allowable values for the numbers on those "index cards", these routines will do just about anything you want to do with Battery RAM.

The fellow in our example wanted to change the numbers on index cards 26, 27 and 28. Here's a complete Applesoft demonstration program that will do precisely that—and more, if you play with it a bit.

Listing 4

```
 10 PRINT CHR$(4)"PR#3": REM 80 columns on (why not?)
 98 REM
 99 REM — set up CALLable machine language routines
100 FOR X=768 TO 810 : READ Y : POKE X, Y : NEXT
110 DATA 24, 251, 194, 48, 244, 0, 0, 165, 254, 72, 162, 3, 12, 34, 0
120 DATA 0, 225, 104, 133, 252, 56, 251, 96, 24, 251, 194, 48, 165
130 DATA 252, 72, 165, 254, 72, 162, 3, 11, 34, 0, 0, 225, 56, 251, 96
198 REM
199 REM — define colors for humans
200 DIM COLR$(15): FOR X = 0 TO 15: READ COLR$(X) : NEXT
210 DATA Black, Deep Red,Dark Blue, Purple, Dark Green
211 DATA Dark Gray, Medium Blue, Light Blue, Brown, Orange
212 DATALight Gray, Pink, Green, Yellow, Aquamarine, White
218 REM
219 REM — and the meanings of the "index cards"
220 DIM IC$(252) : REM there are 252 legal cards, we use 3:
221 IC$(26) = "Text Color"
222 IC$(27) = "Background Color"
223 IC$(28) = "Border Color"
298 REM
299 REM — display the contents of the color "cards"
300 FOR IC = 26 TO 28
301 GOSUB 500
302 PRINT "The Control Panel setting for "IC$(IC)" is "COLR$(N)
303 NEXT
308 REM
309 REM — ask for changes
310 PRINT : PRINT "Do you want to change one of these settings? (Y/N) ";
311 GET A$ : IF A$<>"Y" AND A$<>"N" AND A$<>"y" AND A$<>"n" THEN 311
320 PRINT A$ : IF A$="N" OR A$ = "n" THEN END
328 REM
329 REM — ask which "card" to alter
330 FOR IC = 26 TO 28 : PRINT IC-25". "IC$(IC) : NEXT
331 PRINT: PRINT "Which? (1-3) ";
332 GET A$: IF A$<"1" OR A$>"3" THEN 332
340 PRINT A$
348 REM
349 REM — ask for new value for "card"
350 GOSUB 400: REM display color names
351 INPUT "Change "IC$(25+VAL(A$))" to? (0-15) ";N
353 IF N < 0 OR N > 15 THEN 350 : REM Don't use undefined values!
360 IC = VAL (A$)+25 : GOSUB 600 : REM set appropriate parameter
370 GOTO 300 : REM and loop
398 REM
399 REM — display color names for humans
400 FOR X = 0 TO 15 : PRINT X" = "COLR$(X) : NEXT : RETURN
498 REM
499 REM — return the contents of "card" number IC
500 IF IC<0 OR IC> 255 THEN RETURN: REM don't try to use nonexistent cards
510 POKE 254, IC: POKE 255, 0 : CALL 768 : N = PEEK (252) : RETURN
598 REM
599 REM — set contents of "card" IC to value N
600 IF IC <0 OR IC > 255 THEN RETURN: REM legal cards only
610 POKE 254, IC : POKE 255, 0
620 IF N<0 OR N> 255 THEN RETURN: REM legal values only
630 POKE 252, N : POKE 253, 0 : CALL 791 : RETURN
```

Run the program, change some values, and then go into the Control Panel to find out if the changes "took." Pretty nifty, isn't it? And not outrageously difficult, either.

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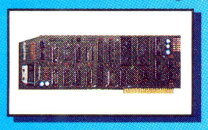

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CHANGING THE CURRENT SCREEN COLORS

One minor flaw in the program above, though. You notice that the *actual* screen colors will not change until you enter the Control Panel, or reset the computer, or something similarly drastic. In other words, our program changes the Control Panel settings, but it does it behind the Control Panel's back, and we never told the Control Panel to take note of the new settings.

We could, of course, simply instruct the user of our program to enter the Control Panel and escape from it after running our program, but that sort of defeats the purpose. A better tactic is to update the values "by hand." As it turns out, there are certain memory locations—called softswitches—which control the computer's *current* screen colors. All we have to do is update those to match the Control Panel settings, and we're set.

The current text color is stored in the upper four bits of memory location $C022 (49186), and the background color in the lower four bits. The border color is in the lower four bits of $C034 (49204). If this sounds horribly complicated, well, it's not that bad, but neither is it for the faint of heart. Don't worry, though, because I'm about to give you three short GOSUB-able subroutines which, once again, will do all the dirty work.

Listing 5

```
1000 REM Set Text Color to N
1010 TB =  PEEK (49186) : REM current text/bkgnd color into TB
1015 REM - strip the old text color, leaving only background
1020 TB = TB / 16: TB = TB - INT (TB): TB = TB * 16
1025 REM - add the new text color
1030 TB = TB + N * 16 : POKE 49186,TB
1040 RETURN
1099 REM
1100 REM Set Background Color to N
1110 TB =  PEEK (49186)
1115 REM - strip the old background color
1120 TB = INT (TB / 16): TB = TB * 16
1125 REM - add the new background color
1130 TB = TB + N: POKE 49186,TB
1140 RETURN
1199 REM
1200 REM Set Border Color to N
1210 BC =  PEEK (49204)
1215 REM - strip the old border color
1220 BC = INT (BC / 16): BC = BC * 16
1225 REM - add the new border color
1230 BC = BC + N: POKE 49204,BC
1240 RETURN
```

To use the routines above in the context of the demo program, just add one more line, to make our program retrieve the "index card" values and update the current screen colors.

```
307 IC = 26 : GOSUB 500 : GOSUB 1000 : IC = 27 : GOSUB 500 :
GOSUB 1100 : IC = 28 : GOSUB 500 : GOSUB 1200
```

THE WRAP-UP

You can probably think of dozens of uses for these routines. Temporarily change the screen colors while you're running a program (for example, change the border color to red to alert the user to an error), then retrieve the original values from battery RAM (it's very important to put things back the way that we found them). It's a great way to provide visual feedback.

So what *else* can you do with battery RAM? A complete list of the battery RAM parameters can be found on Pages 14-12 of the Apple IIGS Toolbox Reference, Volume 1. Using this information, the slightly advanced, or at least grimly determined, IIGS Applesoft hacker could write a BASIC program that automatically switches the /RAM5 volume from 0 to 800K, cold restarts the machine to create the RAM disk, and then turns /RAM5 into a bootable device. And does all of that virtually "hands off."

I'm sure you can come up with some other inventive uses for the routines I've presented. The tools are yours now—use them wisely! ■

ASSEMBLY LISTING

This is the source code for the assembly language program which is POKEd in by Listing 1. There's no need to type this in if you're a BASIC programmer—just use Listing 1. If you know what this is, though, you may find it useful, so here it is. You'll notice that not one but two separate routines are POKEd in—one to retrieve a BRAM value, and another to set it.

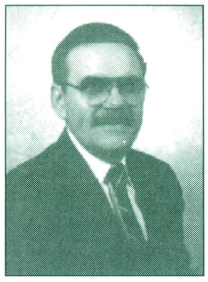
```
300:18              CLC             ;Enable native mode.
301:FB              XCE
302:C2 30           REP #$30        ;enable 16-bit registers.
304:F4 00 00        PEA $0000       ;push 2 bytes on stack for returned
                                    ;data, then fetch "index card number"

307:A5 FE           LDA $FE         ;from location 254-255
309:48              PHA             ;and push it on the stack.
30A:A2 03 0C        LDX #0C03       ;make a "ReadBParam" call
30D:22`s 00 00 E1   JSL $E10000     ;call the Toolbox
311:68              PLA             ;pull "index card"'s value from stack
312:85 FC           STA $FC         ;make it PEEKable from location 252
314:38              SEC             ;go back to 8 bit mode
315:FB              XCE
316:60              RTS             ;return to CALLer.

317:18              CLC
318:FB              XCE
319:C2 30           REP $30         ;same as above...
31B:A5 FC           LDA $FC         ;get desired value from 252-3
31D:48              PHA             ;push it on the stack
31E:A5 FE           LDA $FE         ;get index card # from 254-5
320:48              PHA             ;push it too
321:A2 03 0B        LDX #0B03       ;make a WriteBParam call
324:22 00 00 E1     JSL $E10000
328:18              SEC
329:FB              XCE
32A:60              RTS             ;return to CALLer.
```

AN INTERVIEW WITH JIM CARSON

by Carl Sperber



"As long as there are people willing to buy new Apple II products and support the developers, the developers will continue to support them."

Arriving on the scene with flashy ads, a unique name and a bicycle for a logo, Vitesse proved had substance to back up its style with IIGS products that are, in the company's own words, "Fast, Smooth, and Uncomplicated." These products include the Quickie hand-held scanner, the Salvation series of hard drive utilities (Bakkup, Wings, Deliverance, Renaissance, and Exorciser), and the Harmonie collection of printer drivers for high-resolution printers.

II ALIVE: How did Vitesse get started?

CARSON: The company actually incorporated in November, 1989, and we shipped our first product, a hard drive backup utility which was called Salvation at the time, in January of 1990. Later, *"Salvation"* became the name for our entire family of hard drive programs, and the program that used to be called *Salvation* is now called *Salvation-Bakkup.* We were going to call it *Salvation-Guardian,* but Tandem Computer, who was already using the name Guardian for one of their products, contacted us, and we decided we'd rather switch than fight. Our second product, the Quickie, also came out early in 1990.

II ALIVE: What does the word "Vitesse" mean?

CARSON: We wanted the company's name to reflect our motto, "Fast, Smooth, Uncomplicated." We went to an advertising agency, but we didn't care for their first batch of ideas. Later, they came up with Vitesse, which they said was French for "speed," and then they came up with the bicycle. We asked, "What the hell does a bicycle have to do with computers?" They said, "The same thing an apple does." *(Laughs)* It certainly is unique, and it's worked out pretty well for us.

II ALIVE: When you started Vitesse, people were already talking about the Apple II being dead. What made you decide to go into that market at what seemed like the tail end of the Apple II's growth phase?

CARSON: I was surrounded by Apple II supporters. *(Laughs.)* I, myself, had no experience in the computer field, so it didn't make much of a difference to me. My background was in rescue operations for transportation companies, and in banking and communications sales. But the owner of Vitesse had another company called Applied Ingenuity, and he was familiar with the Apple. When we looked at it, it was obvious that the IIGS was the Apple II of choice, because of its capabilities and because of the opportunities we saw. For example, there wasn't really a friendly hard drive manager for the IIGS. There was *EasyDrive,* but that was mostly for the IIe, and *ProSel-16* was more for power users. That's why we came out with the Salvation series.

II ALIVE: Have you picked up any of the computer stuff along the way?

CARSON: I was definitely more familiar with the business side of the company at first, but I've picked up quite a bit of the computer stuff.

Apple owners have been very loyal to us. They really let you know when they appreciate what you're doing. We now have six products for the Apple II.

II ALIVE: Do you plan to continue producing products for the Apple II? We know you've branched out into Windows, and we hear you have a Macintosh version of the Quickie in the works.

CARSON: Yes, we definitely plan to introduce new Apple II products. There's still a lot of potential there, and we see that potential every time we introduce an upgrade. To us, upgrades are almost important as new products because they keep our existing customer base satisfied and build our reputation for after-the-sale support. *Salvation-Bakkup 2.0* should be released shortly after people read this interview. It's the first major upgrade we've done to that program. The upgrade has lots of new things like compression and SCSI tape backup, and it will require System 6. The Macintosh Quickie is just a rumor, by the way—just something we're looking at. It's not even on the drawing board yet.

II ALIVE: What other upgrades do you have planned?

CARSON: We'll be coming out with a version 3.1 of the IIGS Quickie software early in May. It should improve the grayscale mode tremendously. We thought the current version was pretty good, until we saw what one of our real sharp programmers had come up with. The IIGS can display sixteen colors or shades of gray simultaneously. In the past, the Quickie has only been able to produce eleven shades of gray. The new software can do thirteen, which improves image contrast tremendously. And in July, we're coming out with a color adapter for the Quickie.

II ALIVE: A color scanner for the IIGS?

CARSON: No—we've said before that color scanners are, in our opinion, way too expensive. This is not a color scanner. It's a kit consisting of some special attachments for the Quickie and new software which will allow you to use your existing black-and-white Quickie and scan in color. You scan the image three times, once each with red, green, and blue filters, and the software combines the three scans into a full-color image.

II ALIVE: So the scanner itself will stay the same, just the software will be updated.

CARSON: Yes and no. Yes, the scanner itself will stay the same. We wanted to develop something that would work for existing Quickie owners, the ones who have supported us all these years. If we released a whole new Quickie, our existing customers would have to buy new scanners, or we'd have to offer to take their old Quickies as trade-ins. But no, it's not just software—there are attachments involved. We've used two different models of scanner heads, and we'll make sure that the attachments fit both models.

II ALIVE: What about *Harmonie?* A lot of people are interested in printer drivers for the new color Hewlett-Packard models.

CARSON: Those color drivers are almost done, and we anticipate shipping the upgrade in the next couple of months.

II ALIVE: Does Vitesse have any new product lines coming out?

CARSON: Not right now. We're basically concentrating on upgrades. We've got upgrades in mind for most of our products. Once that's done, we'll start working on new products.

II ALIVE: How well have the sales of your Windows products done?

CARSON: Not nearly as well as the Apple II products! The Windows market is extremely competitive and fast-moving. It's growing very quickly. When we started out, there were maybe 500 Windows developers. Now there are over 5,000! The Apple II market may be smaller, but it's a lot easier to make yourself heard because you don't have thousands of other companies bombarding users with information.

II ALIVE: There seems to be a sudden influx of new IIGS software lately, like *The Manager* from Seven Hills. Where is all that coming from, do you think?

CARSON: While the market is a lot smaller now than it was when we started, people are paying more attention to the developers who have stayed with the IIgs. The people who love their Apples won. They've convinced developers that they'll keep buying new products. There's much less piracy in the Apple II market than there was three years ago. People are finally realizing that if they steal software, they might as well throw their computer away cause nobody is going to develop programs if they can't make money selling them. The IBM and Macintosh markets are big enough that companies can stay in business even if people pirate ten copies for every legitimate copy of a program that's sold, but the economic damage of piracy is much clearer in the Apple II market. If there had been less piracy from the start, a lot of other companies would still be here.

II ALIVE: You don't lay blame for the state of the Apple II market on Apple?

CARSON: I think there's enough blame for everyone to share. One thing I can't figure out, though. John Sculley is a businessman. He had a computer that he couldn't keep in stock, because the demand was so high. So instead of increasing production to meet demand, he reduced demand by ceasing to promote the product. You don't cut off your leg because you have an ingrown toenail—you fix the toenail. Apple and John Sculley have their own priorities, though, and research and development does cost money. They just sold the ten millionth Macintosh, yet we'd much rather make products for the Apple II.

II ALIVE: What is your most memorable experience from your time at Vitesse?

CARSON: It would have to be when ThunderWare introduced the LightningScan. When we introduced the Quickie, we were really excited about it. Sales were phenomenal, and we were sure we had a winner. So we started development on the new software immediately, hoping to keep the momentum going. We originally released the Quickie on February 20, 1990, and about a month and a half later, we saw the first ads for the LightningScan. Sales of the Quickie just stopped. People were waiting for a review that would tell them which one was better. It was really very discouraging. But we just kept at it, and released our Quickie version 2.0 before Thunderware even got their *first* version out. Now I'd say that 85 to 90 percent of the hand scanners owned by IIGS users are Quickies. We've kept updating the software, but we've never raised the price. The Quickie has been our most successful product. So at first, that was our most discouraging moment, but we turned it around and made it one of our biggest successes.

II ALIVE: Is there anything you would have done differently, if you'd known back then what you know now?

CARSON: When we launched the company, we spent a lot on aggressive advertising. If I could change anything, it would be that. We did create the image we wanted, but the cost was phenomenal. Image was very important to us. When we went to trade shows, everyone dressed up and looked very professional. That got people's attention; luckily, we were able to follow up with good products. But I think now that people were ready for our products. The Quickie, especially, would have been a huge hit anyway, I think.

II ALIVE: Any closing thoughts?

CARSON: I've been saying this for three years, and I believe that I speak for all Apple II developers. As long as there are people willing to buy new Apple II products and support the developers, the developers will continue to support them. That's the key. When there's demand for your products, you just can't walk away from the market. ■

► *Keeping our ear to the track (and hoping we're quick enough to pull it back before the train comes by), we print only the freshest gossip. If there's not enough gossip, we make some up! As always, the Rumormonger reserves the right to be dead wrong. Like those 900 astronomy numbers, this column is for entertainment purposes only. If you take it seriously, you deserve whatever fall befates you!*

WHITHER THE MAGIC 8-BALL?

A certain Apple IIGS-oriented magazine (we won't name names, lest they develop an ego problem) has recently been relying on a device called the Magic 8-Ball to compile *its* rumor column. For those who don't remember this '70s relic, the Magic 8-Ball is an oversize 8-Ball (as in billiards) filled with a murky blue liquid, with a clear plastic window in the bottom. Inside the ball is a multi-sided floating thing with various responses printed on it. When you need to make a decision, you ask the 8-Ball the question, shake it well, and turn it upside down. It helps to concentrate hard on your question while you're shaking. The floating thing bobs to the surface and you read your answer through the window—answers like "Not Likely," "Unclear," and the ever-popular "Ask Again Later."

The 8-Ball caused a bit of a stir when, in response to a question about whether WestCode had canceled *HardPressed* due to stiff competition from Econ's *AutoArk,* it answered "It is certain." *HardPressed* programmer Andy McFadden had some harsh words for the publisher of said magazine, which he posted publicly on GEnie. Suffice it to say that not only has *HardPressed* not been canceled, it is actually very close to release—they almost managed to get us a copy for review in this issue, missing our deadline by only a few days. In fact, The Rumormonger has even heard that WestCode is offering a $34.95 pre-release special on the program ($19.95 if you've already got *AutoArk).*

Will the Rumormonger ever use a Magic 8-Ball? It seems decidedly low-tech for a computer magazine. We rather prefer Radio Shack's "Executive Decision Maker." It's a small box with some lights on it, which serves the same purpose as the 8-Ball—you press a button, the lights flash for a while, and finally one light remains lit beside your "answer." We won't be using this device right away, though; it will take us a couple of months to build up an adequate supply of those free Radio Shack batteries.

TRUE MULTITASKING OR WHAT?

Similar electronic messaging sparks flew over Seven Hills Software's contention that their *Manager* program supported "true" multitasking while competing products were merely "task switchers." Since his *Switch-It!* is basically the only competing product, Procyon's Jawaid Bazyar took exception to this bit of rhetoric. As it turns out, Seven Hills was referring to the capability of "*Manager*-aware" programs to perform a wider variety of tasks in the background, instead of merely suspending program execution when a program is placed in the background. Programs have to be specifically written (or revised) to support this *Manager* feature—admittedly, not a difficult task. Time will tell if developers do, in fact, elect to support Seven Hills' standards.

BATTLE OF THE BLANKERS

The long-awaited new release of Digisoft's *Twilight II* screen blanker will be able to use blanker modules from *Phantasm,* part of Q Labs' *Signature* package, targeting its competition directly. Unfortunately, the company decided to showcase its colorful product with a murky black-and-white (!) ad in *GS+.* Quality Computers, meanwhile, has no plans for a major upgrade of *Phantasm,* which is only one part of *Signature.* A minor *Signature* update is planned to improve compatibility with *The Manager,* and a new disk of blanker modules is also in the works (the disk will work with both *Signature* and *Twilight II).*

TURBOCHARGE YOUR REZ?

At last fall's Apple Expo East in Boston, Reztech displayed a new video board for the Apple IIGS that really turned some heads, including the RumorMonger's. Here's a comparison with the IIGS's built-in graphics modes:

	TurboRez	**Standard IIGS**
320 mode	256 colors	16 colors
640 mode	16 colors	4 colors
Mixed 320/640	Anywhere	Only whole lines
Avail. colors	262,114	4,096

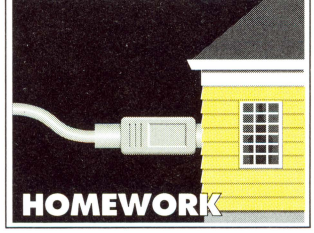
All this and it's *faster* than standard IIGS graphics! Unfortunately, programs have to be specially written, addressing the card directly, to use the new features. The card is not supported by the IIGS Toolbox. But the TurboRez won't stand in the way of programs that only use standard IIGS graphics—your normal IIGS display will still look normal, and you won't need a new monitor.

Installation requires connection of a few wires in different places on the IIGS main logic board in addition to inserting the card in a slot. TurboRez is priced at $330; a $25 deposit at the show reserved a card for future delivery. The first batch was supposed to ship in January, 1993, but we still haven't seen it around these parts.

ANIMATION FANTASIA

Animasia is a 3D animation program that will take advantage of the TurboRez. You'll be able to create, position, rotate, and group 3D objects, much like programs costing thousands of dollars on other platforms. You can draw two-dimensional objects and apply lathe, cone, extrude, path extrude, torus, and helix tools to make them 3D. It sports hierarchical object relationships, multiple layers, and alignment utilities. It can even import DXF files from AutoCAD! Animasia will sell for around $100.

Heard a hot rumor? Send it to: II Alive—The Rumormonger, 20200 Nine Mile Rd., St. Clair Shores, MI 48080, or leave them on our voice mail at 1-800-777-3642, Extension 839.



Persistence and an Apple IIGS

by Richard Immler

I've been married for fourteen years, and for about thirteen of them, my wife had been pleading with me to get us out of the Los Angeles area. In the Spring of 1989, I finally came to agree with her. Unfortunately, my procrastination caused us to miss the peak of the California real estate market by about six months.

We still wanted to move, but we needed an advantage over other sellers on the market. That advantage would be our Apple IIGS computer.

My brother-in-law lives in southern Vermont. For years, he'd been raving about the benefits of raising a family in a rural area. One of our goals was to find an area with excellent public schools. Although my brother-in-law and his wife are public school teachers and assured me that Vermont's educational system was excellent, we wanted a second opinion.

The U.S. Department of Education maintains a toll-free computer bulletin board at 1-800-541-0816. I logged on and quickly found the statistics I was interested in: data on each state ranked by class size, money spent per student, teacher salary, percentage of students graduating, and SAT scores. It turns out that Vermont is indeed up to par—especially considering that the state is not known for its wealth.

Although I trusted the opinion of my in-laws, I wanted to talk with some more Vermonters. The modem again proved useful. I subscribe to GEnie, so I wrote a letter outlining my reasons for the move and asking for input. Was I crazy, I asked, to leave sunny Southern California for snowy New England? I searched the GEnie directory for Vermont residents and sent my letter to all of them.

Nearly half the people I had sent my letter to responded, and, in fact, I began an almost daily e-mail correspondence with one man who lives about a mile from my in-laws. I now consider him to be part of a small, but expanding, network of Vermont friends.

By August of 1989, it was obvious that the old California real estate market—in which houses sold the day they were posted by brokers—had disappeared. People were still looking, but they weren't buying. We needed something to make people remember our house, to make it stand out from the dozens of other homes they were looking at. That something, I decided, would be a multimedia presentation.

I created a stack in *HyperStudio* to help me sell my house. It begins with a picture of a file cabinet. A drawer opens and a file, containing a picture of our house, slides out. The picture expands to fill the screen, showing the front of the house. The garage door opens to reveal a classic car. Then we cut to the back of the house, followed by the floor plan, then the yard (with animated automatic sprinklers). Finally, the For Sale sign appears on the screen, followed by the price. The stack is very colorful and features narration and music.

Whenever the house was shown, I left the IIGS turned on, with *HyperStudio* loaded and my stack repeating endlessly. I also used the IIGS's video output jack to make a videotape copy of

When a realtor came over to show me an offer, I entered his offer into an amortization spreadsheet on the IIGS and instantly figured out the terms with us carrying the paper.

the stack and displayed that in the living room. Brokers were impressed and told me that their clients seemed equally impressed. I usually tried to be out of the house when it was shown, but when I was present, the prospective buyers often complimented me on my "color Mac." They were often surprised when I told them what kind of computer it really was.

But we still hadn't received an offer. We needed to do something more dramatic. I was at a loss until I read in the newspaper that carrying a second mortgage could make a house more desirable in this market.

When most people sell a house, they move to another house of equal or greater value and are able to defer paying tax on their capital gains (that is, the money they made on the house). But although our future Vermont home would be larger than our California home, it would cost less. That meant we would have to pay the capital gains tax. However, if we carried a second mortgage on the home, we could stretch out the payment of the taxes over a period of several years.

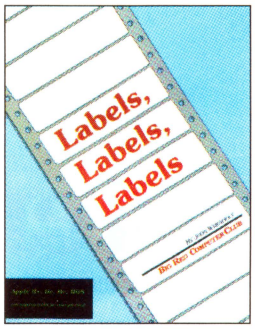
We decided how we wanted the deal to be worded, so I wrote up some escrow instructions. When a realtor came over to show me an offer, I entered his offer into an amortization spreadsheet on the IIGS and instantly figured out the terms with us carrying the paper. I then entered those numbers into my escrow agreement and printed it out, attaching it to our counter-offer as an amendment. This way, I was able to make a counter-offer in minutes instead of days.

At last, my hard work bore fruit. We had an excellent offer from qualified buyers. (Incidentally, they commented that they had loved the slide show of the house.) We had a sixty-day escrow and a lot of stuff to get rid of—and I didn't want to spend every weekend manning a yard sale. So, instead, I advertised the items I wanted to sell in a local classified paper.

I wanted to submit the ad at the last minute, just before the paper's deadline at 5 PM Tuesday. If I submitted the ad by mail earlier, I might sell something I'd listed in the ad in the intervening weekend, or I might decide I'd overpriced something. If I waited until Monday or Tuesday to phone the order in, I'd have to dial for hours to get through.

Luckily, the paper had a modem line. I set *ProTERM* to continuous dial and wrote a macro that would automatically enter my name and phone number when the newspaper's computer picked up the line. I then was able to go do something else while my computer and modem attempted to break through the busy signal. The ad was placed in plenty of time and I was able to sell off most of our unnecessary junk in only a couple of weeks.

As moving day approached, I suddenly realized how many boxes I'd need to pack up our belongings. I was going to get really tired of writing my name and our new address on each one. I used *Labels, Labels, Labels* to quickly



generate several hundred classy-looking labels.

Then I realized I had no idea exactly how much I'd spent on remodeling the house. That would become an essential piece of information when I did my taxes the next spring. But I'd been keeping an AppleWorks spreadsheet recording all my expenses for the last six years. In less than an hour, I had an accounting of every penny I'd spent on the house.

At last our house was sold and our excess possessions were disposed of. Soon, the move was behind us, and my Apple IIGS had a beautiful new home: a lovely old farmhouse, originally built in 1882. I turned one of the house's six bedrooms into an office, and the IIGS now rests proudly on my grandfather's antique desk.

One afternoon, while we were enjoying our view of the Green Mountain State from the front porch of our new country manor, my wife confessed that when she'd pleaded with me to move away from Los Angeles, this wasn't exactly what she'd had in mind. Curious, I asked her where she'd wanted to move.

"Valencia," she said. ■

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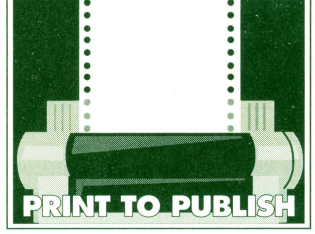


Super Printers

by Bill Carver

As we've seen in the two "No Excuse For Ugly Output" articles, there's a lot you can do to improve your output with the printer you have now, through proper maintenance and software enhancements. (By the way, before we get off the topic of software enhancements, let me mention Vitesses's *PerfectImage* package—a driver for the venerable ImageWriter printer which produces graphics output far superior to Apple's own driver.)

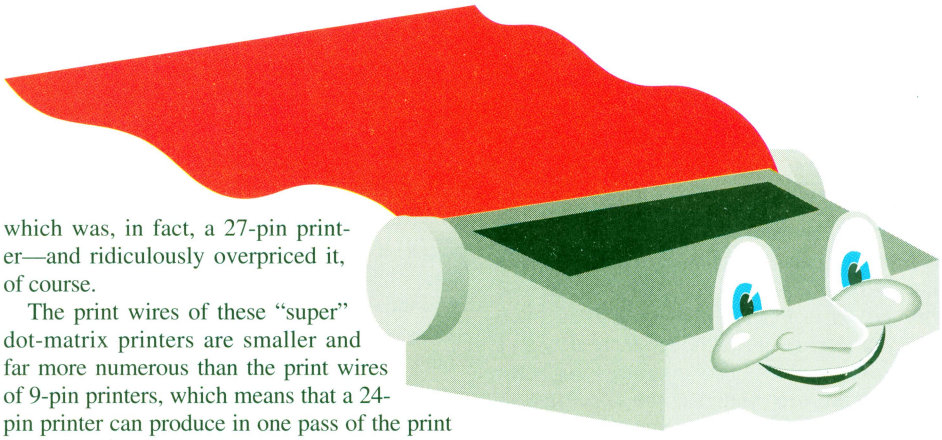
However, there comes a time when you've pushed your current printer to its limit. And a nine-pin dot-matrix printer like the ImageWriter definitely has its limit! While it's adequate for most daily use, there may be times when you need (or want) better print quality than it can deliver. When you reach that point, it's time to consider investing in a new printer. In this article, we'll explore the various types of printers available for use with your Apple II.

WHAT'S YOUR TYPE?

Today's most affordable "super printers" can be divided into four major types: dot matrix, daisy-wheel, inkjet, and laser.

Dot-matrix printers you're already familiar with if you have an ImageWriter. The ImageWriter's dot-matrix print head consists of nine pins (or wires) which slide in and out of the printhead very quickly, striking the printer ribbon and transferring ink to the paper. Because the print element actually strikes the paper, dot-matrix printers belong to a broader category of printers known as "impact" printers.

The lowly ImageWriter is far from the best of the current crop of dot-matrix printers. In fact, by today's standards, the ImageWriter would be considered mediocre at best, its only redeeming feature being its near-letter-quality print mode (and, possibly, its network capability). Newer printers from Epson, Star, Citizen, Panasonic, and many other manufacturers offer a 24-pin print head that produces type indistinguishable from a typewriter at a reasonable reading distance—the definition of "letter quality." Apple itself made the ImageWriter LQ, which was, in fact, a 27-pin printer—and ridiculously overpriced it, of course.



The print wires of these "super" dot-matrix printers are smaller and far more numerous than the print wires of 9-pin printers, which means that a 24-pin printer can produce in one pass of the print head the near-letter-quality text that the ImageWriter takes two passes of the print head to produce. And when you kick a 24-pin printer into letter-quality mode, it performs two passes, allowing it to produce resolutions over 200 dots per inch. This resolution is also available when printing graphics. They're affordable, they're available with color and in black-and-white-only models, and you can use them on your Apple II with appropriate interfacing and software.

Daisy-wheel printers are another type of impact printers. Like a typewriter, these printers print text with a a special print element which contains all the characters in the ASCII code. When the letter "K" must be printed, for example, the print element is rotated so that the letter "K" is directly between the hammer and the ribbon; the hammer then fires and imprints the letter onto the paper. Since these printers use the same printing technology as typewriters, daisy-wheel printers produce output quality equal to that of a typewriter. In fact, some electronic typewriters include an interface port on the back which allows you to use the typewriter as a printer.

Daisy-wheel printers have fallen into disregard recently because they're noisy and slow and can't print graphics. Boldface and underlining are especially noisy and slow since the printer has to strike two characters for each print position. A further disadvantage is that these printers are generally not widely supported by Apple II software. However, they're still available, and you may find that a daisy-wheel printer fits your needs to a T. And it's not difficult at all to set up a custom printer in AppleWorks for just about any daisy-wheel printer.

Inkjet printers are a relatively new technology that's really becoming popular right now. Pioneered by Hewlett-Packard, these printers actually spray ink onto paper—like a can of spray paint, only much more accurately. Early ink formulations were water-based and smeared easily, but the current ink is permanent. They're virtually silent, fairly quick, and have much better print quality than dot-matrix printers, rivaling laser printers in many cases.

While Canon, Apple, and a couple other companies also make inkjet printers, Hewlett-Packard's are still the standard. They even have color models now. With appropriate interfacing and software, most HP and HP-compatible inkjets can be used on the Apple II, yielding splendid results that will have people swearing that you own a laser printer. (Some Canon BubbleJet models emulate popular 24-pin dot-matrix printers, which may also make them a viable solution for Apple II owners.)

The Apple StyleWriter is also an inkjet printer, using a BubbleJet print engine developed and manufactured by Canon for Apple. While IIGS System Software 6.0 does include a StyleWriter driver, the printer is simply incapable of printing text; it only does graphics. This makes it unusable with a wide variety of 8-bit Apple II software, from AppleWorks to DB Master, which print only text. However, it's inexpensive (though a bit on the slow side—the new StyleWriter II is faster), and the print quality is very good, so if you use IIGS Desktop programs almost exclusively, it may be the printer for you.

Laser printers are the current top-of-the-line printing technology and the ultimate in "non-impact" printing. They range in price from $800 on up—*way* up. There are so many different things to consider when buying a laser printer—resolution, speed, print engine, PostScript or PCL compatibility—that we could spin that off into an article all its own. For various reasons, which we'll explain in that other article in the next month, we strongly suggest considering laser printers which are compatible with Hewlett-Packard LaserJets.

INTERFACING THE PRINTER

Above, I dismissed the possible intricacies of connecting these super printers to your Apple II computer by saying that it could be done with "appropriate interfacing and software." Now it's time to determine what, exactly, you need to connect the printer of your choice to your computer.

Printers come in three interface flavors: serial, parallel, and network (AppleTalk). We'll skip the technical differences for now. If you already have a printer, you may want to look for a printer that can be connected to the interface you already use (although there may be a good reason to buy a new interface—for better speed, to use two printers at the same time, or simply because the printer you want doesn't use the interface you have).

The Apple IIGS and IIc have built-in serial ports, so you can connect most serial printers to them with no more than a cable. The Apple IIe needs a serial interface card (such as the Apple Super Serial Card, the Applied Engineering Serial Pro, or any of a dozen other cards that will probably work just as well) to use a serial printer.

Parallel printers need a parallel interface card. IIe and IIGS owners will need Orange Micro's Grappler, Applied Engineering's Parallel Pro, or another similar card. You can also use a parallel printer with an Apple IIc (even though it has only serial ports and no slots to add a card) with a serial-to-parallel converter like Xetec's SuperWriter 924 or Orange Micro's Grappler 9-Pin.

The SuperWriter 924 is also worthy of consideration by IIGS owners. This magic box not only converts serial signals to parallel, it can also translate ImageWriter and ImageWriter LQ commands into commands accepted by many popular 9-pin and 24-pin Epson-compatible printers. (Each manufacturer has its own set of "escape codes" which it designs its printers to recognize. Some manufacturers make their printers compatible with another manufacturer's printers for various reasons. For more information on how these codes work, see the previous issue's "Ask Mr. Tech" column.) Thus, with a SuperWriter 924 connecting a 24-pin Epson-compatible printer to a IIGS, you can simply use the ImageWriter LQ driver already provided in the IIGS System Software, and the ImageWriter driver in programs that don't support the ImageWriter LQ. (This isn't the best way to hook up such printers, but it may be the least expensive.) You can also use the SuperWriter in a "transparent mode" and use appropriate driver software to address the printer's features directly.

Networkable printers are generally useless on Apple IIs, primarily because most home users don't even have networks or the interfaces necessary to use them. Apple IIGS users have networking capability built-in and can set up a mini-network with only their computer and a printer, but they give up one of their serial ports in the process, and older IIGS models must also give up the use of Slot 7. And furthermore, the only networked printers directly supported by the Apple IIGS System Software are Apple's LaserWriters (and laser printers that emulate them). For various reasons which we'll discuss in the next article, laser printers like the LaserWriter may not be the best choice for Apple II owners anyway, so steer clear of printers that only function over a network.

Some printers (like Hewlett-Packard's DeskJet) have both parallel and serial interfaces built in. (The DeskJet will actually let you hook two computers up to its two interfaces and automatically switch from one to the other!) Other printers are available in two versions, one serial and one parallel. When you have a choice, which interface should you choose? Well, if you're a IIc owner, the choice is clear—a serial printer is going to be much easier and less expensive to connect than a parallel one.

> ***Inkjet printers are a relatively new technology that's really becoming popular right now. Pioneered by Hewlett-Packard, these printers actually spray ink onto paper—like a can of spray paint, only much more accurately.***

If you're a IIe owner, it probably doesn't matter much. For text printing and the other sorts of things 8-bit software does with a printer, parallel and serial are going to be about the same speed. Allow yourself to be influenced by things like cost and whether or not you can use an interface card you already have. (If you get a printer which uses the same interface card you already have, you can use a simple switchbox and connect both printers to one interface, switching between them whenever you need to. This is handy if you have some software that won't support your new printer or if you want to print on two different kinds of paper without having to reload the printer.)

On the IIGS, it's not quite so simple. True, you've got a serial port built right into the computer, and you'd need to spend $50-$80 on a parallel card to connect a parallel printer to it. However, you may decide that the benefits are worth it. First, there's the speed difference, which I mentioned was not much of a factor on the IIe. The IIGS—especially Desktop programs—prints nearly everything as graphics, to allow you to use all those fancy fonts and type styles. That's a lot of data, especially when you're printing at 300 dots per inch (laser quality). The data flow is more than intense enough to allow the transmission speed of the data to become a factor. We've heard reports that a DeskJet's parallel interface is up to twice as fast as its serial interface under some circumstances.

Using a parallel printer on a IIGS has another advantage too. If you already have an ImageWriter or other serial printer attached to the IIGS Printer Port, you can put the parallel card into Slot 1 and connect both printers at the same time. Since the Printer Port and Slot 1 share the same "slot space," you can switch printers by toggling between "Your Card" and "Printer Port" in the IIGS Control Panel and restarting. You may want to be able to do that if you have some software that's not compatible with the new printer.

SOFTWARE SUPPORT

Whatever printer you select, and however you choose to interface it, software support is vital. If you have an Apple IIe or IIc (or use mainly 8-bit programs on a IIGS), each software package is responsible for supporting whatever printer and interface you have. Thus, if a particular program doesn't support your printer, you may be out of luck. Choosing a printer that's ImageWriter or Epson compatible (or using a SuperWriter 924) will increase the chances that the software you already have will work with it, since nearly all software supports those printers.

Some programs demand so little of a printer that they'll work with virtually anything, as long as it can print unformatted text. These kinds of programs usually don't use underlining, boldface, or different character sizes. Most software written in BASIC is like that. Other programs may let you type in the ASCII codes your printer needs to activate the features the program uses (see "Ask Mr. Tech" in the previous issue). AppleWorks, for example, lets you set up a "custom printer" driver if you need to. (You'll need to be familiar with ASCII and look up the necessary codes in the printer's manual.)

Don't expect to improve anything but text printing with 8-bit programs. Programs that print text will use the printer's built-in fonts, allowing you to take advantage of the printer's superior quality. Programs that print graphics are usually designed for the "least common

denominator" (9-pin dot-matrix printers) and may not use the printer's full resolution. For example, printing a card in Broderbund's *The Print Shop* with a 24-pin Epson-compatible printer would not give you a very much better printout than the same card printed on a 9-pin Epson-compatible printer. Similarly, while TimeWorks *Publish It! 4* will work with a Hewlett-Packard DeskJet, it only prints at about 150 dots per inch, far short of the 300 DPI the printer is capable of. Furthermore, some programs may support your printer, but not in color—only black and white.

Apple IIGS owners have it easier. Apple IIGS Desktop programs don't come with their own printer drivers. Instead, they use the "printer drivers" on the System Disk you boot from (or the drivers on your hard drive). These drivers are simply small programs that know how to take a graphic image in a standard format and print it on a specific printer. Adding a driver to your System Disk or hard drive automatically allows you to use that printer in any IIGS Desktop program.

As it turns out, IIGS drivers are readily available for the most popular super printers. IIGS System 6 comes with a StyleWriter driver, as we already mentioned, and one for the ImageWriter LQ (useful if you choose to use a SuperWriter 924 with an Epson-compatible parallel printer). Vitesse's *Harmonie* and Seven Hills Software's *Independence* provide drivers for Hewlett-Packard (and HP-compatible) inkjet and laser printers. *Harmonie* also includes drivers for several 24-pin Epson and Epson-compatible printers, and improved drivers for the ImageWriter and ImageWriter LQ (the same ones included in the *Perfect Image* package).

You'll also want Westcode's *Pointless,* which will allow text printed on your new super printer to look smooth at any point size and resolution. We enumerated the benefits of scalable TrueType fonts last month, but it bears repeating.

AppleWorks users who are considering an HP Deskjet might be interested in Q Labs' *SuperPatch,* which provides two separate printer drivers for AppleWorks. You could also set up a custom printer yourself—there are several instruction sheets and UltraMacros task files to do just this—but *SuperPatch's* approach doesn't use the custom printer, instead patching AppleWorks directly and at a lower level. As a result, *SuperPatch* allows you to print your documents sideways ("landscape" mode) and supports fully justified text with the printer's proportional typefaces—things you can't do if you type in your own custom printer.

THE FINE PRINT(ER)

No one printer is right for everyone, but the Hewlett-Packard DeskJet is a serious contender if you have a IIGS and use mostly IIGS software and AppleWorks. If you have a IIe or IIc, an Epson-compatible 24-pin dot-matrix printer may be a better choice because more software will support it. You should be able to go either route for around $500. At least, you now know enough to make an informed choice and to pick out the interface, hardware, and software you'll need.

In the next issue, we'll talk about laser printers and why they may be just a flash in the pan for IIGS owners. Until then—print well! ■

INKJET PRINTER TIPS & TRICKS

The most critical factor affecting inkjet printer output is the paper. With a dot-matrix or laser printer, you can usually get by with the cheapest paper that'll take the ink. With an inkjet printer, though, this penny-pinching will show, usually in the form of bleeding ink and wrinkled pages, and, occasionally, smearing.

One paper that I've found to work very well with a DeskJet is Weyerhaeuser First Choice™. In addition to having a smooth surface, it's a heavy paper at 24 pounds, and it's extremely white. It's an excellent paper for general use, and particularly good for use with inkjet printers. I've also found that a high quality laid finish paper (with a rippled surface) will produce excellent results, although Hewlett-Packard recommends smooth paper.

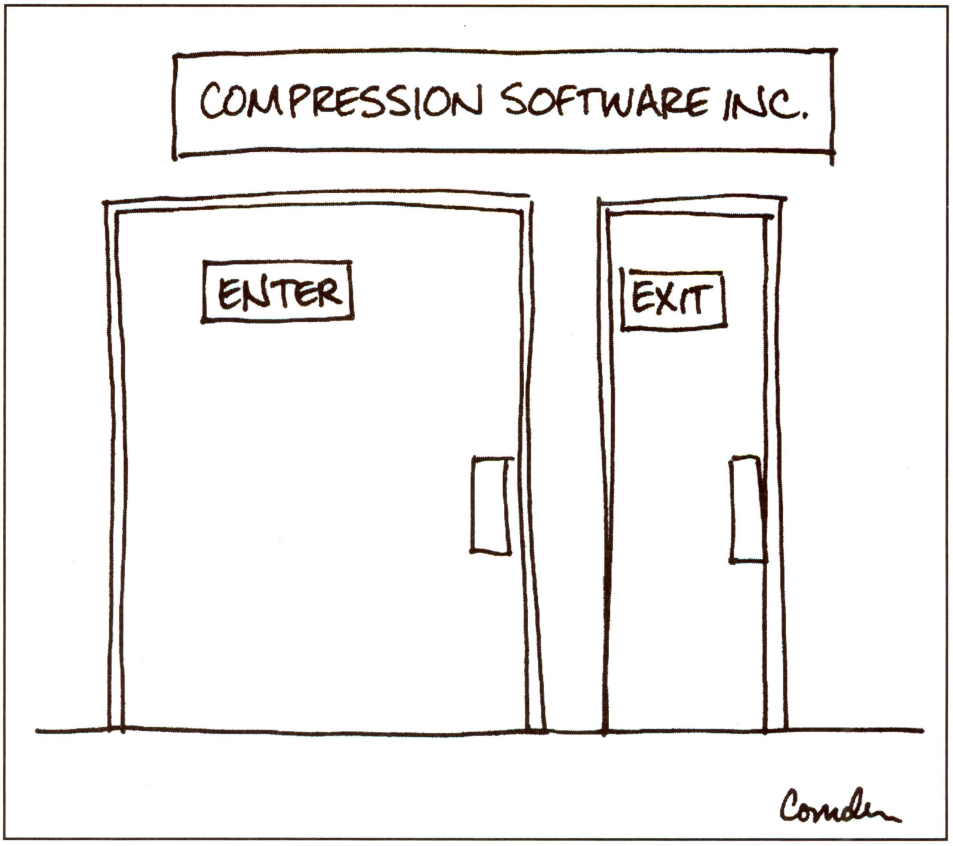
When trying other papers, try to get a sample so you can test the paper in your printer before buying a whole ream. Stiffer papers reduce wrinkling. To reduce the chances of jams and misfeeds, avoid paper heavier than 28 lb. Paper Direct has plenty of choices for laser and inkjet printers, including three papers specially designed for inkjet printers, which I haven't tried. Call 1-800-A-PAPERS for a free catalog.

If you're encountering streaking or missing dots, you probably need a fresh ink cartridge. If your cartridge is fairly new, try the printer's PRIME button. While you can refill inkjet cartridges easily and inexpensively (all you need is a hypodermic needle and a bottle of Parker "Quink" fountain-pen ink), a new ink cartridge will generally yield slightly better print than a refilled one. —Dan Brown

DOTS PER INCH

Printer resolutions are measured in Dots Per Inch (DPI). At least 200 DPI is required for our eyes to accept printed text as "letter quality," while "typeset quality" of the sort used in this magazine requires at least 1000 DPI. Doubling a printer's DPI quadruples the number of dots it prints.

QUALITY	DPI	TYPE OF PRINTER	COST
Draft Quality	72	9-pin dot-matrix	$200–$400
Near Letter Quality	144	9-pin dot-matrix (two passes)	$200–$400
Letter Quality	216	24-pin dot-matrix	$300–$500
Laser Quality	300	laser or inkjet printer	$400–$1000 (inkjet) $800–$2000 (laser)
Typeset Quality	1200	imagesetter or laser printer	$10,000–$40,000



MULTIPLE PROGRAMS ARE BETTER THAN ONE

A Comparative Review of Switch-It! and The Manager

by Tyler Weisman

FROM THE IIGS FINDER'S VERY INCEPTION, users have coveted the Macintosh's MultiFinder, with its ability to run two or more programs simultaneously. They said it couldn't be done, but at long last, we have not one but *two* different Apple IIGS "MultiFinders"—*Switch-It!* from Sequential Systems and *The Manager* from Seven Hills Software.

The Contenders

Switch-It! is billed as "A Multi-Application Switcher for the Apple IIGS." It was written by Jawaid Bazyar of Procyon Enterprises, Inc., best known for the GNO/ME multitasking shell for the IIGS. *Switch-It!*'s approach of displaying only one program on the screen at a time (hiding the windows of other active programs) mimics the way Mac's original Switcher program worked.

Seven Hills Software calls *The Manager* "The first and only true MultiFinder for your Apple IIGS." It was developed by France's BrainStorm Software in conjunction with Seven Hills Software. *The Manager,* like the Mac's MultiFinder, displays the windows of multiple active programs "behind" the foreground program.

Both *Switch-It!* and *The Manager* are application programs, although *The Manager* requires a special initialization file, installed on your system's startup disk, to allow it to display its menu. (This is the same init file used by Seven Hills' *Kangaroo* and *TransProg III,* which were also programmed by BrainStorm.) This means that you could, conceivably, use these programs even if you don't have a hard drive (although you're likely to be in for quite a bit of disk swapping). *Switch-It!* also includes three desk accessories, which should be installed on your startup disk for easy access.

Both programs run only under System 6 and have a minimum memory requirement of 2 MB RAM. Although you can use *Switch-It!* and *The Manager* with only 2 MB RAM, you may need more memory if you plan to run more than the Finder and one small application simultaneously. Remember, Apple recommends 2 MB for System 6 *alone.* We suggest 4 MB RAM as a *reasonable* minimum size if you plan to do any serious work.

With that in mind, we outfitted our test ROM 03 IIGS with a full 8 MB of RAM (via an OctoRAM card). The test machine also had a 360 MB Conner-mechanism hard drive attached to an Apple II High Speed SCSI Card, just to make sure we had somewhere convenient to put all those programs we were going to run at the same time.

Both programs are installed using Apple's standard IIGS Installer, with the special scripts provided by Sequential and Seven Hills, reducing the potential hassles of installation to a familiar point-and-click operation. We installed *Switch-It!* (along with its three desk accessories) and *The Manager* on our hard drive in about ten minutes, without even reading the manual. (*The Manager*'s installer also includes an option to install *QuickLaunch,* a freeware program launcher that works in the Finder. We already have Seven Hills' *TransProg III* launcher on our system, though, so we skipped that option.)

Now, with both program switchers installed on our hard drive, we restarted the machine and got down to some serious testing.

Switching with Switch-It!

Since *Switch-It!* is a normal GS/OS application program, you can launch *Switch-It!* by double-clicking its icon in the Finder. (You can also use System 6's SetStart Control Panel to make the IIGS start up directly into *Switch-It!*) You can configure *Switch-It!* to re-launch the Finder immediately if you like. This allows you to keep the Finder handy for formatting disks, launching programs, copying files, and so forth—if you've been using a desk accessory like *Disk Access* or *File-A-Trix,* you'll love having the Finder always available.

If you keep the Finder active, you'll probably prefer to launch programs directly from there. However, if you're not using the Finder, you can use *Switch-It!* itself to launch the other programs you want to use. *Switch-It!*'s File menu contains an "Open New Application..." option, which presents a Standard File Open Dialog, much like the Mini Launcher System 6 presents when the Finder is not available. It's not as friendly as the Finder by a long shot, but it'll do when you're short on memory.

A more convenient way to launch frequently-used applications is *Switch-It!*'s Speedy-Launch list. You can define up to twenty programs in this list, then select any of them from a pull-down menu. The list has plenty of room for long, descriptive, names, so an application that's called "GSHK" on your hard drive could be called "ShrinkIt GS" on the SpeedyLaunch menu. You can even add the Finder to this menu so that you can start up without it and launch it only when you need it.

Switch-It! only works with GS/OS Desktop applications. You can also launch non-Desktop programs, such as the ORCA shell and ProSel-16, but you may be "stuck" in that program until you quit if it doesn't provide a menu bar. *Switch-It!* cannot launch ProDOS 8 applications (including all Applesoft BASIC programs and applications like ProTERM, Publish It! 4, and classic AppleWorks). However, since you can quit *Switch-It!* any time you like and return to the Finder to launch P8 programs, this may not be as great a hardship as it seems at first. (You must quit all the applications you launched with *Switch-It!* before you can quit *Switch-It!* as a safeguard against losing work in the other open applications.)

Switch-It!'s File menu also contains a "Shutdown" option, so that you can still shut down the computer even if you're not running the Finder in the background. An warning appears to make sure you don't shut down before you've saved your work in the active applications.

When you're running with *Switch-It!*, the Switch menu appears at the extreme right side of the menu bar in every application. This menu provides a list of all the programs currently loaded into memory, including *Switch-It!* itself. Switching applications couldn't be simpler—just choose the application you want to use from the menu. In most applications, you can also use the Option-Tab keystroke to switch to the next application on the menu. As we mentioned earlier, switching applications "hides" the current application's windows and menu bar and "reveals" the new application.

Each program that is launched requires a share of Bank Zero memory for its stack space. A total of 40K is available, and most programs will work with as little as 4K allocated. Some programs need more, though—AppleWorks GS needs 16K, for example, and HyperCard GS needs 20K. *Switch-It!* provides a way to allocate different amounts of Bank Zero memory for the programs you launch via the "Options" menu item on the Apple menu, and an appendix in the manual lists the Bank Zero requirements for many popular programs.

The three New Desk Accessories (NDAs) included with *Switch-It!* have long been available as freeware, but that doesn't make them any less useful as part of the package. *Memory Bar,* written by Dave Lyons of Apple Computer, displays a bar graph of the amount of memory in use, purgeable, and free—and more importantly, size of the maximum available contiguous block of memory. The Compact

SWITCH-IT!

by Jawaid Bazyar, Procyon Enterprises
Published by Sequential Systems

1200 Diamond Circle
Lafayette, CO 80026
(800) 759-4549

Product Summary: A multi-application switcher for the Apple IIGS.

System Requirements: Apple IIGS; System 6 or later; 2 MB RAM 4 MB recommended); 3.5" drive (hard drive recommended). Not copy-protected; hard drive installable.

Retail Price: $79.95

Capability: 6
Ease Of Use: 9
Documentation: 9
Innovation: 7
Compatibility: 5

Overall: 7

THE MANAGER

by Brainstorm Software
Published by Seven Hills Software

2310 Oxford Road
Tallahassee, GL 32304
(904) 575-0566

Product Summary: A MultiFinder for the Apple IIGS.

System Requirements: Apple IIGS; System 6 or later; 2 MB RAM 4 MB recommended); 3.5" drive (hard drive recommended). Not copy-protected; hard drive installable.

Retail Price: $69.95

Capability: 8
Ease Of Use: 9
Documentation: 8
Innovation: 8
Compatibility: 6

Overall: 8

button in Memory Bar will close up the gaps in memory use if this is possible, and if you hold down the Apple (Command) key, the NDA will even purge memory that's marked as "in use" but is no longer being used by any active programs. This can be helpful to free up enough memory to squeeze in another application.

ScrapMaster, by David Huang, is based on the Macintosh Scrapbook desk accessory. With it, you can store your text and graphics "clips" into one central repository using the usual Cut, Copy, and Paste commands. Later, you can copy items from the scrapbook into your documents the same way. You can probably imagine how useful this is with *Switch-It!*—for one thing, it lets you move multiple "clips" between applications with a minimum of switching. ScrapMaster also has a button that displays what is currently on the clipboard.

Finally, *ClipIt,* by Mike Nuzzi, is an NDA that lets you copy graphics directly from the screen to the clipboard. From there, it can be pasted into another application or stored away in the ScrapMaster scrapbook for later use.

Switch-It! closes any open desk accessories when you switch to another loaded program; this can be a little inconvenient, but it didn't bother us that much. *(The Manager* keeps desk accessories open when you switch applications.)

We encountered only a couple of minor problems that could be correctly classified as "bugs" during our testing. The Return key doesn't select the default button in the "Options" dialog as it should, and the *Switch-It!* configuration file has a filetype of TXT instead of CFG (appropriate for a configuration file).

Managing The Manager

The Manager, like Switch-It, is a standard IIGS application, although it does require Brainstorm's "hierarchical menu" initialization file installed on your boot disk. (Don't worry; the installation procedure puts it there automatically.) As with *Switch-It!*, you can launch *The Manager* from the Finder or via the System 6 SetStart Control Panel.

Once launched, *The Manager* immediately restarts the Finder and adds a new menu *(The Manager*'s Menu) to the menu bar and three menu items to the Finder's Extras menu. *The Manager*'s menu is located on the far left end of the menu bar and is represented by an icon. Just like on the Mac, this icon changes depending on what program you're in at the moment, giving you visual feedback on where you are. The menu contains the names of all the applications you're running, much like *Switch-It!*'s Switch menu.

Like *Switch-It!*, *The Manager* can only switch between IIGS Desktop programs. However, you can launch 8-bit programs while the *The Manager* is running as long as the Finder (or the Mini-Launcher) is the only program in memory, without having to quit *The Manager.*

The Manager's screen display can be a little more confusing than *Switch-It!*'s because it displays all the windows of all the programs you're running at once. Clicking on a window that belongs to an inactive program automatically brings it to the front, just like on the Mac. (Clicking the background takes you to the Finder.) And just like on the Mac, *The Manager*'s menu includes options to help manage screen clutter. "Hide Me" makes the current application invisible and switches to the next application. "Hide Others" hides all the windows that belong to applications other than the active one. (The Finder's desktop icons, however, always remain visible, since they're not in a window.) "Show All" reverses the effect of "Hide All." Two more items not found on the Mac allow you to always hide a particular application when you switch from it and to always hide background windows when switching to an application.

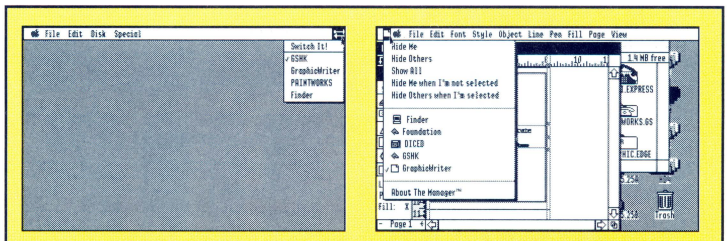
The Manager displays non-Desktop programs (such as the ORCA shell, SynthLab, and ProSel-16) on their own screen, providing a hot key that takes you back to the Finder so you can select another application from *The Manager*'s menu.

The IIGS, as you may know, has two separate graphics modes—one 320 pixels wide with 16 colors, and one 640 pixels wide with 4 colors. Application programs can use either, sometimes switching between modes in the same program. *The Manager* handles these two screen modes in a logical way. Since you can't display both types of screens at once, only 640-mode background windows are displayed when you're in a 640-mode application, and only 320-mode windows are displayed when you're in a 320-mode application. This means, for example, that when you're in *Platinum Paint* (in 320-mode) you won't be able to see the Finder's icons and windows in the background.

In addition to the application-switching menu and the items added to the Extras menu, *The Manager* also modifies the Finder's Shut Down dialog to allow an additional choice (in addition to Shut Down, Restart, and Quit): Use Mini Launcher, which quits the Finder and installs the System 6 Mini Launcher. This can come in handy when you're short on memory, but we suggest sticking with the Finder when you can.

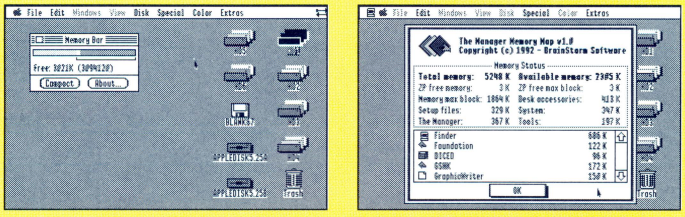
The Extras menu items are used to configure *The Manager* and the applications you want to use with it. *(The Manager* can record your preferences on an application-by-application basis.) To configure one of your programs, just select it in the Finder and choose "TM Application Setup" from the Extras menu. You can tell *The Manager* to always hide certain programs when they're not selected, or to always hide other loaded programs when a certain program is selected. This is the same as choosing the corresponding option from *The Manager*'s menu, except *The Manager* remembers to do this whenever you're using the program.

From the same dialog, you can also tell *The Manager* that a particular program uses the screen in an "anarchic" way (bypassing Quick-



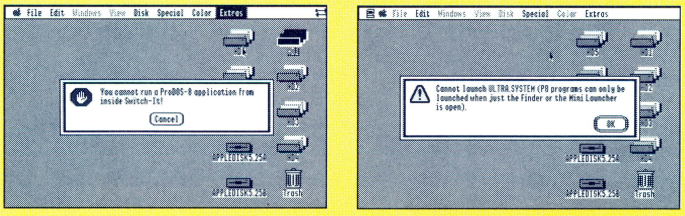
SWITCH-IT! THE MANAGER

Switching applications. Notice that The Manager's menu contains additional menu items for hiding and revealing background applications. Also notice that Switch-It!'s menu lists Switch-It! as a separate application, while The Manager "becomes' a part of the Finder.



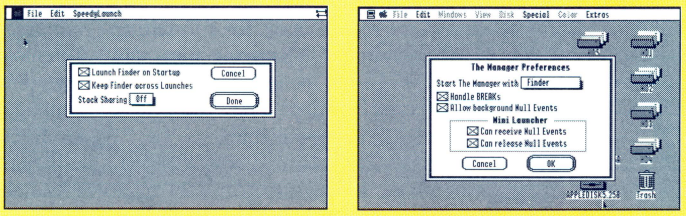
SWITCH-IT! THE MANAGER

Switch-It! includes the Memory Bar NDA to help you keep tabs on your memory usage. The Manager's memory usage dialog is more informative (including vital "zero page" memory statistics) but Memory Bar lets you compact and purge memory.



SWITCH-IT! THE MANAGER

The Manager is a bit more flexible about running ProDOS 8 programs, allowing you to launch them without having to quit The Manager as long as there are no GS/OS programs in memory.



SWITCH-IT! THE MANAGER

Switch-It!'s preferences screen allows you to auto-load the Finder (and keep it loaded across applications) and to activate the stack-sharing feature which will let you run multiple stack-hogging programs. The Manager's preferences screen also allows you to select the startup application and to activate the program's multitasking features. The Manager also lets you choose some settings on an application-by-application basis.

Draw and writing directly to screen memory). Some older programs do this, and this option allows *The Manager* to work more smoothly with them. You can also mark a program "incompatible" with *The Manager*. If you do that, *The Manager* will refuse to run it, so you don't run the risk of crashing the machine (and thus losing the work in your other loaded programs) with an accidental double-click. The other options note whether the program is compatible with *The Manager*'s true multitasking scheme, and provide additional compatibility for text-mode IIGS programs. These application settings are stored in the application's resource fork.

The "TM Memory Map" option on the Extras menu displays a nifty dialog showing you the memory allocated to the various programs loaded into memory—not just applications, but also desk accessories, initialization files, tools, the System, and *The Manager* itself. You can also see the total amount of memory in the computer, the available memory, and the maximum block size of available memory. Finally, it lists the amount of memory remaining in the "zero page" (actually bank zero) and the maximum block size of this memory.

Naturally, other Seven Hills utilities like *TransProg III, QuickLaunch,* and *Kangaroo* are compatible with *The Manager*. Used in a multi-program environment, these programs gain a new dimension of usefulness. The desk accessories that come with *Switch-It!* aren't included with *The Manager*, but they are compatible with it, and since they're freeware, you ought to be able to pick them up from an online service or your local user group.

As we mentioned earlier, *The Manager* supports true multitasking. As on the Macintosh, a cooperative scheme is used, with the operating system (or *The Manager* in this case) telling background programs when to process a "slice" of their task. The application must be written so that it knows how to perform its job in small pieces and so that it returns control to *The Manager* occasionally to let other applications have a chance. Most IIGS applications are close to doing this already, and Seven Hills provides additional programming guidelines on *The Manager*'s disk.

The only thing we'll call a real "bug" at this point (rather than a simple incompatibility) is the fact that the Escape key didn't cancel the dialog boxes for Application Setup and Manager Preferences.

Compatibility

How well do these programs work? Surprisingly well. Because of the technical issues involved in writing a program switcher, and the wide variety of programs people will be using it with (including a huge number of INITs, desk accessories, Control Panels, and other system enhancements), it's impossible to make sure every single combination of software works just right. Some things just aren't going to work.

Here are some of the things we found with *Switch-It! Formulate*—published by Seven Hills Software, coincidentally—has a bug which prevents it from working with *Switch-It!*. The *Switch-It!* program disk includes a program that fixes this bug. If you're using Bill Tudor's *Alarm Clock* NDA (part of *Six Pack* from Q Labs), *GraphicWriter III,* also from Seven Hills, doesn't display the time on the menu bar—though the time display works fine without *Switch-It!*. *AutoMenus,* by Jay Krell, works erratically—sometimes working fine, sometimes not working at all. *TransProg III* (another one from Seven Hills) causes all sorts of cosmetic problems, including dropping Finder from the Switch menu unexpectedly.

The Manager had problems with the popular shareware *Super Info III* desk accessory—sometimes corrupting memory and forcing a reboot of the system. Also, *AppleWriter II* couldn't be launched from the Finder while *The Manager* was active—the computer simply returned to the Finder. (Launching other 8-bit programs worked as advertised—this is reportedly a System Software bug.) And finally, the GS+ *Cool Cursor* init caused several operational conflicts. GS+ is preparing a new version of *Cool Cursor.*

The Phantasm screen blanker and the Sonics event sound assigner (both from Q Labs' *Signature)* were discovered to be incompatible with both *Switch-It!* and *The Manager*. Q Labs is readying an update, which should be available by the time you read this.

Since the technology is so new, we'll be charitable and not call these problems "bugs." Remember, neither the IIGS nor its operating system were really designed with multitasking and program switching in mind. Both Seven Hills and Sequential are working hard to find the causes of any incompatibilities that users detect and to correct the problems by working with the authors of the offending programs. Some older programs, of course, may never be switcher-compatible, just as some programs written for System 4.0 don't work properly under System 5 or System 6. As time goes by, though, more and more programs will be written with switching in mind, which will result in fewer and fewer problems for users.

The Showdown

The big question—the question this review is intended to answer—is which switching program to buy, if any. The main advantage of *Switch-It!* is its ability to share stack space (it can run AppleWorks GS and HyperCard GS at the same time, while *The Manager* can't). Its built-in mini-launcher, with its SpeedyLaunch capability, is also handy; with *The Manager*, you have to use *QuickLaunch* and the Mini Launcher to get the same features—and since *QuickLaunch* is a Finder Extension, the two features are mutually exclusive! The desk accessories in the *Switch-It!* package also rate as a big plus—while they're available freely elsewhere, they demonstrate that Sequential and Procyon are thinking of their customers.

The Manager has the advantage of its seamless user interface. When you're using *Switch-It!*, you're always aware that *Switch-It!* is a separate program. *The Manager*, in contrast, seemingly transforms the ordinary Finder into a IIGS MultiFinder—a much more difficult feat and one that's more aesthetically pleasing. Its yet-untapped multitasking capabilities are also ripe with potential. (With *Switch-It!*, a program stops running when it's put in the background. With *The Manager*, a "Manager-aware" program could conceivably continue running—unpacking a file which was just downloaded, printing, or whatever.)

Although our testing could not possibly be complete in our limited review time, and while *Switch-It!* certainly didn't exhibit any major problems that could be traced directly to the program itself, *The Manager* still seemed to us to be a more stable product, possibly as a side effect of its tighter integration with the Finder. Both are in their first release, though, and the stability of both products should improve in subsequent revisions. Both programs are quite usable right now, though—program switching has finally come of age on the IIGS.

So which to buy? *The Manager* seems to be the better choice simply due to its lower price, not to mention its potential multitasking features. (To be fair, no programs are yet available to use this capability.) If, on the other hand, the ability to run HyperCard GS and AppleWorks GS simultaneously is a necessity, then *Switch-It!* is the only way to go. You could, of course, always buy both and thus encourage both developers to continue improving their products—since they're both applications, you can install them both and use whichever one is more appropriate for the task at hand.

Both *Switch-It!* and *The Manager* have added new life and incredible potential to the IIGS. Hats off to both Seven Hills and Sequential Systems for proving that, contrary to popular belief, it—no matter what "it" may be—*can* be done on the Apple II! ■

SWITCHING 8-BIT APPLICATIONS

While neither Switch-It! nor The Manager can switch older 8-bit programs, SoftSwitch—the first Apple IIGS program switcher, from Roger Wagner Publishing—can. SoftSwitch has been available for a few years, but it still works (even with System 6) and it's still useful.

You can even use SoftSwitch in conjunction with The Manager or Switch-It! The only drawback is that you must quit all the IIGS Desktop programs you're using (including Switch-It! if you're using it) before you can get to ProDOS 8. But once you're in a ProDOS 8 program, SoftSwitch will allow you to "freeze" any 8-bit application in progress, store it in a workspace, then continue with your work. You can then quit that program (after it's been "frozen"), load another, and freeze that one. You can switch among frozen programs almost instantly, taking your computer back in time to the moment you froze the program. (This is also a great way to get a "second chance" on certain games!)

SoftSwitch has a retail price of $59.95 and is published by Roger Wagner Publishing, 1050 Pioneer Way, Suite "P", El Cajon, CA 92020.

Aa Bb Cc
fonts
desk
accessories
drivers
sounds
system
setup

ANATOMY OF A SYSTEM DISK

by Joseph Selur

IN 1988, Apple released IIGS System Disk 4.0—the first true 16-bit System Disk for the IIGS. System 5 came with several new features—including vital speed improvements, via a fast disk storage format called ExpressLoad, and support for resources. IIGS System Software 6.0 comes on a whopping *six* disks (compared to two for older versions) and virtually demands a hard drive for effective use, but delivers dozens of additional capabilities and features.

In this article, we'll take a close look at the basic System Disk for both System 5 and System 6 and explain the purpose of the various components of the IIGS System Software.

What's What On System 5

System 5 (of which version 5.04 is the latest) comes on two 3.5" disks. One is a bootable volume, called "System.Disk," containing the essential System Software; the other is a non-bootable volume called "System.Tools," which contains additional System Software which wouldn't fit on the System.Disk and which isn't needed by most 3.5"-only IIGS users.

Here's an outline of the files on the System 5 System Disk:

ProDOS: This is the file the computer loads when first starting up. On 8-bit startup disks, the ProDOS file contains the entire ProDOS 8 operating system. On a IIGS startup disk, however, the ProDOS 8 operating system is stored in the P8 file in the System folder; the ProDOS file is a much shorter version which loads Start.GS.OS from the System Folder.

AppleTalk: Contains files used for networking. On the standard System Disk, this folder is empty.

BASIC.Launcher, BASIC.System: These two files are running Applesoft BASIC programs. BASIC.System contains the ProDOS BASIC software itself; BASIC.Launcher is used by the IIGS Finder to launch BASIC programs.

System 6 is a much, much bigger operating system than System 5, so a few things had to be dropped to get it to all fit onto one disk.

Icons: Contains files which store the Finder icons for each type of disk, device, folder, and file, along with other files which allow the the system to provide plain-English descriptions of each type of file.

Tutorial: A set of folders and files provided to allow you to practice using the IIGS Finder.

System: Contains the bulk of the system software. In addition to the main GS/OS segments, the System folder also contains the Finder and several sub-folders, each of which holds a single type of file (desk accessories, control panel devices, etc.).

Inside The System Folder

Inside the System folder itself you'll find the following files and folders:

Start.GS.OS: This is the program launched by the ProDOS file in the disk's main directory. Its sole purpose is to load all the other parts of GS/OS from their various resting places in the System folder and get them up and running.

GS.OS: The main GS/OS system file, loaded by Start.GS.OS.

GS.OS.Dev: The GS/OS device manager, which handles loading the appropriate drivers for the peripherals you have attached to your computer.

Start: The startup program that is run when GS/OS has been fully loaded. On the standard System Disk, this is the Finder, but you can replace this file with another program to create a disk that boots directly into that program.

ExpressLoad: This program, loaded while GS/OS is booting, provides a substantial speed increase when loading programs compared to previous versions of the System Software.

Error.Msg: This file contains the error messages displayed by GS/OS.

P8: The ProDOS 8 software, used for running 8-bit programs under GS/OS. This is the same file as the ProDOS file on a bootable 8-bit disk.

Desk.Accs: This folder contains Desk Accessories. The IIGS supports two different kinds of desk accessories: Classic Desk Accessories, which are accessed by pressing Apple-Control-Escape and which are available in any program, and New Desk Accessories, which are accessed from the Apple menu in IIGS-specific programs. The standard System Disk's Desk.Accs folder contains a single file called "CtlPanel.NDA," the IIGS's Macintosh-style "Control Panel."

CDevs: This folder contains Control Panel devices, or CDevs ("SEE-devs") for short. Control Panel Devices are used by the Control Panel NDA. Each CDev allows you to configure a single aspect of your computing environment. The CDevs provided by Apple are: Alphabet, DirectConnect (printer selection), General, Keyboard, Modem, Monitor, Mouse, Printer, RAM, Slots, Sound, and Time.

Drivers: This folder contains drivers that talk to your various peripherals. The Apple-supplied System Disk contains: AppleDisk3.5, AppleDisk5.25, Console.Driver (screen display), ImageWriter, Modem, and Printer.

Fonts: This folder contains typefaces for common use in IIGS programs. The System Disk contains Courier.10, Courier.12, FastFont (a pre-compiled typeface to speed up the display of the system font), Geneva.10, Geneva.12, Helvetica.10, Helvetica.12, Shaston.16, Times.10, Times.12, and Venice.14.

FSTs: This folder contains File System Translators. GS/OS is designed to be file-system independent—that is, to work with any kind of disk (ProDOS, AppleShare, CD-ROM High Sierra, etc.). The FSTs allow GS/OS to read and write specific file systems. Included file systems are: Char.FST (for character input and output) and Pro.FST (for ProDOS disks—the standard Apple II disk format).

System.Setup: This folder contains files which are loaded during boot to perform patches (modifications) to GS/OS or to perform some other function that needs to be performed at each boot. CDev.Init takes care of initializing each CDev in the CDevs folder; Resource.Mgr is the GS/OS resource manager; Sys.Resources are resources shared by the entire system; Tool.Setup is responsible for loading the appropriate patch file, TS2 or TS3, depending on which IIGS ROM version you have.

Tools: The Tools folder contains the disk-loaded parts of the IIGS Toolbox, including Tool014 (Window Manager), Tool015 (Menu Manager), Tool016 (Control Manager), Tool018 (QuickDraw II Auxiliary), Tool019 (Print Manager), Tool020 (Line Edit), Tool021 (Dialog Manager), Tool022 (Scrap Manager), Tool023 (Standard File), Tool025 (Note Synthesizer), Tool026 (Note Sequencer), Tool027 (Font Manager), Tool028 (List Manager), Tool029 (Audio Compression/Expansion), and Tool034 (Text Edit).

With this folder arrangement, adding new desk accessories, drivers, CDevs, and so forth is as simple as placing them in the appropriate folder on your startup disk (assuming there's enough room).

Make Room, Make Room!

There's not much room on a standard 3.5" System Disk to add more of those desk accessories, drivers, CDevs, "and so forth" we mentioned in the last section. How can you get more room on your System Disk? Well, to put it bluntly, you have to decide to get rid of something you don't need very much. Here's a simple guide that may help you get rid of things. Remember, make a copy of the original System Disk and delete things from that copy.

AppleTalk (folder). Sure, it's an empty folder, so it doesn't gain you much space, but why keep it around if you're not using a network?

Tutorial (folder)—11K. This is a waste of space once you've mastered the Finder.

P8 (in System folder)—16K. Delete this if you don't need to run ProDOS 8 programs with this System Disk.

BASIC.Launcher, BASIC.System—12K. Delete these if you don't need to run Applesoft BASIC programs with this System disk.

Finder.Icons.X, FType.Main (in Icons folder)—9.5K. These files are "supplemental" to the main icon files and are not strictly necessary.

CDevs: Delete any CDevs you don't need—basically, anything that's duplicated by the built-in Apple-Control-Escape control panel, including General, Keyboard, Modem, Monitor, Mouse, RAM, Slots, Sound, and Time. You can also delete DirectConnect after using it once to select your printer (you will only need it later if you want to switch to a different printer driver). Hey, that's basically all of them!

Control Panel & Related Files—24K. If you are not using any CDevs at all, you can save additional space by deleting the CtlPanel.NDA (in the Desk.Accs folder) and CDev.Init (in the System.Setup folder).

TS2 or TS3 (System.Setup folder)—39.5K or 9K. If you have a ROM 01 IIGS and do not need to be able to boot the System Disk on a ROM 03 machine, you can delete TS3. If you have a ROM 03 IIGS and do not need to be able to boot the System Disk on a ROM 01 machine, you can delete TS2.

Drivers: Delete any drivers for devices you do not have or do not need to use—possibly the ImageWriter driver (23.5K) and AppleDisk-5.25 driver (7K).

Fonts: Delete any fonts you do not use. Keep FastFont on hand, though, if you can—it really does allow the computer to draw text faster. Only delete it in an emergency.

Tools: You will want to keep all the tools around most of the time. However, in a last-ditch effort, you may try deleting Tool026 (Note Sequencer) and Tool029 (Audio Compression/Expansion), as programs which use these tools are few and far between, and the System Disk included with System Software 6.0 doesn't include them.

System 6

System 6 is a much, much bigger operating system than System 5, so a few things had to be dropped to get it to all fit onto one disk. Additionally, some files are simply no longer necessary, since their function has been absorbed into other parts of the System Software. Here's the stuff missing from a System 6 System Disk:

AppleTalk folder. It was never used on a standard System Disk anyway, so it's gone.

BASIC.Launcher. The functionality of System 5's BASIC.Launcher is now built into another part of System 6.

Finder.Icons, Finder.Icons.X, FType.Main, FType.Aux (Icons folder). The Finder's standard icons are now stored in the Finder itself, and the FType files have been combined into a single file, FType.Apple.

ExpressLoad (System folder). ExpressLoad is now built into System 6 instead of being a separate file.

CDevs folder. System 6 only has room on the System Disk for two CDevs—Printer and Time.

Desk.Accs folder. The System 6 Control Panel desk accessory is called ControlPanel, instead of CtlPanel.NDA. It's a little smaller than the old one, too.

Drivers folder. System 6 doesn't have the ImageWriter, Modem, or Printer drivers on the System Disk.

Fonts folder. The standard System 6 System Disk contains no fonts—not even FastFont, which is now built into another part of System 6.

System.Setup folder. The CDev.Init program is now built into another part of System 6.

Tools folder. As mentioned above, System 6 does not include Tool026 and Tool029

Tutorial folder. It's history.

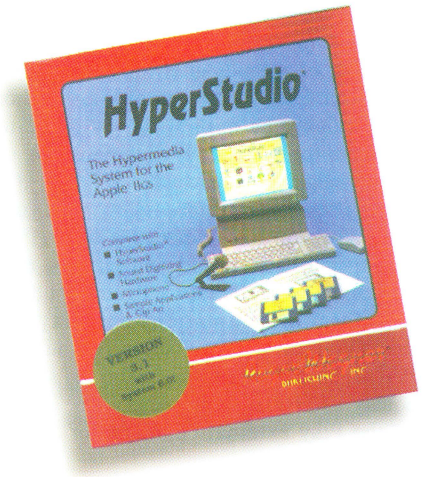
Since the System 6 System Disk is almost completely full, yet contains somewhat less functionality than the System 5 System Disk, we definitely suggest sticking with System 5 if you only have 3.5" drives on your computer. While System 6 has a lot of great new features—like the ability to read and write Macintosh disks—all that stuff simply won't fit in 800K anymore. Start saving those pennies for a hard drive now—System 6 is worth it! ■

The GS Producer

by Auri Rahimzadeh

Since the IIGS's release in 1987, we've seen an evolution in its multimedia capabilities. Originally, most programs used 16-color graphics. Now programs routinely use 256 or even 3200 colors. The hardware hasn't changed—just peoples' expectations. The mono-only sound barrier of the Ensoniq digital sound chip was broken by the Sonic Blaster and the newer SoundMeister. Games have evolved from shoot-em-up arcades to virtual reality and role-playing. The FTA and their demo disks have gone a long way toward proving that the IIGS is capable of awesome graphics and sound—they have inspired dozens of IIGS programmers to aspire to similar achievements. At the same time, hypermedia authoring systems have become more and more powerful, bringing the power to create cool stuff within the reach of ordinary people.

Multimedia is one of today's hot topics, and the IIGS is ideally suited for it now that all these ingredients are in place. *HyperStudio 3.1* (Roger Wagner Publishing) is the final piece of the puzzle, allowing even novice computer users to begin making their own multimedia programs—stacks—in just a few minutes. Instead of writing program code, the stack developer simply tells *HyperStudio* what to do by selecting options from pull-down menus. If you want a certain button to have rounded corners, you simply select the button and choose a "rounded" style from the menu. No programming is necessary!



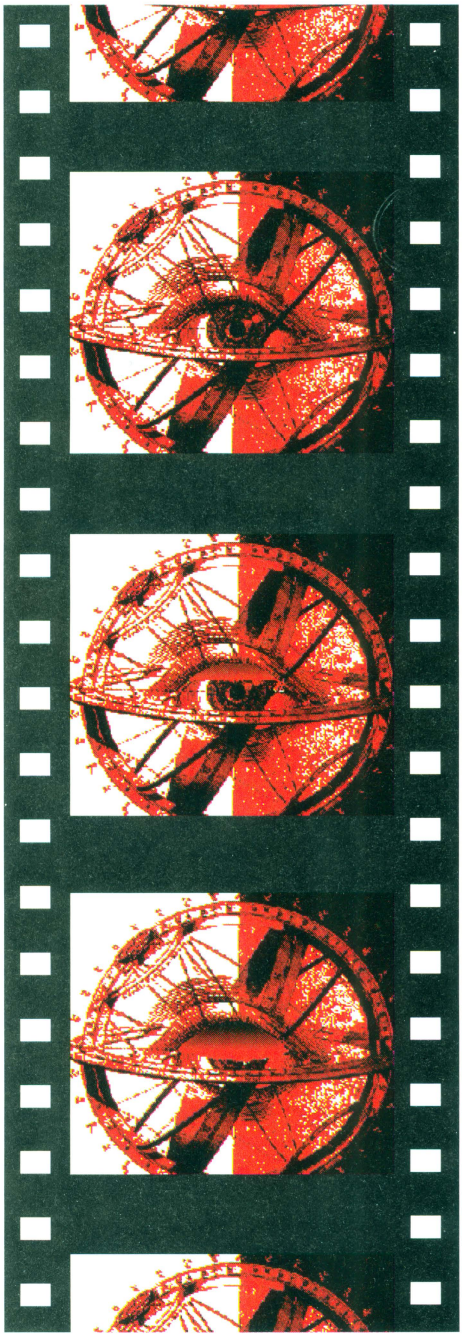
Most people have seen HyperStudio stacks for storing phone numbers, or for teaching some educational principle, or for displaying graphics in a "slide show" with a different transition and maybe a sound effect between pictures. These are the most obvious uses for multimedia, but by now they've become just a little bit boring. Besides which, you have to have a computer to take advantage of them. Why not make a movie with *HyperStudio?* It's easy!

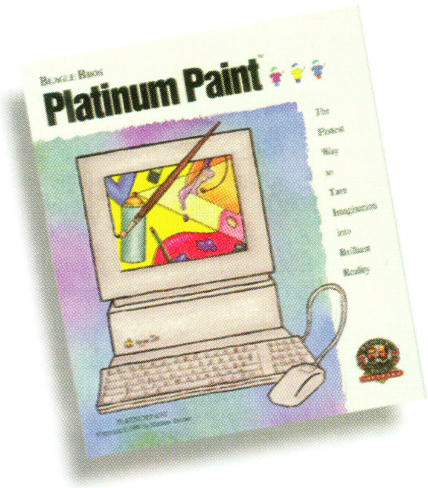
I started on that exact project when I got *HyperStudio* six months ago. I wanted to take *HyperStudio*—and the IIGS—to its limits. While a movie isn't interactive at all, you can make a videotape of it and show it off to anyone who has a VCR. In fact, I submitted mine to a local film festival.

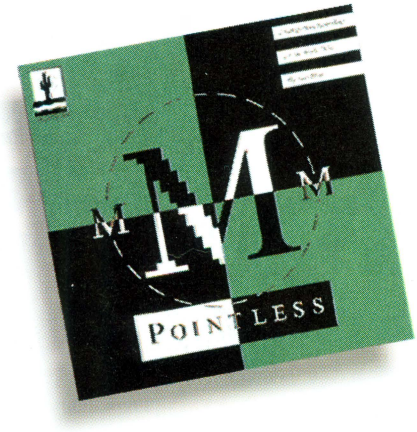
WHAT YOU NEED

You're going to want plenty of memory in your IIGS—three or four megabytes. Graphics (especially animations) and sounds are real memory hogs. For the same reason, you'll want a good amount of hard drive space. (You'll want that for any serious work in *HyperStudio,* not just this project. You may not see the need for it now, but you will, very soon.) For fluid animations, an accelerator is also helpful. (You can do animation without it, but moving images will sometimes look a little jerky, especially when you're moving large objects around on the screen.)

You may also want a stereo sound card (preferably one with a built-in digitizer for recording your own sounds), though there are plenty of readily-available *SoundSmith* and *Synthlab* songs which can provide the soundtrack for your movie, and the IIGS's normal sound output is adequate for TV reproduction. You'll want Roger Wagner Publishing's free Play external command if you're using *SoundSmith* songs, or the *SynthPlay* package (Triad-







Ventures) if you're using *Synthlab* songs. (You can also sample sounds and use those, but long sampled sounds take a lot of memory. Reserve the sampled sounds for voices and short sound effects, and keep the sampling rate as low as possible while still achieving acceptable quality.)

An Apple Video Overlay Card is an expensive, but useful, option. Although you can just connect your VCR to your IIGS's composite "video out" jack, your final tape will look substantially nicer with the Overlay card installed. And you'll be able to combine computer images with live video, using a second VCR or camcorder, while recording the final product onto your main VCR.

A paint program is a must. *Platinum Paint* (Beagle Bros) is a good selection for a general paint program—it will let you create animations, gradient fills, shadows, and do hundreds of other fun, exciting things to your graphics. However, it only supports 16-color pictures, and since the latest versions of *HyperStudio* can support up to 256 colors (or 3200 colors with an external command), you'll also want *DreamGrafix* (DreamWorld). The difference between 16-color and 256-color graphics can literally be stunning, so I chose to use 256-color graphics throughout my movie. You'll create all your graphics using one or both of these paint programs, then import them into HyperStudio as card backgrounds.

If you can't draw (or even if you can), you may want a hand-held scanner like the Quickie (Vitesse) or a video digitizer like the Enhanced VisionPlus (New Concepts). Some intriguing effects can be created by incorporating "found art" in your productions. (Be careful of copyrights, though—if you intend to distribute your movie, you should get permission from the owners of the art or video clips you scan or digitize.) If you can't afford a scanner, you can trace the outlines of objects you want to use onto a transparency, attach it to your screen, and trace it into the computer using the mouse.

Finally, *Pointless* (WestCode) is another nice extra. Unless you add voice-over narration, most of the communication in your movie will be done with on-screen text. Pointless makes sure that text looks its best at any size, and gives you access to a wide variety of TrueType fonts so you can find the perfect style to match the mood of your video.

DESIGNING THE MOVIE

Before you start, you'll want to make an outline of what each scene in your movie will be. The pros use a collection of small drawings of the important moments in each scene—a storyboard—to depict the movie's plot. You may even need a script if you plan to add voice-overs, narration, or live action. My movie was designed to simply show off the IIGS, so it didn't really have a plot, but I did spend some time planning what each of the scenes would depict.

Now it's time to begin putting the graphics and animation together. We won't go into too much depth in this article on painting or animation techniques, since those could easily be articles of their own. Just be careful to avoid too-bright colors—especially reds—because they can bleed when you record the final product to videotape.

HyperStudio supports two different animation techniques. First, there's *cel animation* (also referred to as PaintWorks animation). As in traditional cartoon animation, you draw a series of pictures, then display them as quickly as possible in sequence. Since you're doing it on the computer, making small changes from one picture to the next is pretty simple. I used this technique to make the blinking eye animation. The PaintWorks animation file stores only the differences from one picture to the next, so most animations are pretty compact. *Platinum Paint* can create these kinds of animations—look for "Paintworks animations" in the index.

HyperStudio also supports the creation of *path animation.* With path animation, *HyperStudio* takes a graphic object and drags it around on the screen. (You can define the path through which the object will move with the mouse.) The object itself can't change. For example, if you were animating a car this way, you couldn't show the wheels spinning as it moved around the screen. However, it's just the ticket for rocket ships and other objects that remain the same during a scene. And path animation is a much better way to animate lots of things at once (since cel animation stores the changes between pictures, it begins to require a lot of memory when large portions of the picture are changing). You can even use it to create an animation that signs your name—see the sidebar.

MAKING THE STACK

Now you're ready to actually begin building your movie as a stack. First, pull up *HyperStudio's* "Preferences" dialog (it's under the Apple menu) and make sure that "Advanced User" and "Auto-Activate buttons active" are both selected. Since you want your movie to run by itself, without input from you, you'll be making extensive use of "timed" buttons—buttons that automatically click themselves a certain number of seconds after the card they're on is opened. Each button can play a sound or a song, display an animation, or move to another card (or even do all of these tasks), so you'll be using them extensively.

Create a separate card for each scene in your movie. Work on one scene at a time, first importing the background you want to use, then creating invisible auto-activating buttons that perform the animations and play the sounds. (You can use one button for multiple tasks if all of them are to be performed simultaneously.) Musical sequences can be added using the Play external command or *Synth-*

Tunes package (mentioned previously). Be careful with the Play external command—it can sometimes start playing garbage after it has played the end of a song, so time the music and program another button to forcibly stop the song when it's finished.

Leave the buttons that will automatically move from one scene to the next for the very last step of the production. When all the scenes are complete, manually move from one card to the next and use a stopwatch to record the exact length each card should be displayed (until the animation or sound stops, or however long looks good to you.) Then create a new invisible button on the card, auto-triggered after an appropriate delay, to move to the next card with a nice visual effect.

My entire movie consisted of computer-generated images. If you are including live-action video, though, you should leave some links between cards unconnected. This will give you a chance to pause the tape and change the cabling around (to get input from your second VCR or camera) when you are recording your movie.

RECORDING THE MOVIE

Run through your production one last time to make sure that there are no embarrassing mistakes. Correct any you find. Add a totally black screen to the end of your stack—that will come in handy in a minute.

Connect the VCR to the IIGS. You can use a standard RCA cable in most cases to connect the IIGS composite video out (or the Video Overlay Card's out) to the VCR's video in. You may need to adjust the VCR to record it's "video in" or "line in" signal instead of a TV program. Audio is a little trickier. Here are the possibilities:

- If your VCR has only one audio input (mono), you need a simple cable—one with a 1/8" mono headphone plug on one end and an RCA plug on the other. This cable connects your IIGS headphone jack to the VCR's audio input. (If you have a stereo card, it doesn't matter, because your VCR can't record stereo anyway—use the IIGS headphone jack and ignore the stereo card.)
- If your VCR has two audio inputs (stereo), and you have a stereo card, you will need either two RCA cables just like you're using for the video (if your stereo card has RCA outputs) or a cable with a 1/8" stereo headphone plug on one end and two RCA plugs on the other (if your stereo card only has a headphone output). This latter cable is the same kind you use to connect a portable CD player, like a Sony Discman, to a home stereo.
- If your VCR has two audio inputs (stereo), and you don't have a stereo card, you need the same cable mentioned above—a 1/8" headphone plug to two RCA plugs. This will split the signal emerging from your IIGS and allow it to be recorded on both stereo channels, although the signal will be in mono.

Your IIGS's volume (or your sound card's volume) should be turned about 2/3 of the way up. If your VCR provides an audio level adjustment, run through your movie once (don't actually record it on the tape yet) and watch the VCR's level meters. The loudest part of the soundtrack should reach about 0 VU on the meters, and go into the "red" area (overload) as little as possible. (If your VCR doesn't provide level meters or controls, adjust the sound in the IIGS control panel or on the stereo card so it's about as loud as other tapes you have made from TV programs.)

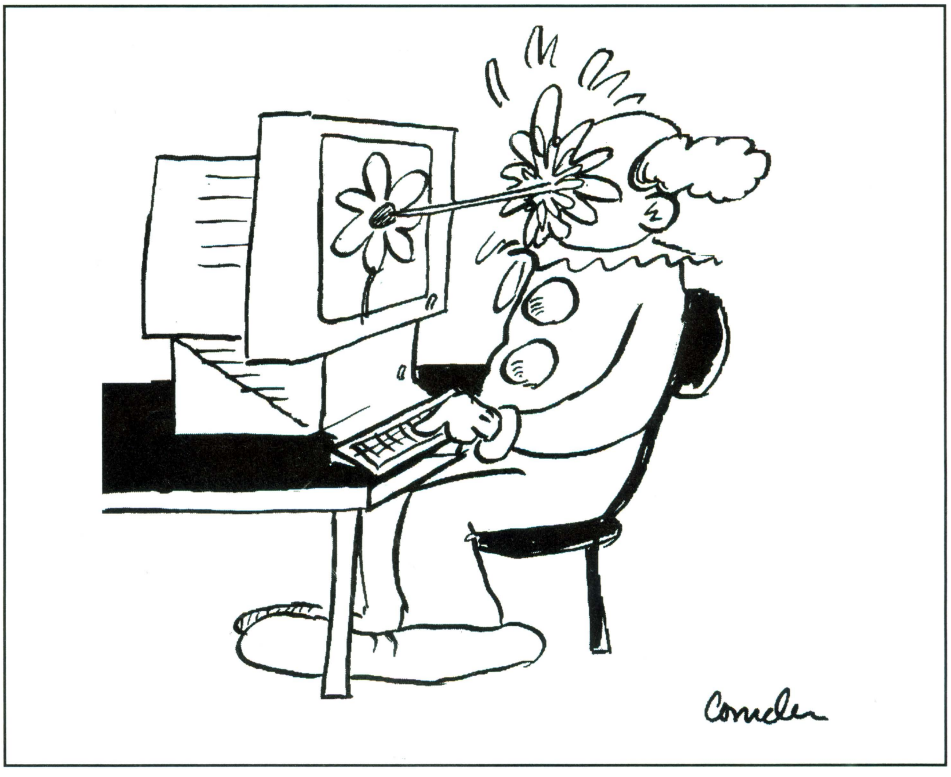
Okay, you're ready! You should be displaying that black card you added. Load a blank tape into the VCR and press Record. Let the VCR run for a good minute (this will allow the VCR time to adjust the colors and tracking when you play back the tape), then press Open-Apple-1 to move to your first card. The auto-activate buttons on that card will take over, and the show will begin!

If you have to stop the tape to add some live-action video from another source, be sure to use the Pause button, not the Stop button. Using the Stop button on most decks will create a nasty glitch at the edit point, unless your VCR is an expensive model with a feature called a flying erase head. Be quick about changing things around while your VCR is paused—most will automatically jump out of pause mode after a couple of minutes.

In a few minutes, your new creation will be on tape. Now you can brag to all your friends that you produced a movie on your IIGS! ■

Signing Your Name With Path Animation

1. Make a blank black card and select the paint brush tool. Use a small brush to make a white dot on the screen.
2. Select the lasso tool and surround the dot.
3. While holding down the Apple key, press X to Cut the small dot.
4. Select the Animator NBA that came with HyperStudio. When it asks you how you want the animation to work, make sure that you specify "draw multiple." This will make the object leave a trail as you drag it around, instead of actually animating a single dot flying around.
5. Select "from clipboard" as the source of the graphic.
6. Begin recording the animation. Your cursor has become the dot that you cut to the clipboard. Drag the mouse to draw your letters. Go slowly so that you don't have jaggy lines or gaps.
7. Press Return when you're finished.
8. Select "View current animation" to see your creation.
9. There you go! Neat, eh? (Try some other shapes, instead of just the white dot!)



COPYRIGHTS IN THE MULTIMEDIA AGE

by Barry McDonald

Have you ever used *InWords* to scan text into AppleWorks? Do you incorporate scanned images or clip art in the newsletter that you publish? Have you captured sounds or images and used them in a *HyperStudio* stack? If so, you have probably already run into situations which require a knowledge of copyright law.

By now, most computer users have some understanding of what constitutes the legal use of software. Through the efforts of the Software Publishers Association, phrases like "single copy for archival purposes," have become part of our awareness. However, copyright considerations do not end with the question of software duplication. In the age of multimedia, as users extend their systems by adding scanners, video and sound cards, CD-ROMs, and modems, copyright questions pop up each time we scan an image, capture a sound, or download a file. Today's more powerful Apple II software has allowed users to become creators—desktop publishers, stack developers, authors, composers, presenters—and as creators, we often recombine bits and pieces that others have created.

As current technology makes it easier to recycle others' creative efforts, computer users have to begin worrying about copyrights, royalties, and permissions—matters that once concerned only publishers and major corporations. Although new technology continues to complicate and redefine some aspects of the copyright law, users of today's technology should be aware that there are basic principles that apply to all forms of copying from fax to fiction, from scanned art to clip art.

A BRIEF HISTORY

Thomas Jefferson and Benjamin Franklin, though they were themselves prolific inventors and progressive thinkers, surely never envisioned computers, hand-held scanners, or hypermedia, but they did realize that inventions, literature, and works of art serve to enrich our culture and keep our country strong. To encourage and reward scientific and artistic achievement, the framers of our Constitution gave Congress the power to "promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries." These words from Article I, Section 8, of the United States Constitution authorize Congress to create laws that would give artists and scientists control over their creations. The principle is a simple one: encourage the creation of art and technology by allowing the creators to gain financially from their work.

The first federal law to define these rights, the Copyright Act of 1790, has evolved through a half dozen major revisions into our current law, The Copyright Law of 1976. The Copyright Law, however, deals with general concepts and guidelines, not with specific situations. The U.S. Copyright Office in Washington, DC, oversees the copyright registration process and distributes information on copyrights, but as new technologies and new forms of expression evolve, it is the courts that ultimately fill in the details of copyright law. So, as we review the basics of copyright law, keep in mind that many of the concepts we discuss, as they apply to computer technology, are still being tested and refined. The information presented here is intended as a general introduction to copyrights, and is not meant to take the place of qualified legal advice.

COPYRIGHT BASICS

The copyright law protects "original works of authorship," that are "fixed in a tangible form." If a work does not contain some originality, it cannot be copyrighted. Thus, a tracing of an existing picture or a database of baseball statistics would not be eligible for copyright protection since they contain no originality. Among the materials that have been ruled ineligible by the courts are blank forms, calendars, lists of ingredients, tables of weights and measurements, titles, words, short phrases, and the white pages of the telephone directory.

The law also does not protect ideas, but it does protect the original expression of ideas. No one can have a copyright on the idea that falling in love is wonderful, but a particular poem on that subject would be protected.

Under current law, a work is automatically considered to be copyrighted from the moment it is fixed in a tangible form. For example, a melody in the composer's head is not copyrightable, but from the moment it is written on paper or recorded on tape (or even as MIDI data in a computer), it is considered copyrighted. A work does not have to be registered with the Copyright Office or bear a copyright notice to be copyrighted. An author's right to protection exists automatically from the moment the work is created. However, registering the copyright provides proof of the date the work was created and strengthens your case should you ever need to go to court to protect your rights.

The Copyright Law gives writers and artists the sole right to reproduce, sell, perform, or display their works for a specific period of time. In general, works created before January 1, 1978, retain their copyright for a period of seventy-five years. The copyright for works created on or after this date expires fifty years after the author's death, or, in the case of works made for hire—works that have been sold by the original creator to another party such as a publisher or corporation—seventy-five years from the date of publication, or one hundred years from the date of creation, whichever comes first.

A copyrighted work may not be reproduced, distributed, performed, or displayed by anyone except the copyright owner unless the owner gives his or her permission. This is the origin of the word "copyright," which simply means "the right to make copies." Copyright owners have the right to demand payment for the use of their material, in the form of a one time permission fee, or in royalty payments which are based on the number of times the material is duplicated. Once the copyright has expired, however, the work enters the public domain and can be used by anyone without permission.

A copyright owner also has control over *derivative works.* For example, a novel cannot be translated into another language or turned into a movie without the author's permission. A *compilation* is a specific type of derivative work in which material created by others is collected. An anthology of poems or a book of artwork is a compilation.

To complicate matters, a derivative work or compilation can itself be covered by a copyright. For example, an artist might get permission from several photographers to combine a number of their photographs into a collage. Each photographer owns the rights to his own photographs, but the artist who creates the collage would hold a copyright on the collage.

Music is another potentially complicated area when it comes to copyrights because a musical composition can take many forms. A song can be printed as sheet music, recorded on a tape or CD, performed live, or used as the sound track of a movie. The rights to use music in these four ways are known respectively as *print rights*, *mechanical rights*, *performance rights*, and *synchronization rights*. Permission to use the music in one form does not automatically confer permission to use it in another.

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                                        PO Box 345
                                        Wakeville, CA 00000
                                        March 29, 1993

Permissions Department
Superior Publishing Co.
999a West 52nd Street
New York, NY 10019

Dear Sir or Madam:

I am requesting permission to duplicate the drawing of a
dove which appears on page 43 of the book Our Fine Feath-
ered Friends, 2nd edition, by Thomas Quick, copyrighted
by Superior Publishing Co., 1987. I would like to use the
drawing in a small non-profit newsletter which I publish
for my church.

The drawing would be scanned with a hand-held scanning
device and the resulting digitized image would be includ-
ed in one issue of a newsletter that my church publishes
on a monthly basis using an Apple IIe computer and a
desktop publishing program named Publish It!  This
newsletter, entitled Church Happenings, is distributed
free of charge to the congregation of the First Orthodox
Church of Wakeville, in Wakeville, CA. Eighty copies of
the newsletter would be printed and mailed to the congre-
gation members. The image would be reduced in size so
that it occupies approximately one-eighth of a 8 1/2 x 11
inch page. We would include full credit for you as the
source of the drawing.

Since Church Happenings is a non-profit publication, I am
hoping to receive your permission to use the image with-
out charge.

                                        Yours truly,

                                        Carolyn Wilder
```

COPYRIGHTS & COMPUTING

How do all these rights affect you? Let's say you scan a drawing from a magazine. The moment you are done scanning, you have unlawfully *reproduced* copyrighted material. If you place the scanned image in a newsletter, you have unlawfully *distributed* it. If the image becomes part of a HyperStudio presentation, you have unlawfully *displayed* it. If you load the image into a drawing program and change it, you have unlawfully created a *derivative work*. In fact, computer-generated artwork, AppleWorks word processing and database files, hypermedia stacks, desktop publications, and screen presentations are often derivative works or compilations since they combine bits of text, artwork, music, or video from other sources.

It's true that there are no "copyright police" looking over your shoulder. It's also true that scanning a copyrighted image of a cartoon character into your computer for your personal use (as a startup picture, for example) is unlikely to provoke the wrath of the copyright holder. The courts have even ruled that videotaping a copyrighted television program for later private viewing—

time-shifting—is legal (in the so-called "Betamax" decision). However, the bottom line is this: If you want to *legally* use copyrighted material, you must request permission to do so. You may be required to pay royalties for your use of the material, or you may receive a flat refusal, but these inconvenience seem quite minor when you consider that a first offender could be imprisoned for up to one year and fined up to $25,000!

SEEKING PERMISSION

To request permission to use copyrighted material, write a letter to the publisher or distributor of the material. Even if a particular person's name is listed in the copyright notice, it is the publisher or distributor who usually handles requests for permission. Most major publishers have a Permissions Department which handles these requests. The name and address of the publisher are usually displayed somewhere on the work, but for more detailed and up-to-date information, check your local library for copies of *Literary Market Place*, *Gale's Directory of Publications and Broadcast Media*, and *Ulrich's International Periodicals Directory*. Using these three books you should be able to find the addresses and telephone numbers of any major publisher or broadcaster, as well as the name of a particular person to contact about permissions.

The music industry has set up several organizations which act as clearinghouses for permission requests for virtually all of the music that is published or recorded in the United States. To request permission to use a musical composition, you should contact one of these agencies. Performance rights for most musical compositions are controlled through one of three performing rights societies: the American Society of Composers, Authors and Publishers (ASCAP), Broadcast Music Inc, (BMI), or the Society of European Stage Authors and Composers (SESAC). Mechanical and synchronization rights are controlled through the Harry Fox Agency, a subsidiary of the National Music Publishers Association. To request permission to copy sheet music, contact the individual publisher.

In your letter, clearly identify the title, author, and portion of the work that you would like to duplicate and the method and purpose of the duplication. Explain how many copies you plan to make, and state whether the material will be used for commercial purposes. The more completely you describe your intended use, the better chance you will have of getting a quick response. (See Figure 1)

Publishers of books and periodicals will usually respond within a few weeks. Don't expect a fast response from major corporations such as movie studios. The response you receive may grant you permission to use the material free of charge, or you may be required to pay a fee. Many publishers will allow you to use material without a charge if it is for educational or non-profit purposes, but they will usually set certain conditions. One common condition is that the copyright notice or a notice that acknowledges the source must be displayed on the copies. Commercial uses, however, are treated in a more business-like manner. If you are requesting permission to digitize a drawing and sell the copies, or if you want to include a poem in a HyperStudio stack that you plan to market, you can expect the copyright holder to demand a fee based on the number of copies that you sell.

You may also be refused permission to use the material. As a rule, the more formidable the source, the more likely it is that you will receive a flat refusal. You are more likely to get permission to duplicate an article from a small local paper than from *The New York Times*. You will probably have more success getting permission to duplicate an advertisement for Sammy's Cafe than one for Sony Corporation.

THE LAW RACES TO CATCH UP

Today, computer users find themselves in a world where copyright laws and practices have fallen behind the advances in technology. The law, as it applies to computer technology, is not always clear. If you digitize a five-second sound sample from your favorite rock tune and attach the sound to a drawing in *Platinum Paint,* does playing back the sound constitute a performance?

What constitutes a copy? In the act of scanning and printing an image, two copies are created as you scan, one in memory and one on the screen. Another copy is made when you save the file on a disk. When you load the file into your paint program, two more copies are created, again on the screen and in memory. Then you print the hardcopy. Has the image been duplicated once or six times?

The method of granting permissions is also undergoing major changes. A few organizations such as the Copyright Clearance Center and the National Association of College Stores are attempting to apply the clearinghouse concept that is used by the music industry to other forms of reproduction by forming centralized copyright clearinghouses that simplify the process of granting permissions and collecting royalties, but this approach is still more the exception than the rule. There may come a day when you will be able to browse through collections of art, music, and literature online, enter a credit card number, and download the material you want to use, but many issues need to be resolved before such a system can become a reality.

One issue that needs to be studied is the pricing structure that is currently used for royalties. The current system of fees is based on traditional forms of duplication and is often not appropriate for computer applications. Many publishers do not have policies or fee structures that cover scanned images, brief digitized sound samples, or the creation of word processing files. The stack author who wants to digitize a ten-second drum roll from a copyrighted recording is likely to be charged the same fee that a major recording artists would pay to include the entire song on a record album. If the same author wanted to place a scanned image in the stack, the owners of the image would probably charge him the same fee that they would charge *Time* magazine. Since a multimedia presentation can contain hundreds of sound samples, video images, and graphics, it becomes virtually impossible for an author to develop a profitable multimedia work. This is why so many commercial CD-ROMs and stacks are based on older works like the Bible, Shakespeare and Sherlock Holmes, works which were never copyrighted or on which the copyright has expired. Try to find a piece of software on a modern classic like *Catcher in The Rye*!

TO SCAN OR NOT TO SCAN

So where does that leave you? Have you bought all that equipment only to find out that you can't use it without sending out a royalty check once a week? The best advice for computer-using authors, teachers, and artists is to use as much of your own original material as possible. If you have the talent, create your own illustrations or record your own music. If you want to include copyrighted material in a commercial project, select only one or two items that you can't get along without, and when you request permission to use these items, emphasize the limited nature of the use and the limited earning potential of your product. If your creation will be used for non-profit educational purposes, make this clear and request that any fees be waived.

Lucky for you, though, we've saved the best for last. There is a virtually infinite source of words, music, and images that you can draw upon without worrying about permission or fees.

THE PUBLIC DOMAIN

Works that are not protected by copyrights are said to be in the public domain. This includes works for which the copyright has expired and certain works that are not eligible for copyright protection in the first place.

Since seventy-five years is the maximum duration of the copyright on works published before 1978, it is generally safe today (in 1993) to use material from books and periodicals published prior to 1918. This includes many wonderful classics ranging from the works of Dickens to Frank Baum's novel *The Wizard of Oz*, as well as a variety of musical compositions and artwork. There are some exceptions, however. Remember, derivative work and compilations can be copyrighted even if they are based on material that is in the public domain. In these cases, the original material remains in the public domain, but any creative additions or substantial editorial changes may be copyrighted. So, though the original text of Shakespeare's *Hamlet* is public domain, a new version of the play in which some of the language has been edited or modernized may be protected. Prefaces, annotations, footnotes, and illustrations may also be added to a new edition of a classic, and these are clearly not public domain.

Continued on next page

FOR MORE INFORMATION

The U. S. Copyright Office publishes dozens of free circulars about copyrights. You can order circulars by calling the Forms and Circulars Hotline at 202-707-9100. The Hotline is an automated answering system that operates twenty-four hours a day, but since you will be dealing with an answering machine, you must know which publications you want before you call. To get information about circulars and other copyright matters from a live human being, call the Public Information Office at 202-707-3000 weekdays between 8:30 and 5:00 p.m. EST.

You can also request information and order circulars by writing to Publication Section, LM-455, Copyright Office, Library of Congress, Washington, DC 20559. Listed below are some circulars that will introduce you to the basics of copyright law. Circular number 2 contains a listing of other circulars that are available from the Copyright Office, so order it first.

Circular 1:	Copyright Basics
Circular 2:	Publications on Copyright
Circular R2b:	Selected Bibliography on Copyright
Circular 15a:	Duration of Copyright
Circular 21:	Reproduction of Copyrighted Works by Educators and Librarians
Circular 92:	Copyright Law of the United States of America

BOOKS: You may also be able to find books on copyright law at your local library or bookstore, but check the dates of publication before you start reading. Books written before 1978 are obsolete. Revisions have been made to the law in the last few years, so look for newly published books.

FOR SOFTWARE USERS: The Software Publishers Association (SPA) distributes information about your rights and responsibilities as a software user. Contact them at 1730 M Street, NW, Suite 700, Washington, DC 20036-4510, or by phone at 202-452-6100.

FOR EDUCATORS: If you are an educator, consider ordering *Copyright Law: A Guide for Public Schools,* from the National School Boards Association, 1680 Duke Street, Alexandria, Virginia 22314 (703-838-6722). The Association for Information Media and Equipment (AIME) will answer your questions about the educational use of video and film on their copyright hotline (800-444-4203). They also distribute printed information and a videotape about copyright law.

MUSIC RIGHTS: To discuss performance rights for a musical composition, contact the following agencies: ASCAP East, 1 Lincoln Plaza, New York, NY 10023, (212-595-3050); ASCAP West, 7920 Sunset Blvd., Suite 300, Hollywood, CA 90046, (213-883-1000); BMI East, 320 West 57th Street, New York, NY 10019, (212-586-2000); BMI West, 8730 Sunset Blvd., Third Floor, Los Angeles, CA 90069, (310-659-9109); SESAC, 156 West 56th Street, New York, NY 10019, (212-586-3450). For information on mechanical and synchronization rights, contact HFA, 205 East 42nd Street, New York, NY 10019 (212-370-5330).

THE CHALLENGE OF TECHNOLOGY: The U.S. Congress's Office of Technological Assessment published in May of 1992 a 236 page report entitled *Finding A Balance: Computer Software, Intellectual Property and the Challenge of Technological Change,* which provides a thorough discussion of the effect that computer technology is having on copyright law. Available for $11.00 from New Orders, Superintendent of Documents, PO Box 371954, Pittsburgh, PA 15250-7954, (202-512-2250). Request publication 052-003-01278-2.

Remember also that copyright law does not require that a copyright notice appear on the work, so the absence of the notice doesn't necessarily mean that the work is in the public domain. The safest course is to get your hands on an original copy that was published before 1918, or a facsimile. If you are using a modern edition of a classic, it is always best to contact the publisher if the copyright status of the version is in doubt.

Works may enter the public domain in other ways. An author or artist can release a work to the public voluntarily—a concept many are familiar with in the computer software field. Some materials are not eligible for copyright protection. As mentioned earlier, material which lacks originality—including calendars, conversion charts, common shapes, words, phrases, titles, and lists of commonly-available information, such as addresses—are not subject to copyright protection. (Some shapes, words, and phrases may, however, be protected by *trademark* law.) Also, public documents and publications of the federal government cannot be copyrighted. So President Clinton's inauguration speech, income tax forms and manuals, The Constitution, or entries in *The Congressional Record* are fair game.

FAIR USE

To use copyrighted material in any major project, whether commercial or not, you clearly need permission. There are, however, circumstances under which a portion of a copyrighted work may be duplicated, on a one-time only basis, without permission. The so-called fair use provision states that portions of a copyrighted work may be used "for purposes such as criticism, comment, news reporting, teaching, scholarship, or research." So, a book review can contain an excerpt from the book being reviewed, a term paper can contain quotations from other books, or a news broadcast can contain footage from a movie or television show.

One of the primary applications of fair use occurs in education. Teachers have a right—although a carefully limited one—to duplicate certain materials for educational uses. The rights that teachers have to duplicate material are spelled out in a series of guidelines that can be obtained from The Copyright Office. (See sidebar, and order Circular 21.) A document entitled "Agreement on Guidelines for Classroom Copying in Not-For-Profit Educational Institutions," provides specific information on photocopying for teachers and librarians. Other documents such as "Guidelines For Off-Air Recording of Broadcast Programming for Educational Purposes," and "Suggested Software Use Guidelines" cover videotaping and software use.

The doctrine of fair use will probably not apply to most computer-based projects because it relates to temporary or one-time use. If you have taken the time to integrate material into a computer presentation, it is not likely that you will use it only once. Also, most commercial uses do not qualify as fair use.

THE AGE OF MULTIMEDIA

We live in an age where a piece of art can be copied in California and printed out in New York a few seconds later, and not by a major news organization, but by two ordinary people. As the magic of technology allows us to access, copy, customize and recombine bits and pieces of other's creativity in an ever-increasing variety of ways, we need to make sure that our understanding of technology does not exceed our understanding of the law. As we become publishers, authors, and artists, we need to face the same issues that confront our professional counterparts. So the next time you pick up that scanner in one hand, it might be a good idea to pick up a book on copyright law in the other. ■

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Don't quit to the Finder each time you want to start a different application! Instead, simply select the application from the TransProg III menu (appears in all standard desktop applications) and the application is launched immediately. If you're not using The Manager, the currently-running application is automatically quit first.

In addition to providing quick launching, options can be set for each application, including slot changes without having to restart the computer! The TransProg III menu is fully customizable, from the color and arrangement of the menu items to the creation of sub-menus in which you can group similar applications together.

Suggested retail $39.95 ..... *QC's price only $27.95*

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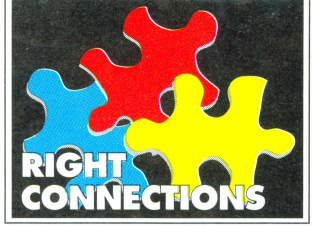
Stop waiting for your printer—use Express to quickly print your documents to disk, then continue working as your printer prints in the background. The longer or more complex the document, the more time you save!

Multiple files can be spooled, printed more than once, and deleted from the spool list. You can even switch between programs while the printer is working.

Express works with all standard IIGS desktop software (e.g. AppleWorks GS, GraphicWriter III). It requires an Apple IIGS, hard disk drive, and any direct-connect (non-networked) printer except the StyleWriter.

Suggested retail $49.95 ..... *QC's price only $32.95*



Maximizing Productivity Through Networking

by Glen H. Page

In today's world of ever-tightening budgets, it's vitally important to get the most out of the hardware we already own. That's especially true in education, since, as teachers, we're expected to provide more and more for our students regardless of funding. Our students deserve the best—yet the budget simply doesn't allow us to put a computer on every desk, nor to equip every computer with a hard drive, a printer, a CD-ROM drive, and an assortment of software.

One approach to delivering services to more computers and more users is the Local Area Network (LAN). In the Apple universe, this generally means AppleTalk—it's built into the Apple IIGS, and can be easily added to an existing base of Apple IIe machines and ImageWriter II printers.

Networks have several advantages over the same number of un-connected computers. Shared disk storage (a network "file server") ends the perpetual disk shuffle and the problems of disks damaged by students. (In fact, it's possible to set up the computers to boot directly from the network and remove the disk drives completely.) Students can save their work to the file server, eliminating the danger of lost data disks and allowing the instructor to review student progress more conveniently. And sharing software can even save you money in the long run—a thirty-user network license costs much, much less than thirty single-user copies of the same software.

Printer sharing is an added benefit of networking your lab. Your students probably spend 80-90% of their time with the computer on tasks that don't require a printer. You might already be taking advantage of this fact by connecting several computers to one printer via a switchbox, but sharing a printer via a network is a much easier solution. The printers you share can be anywhere on the network—even in a different room—and you never have to worry about someone "switching off" someone's print job to run their own.

The networking protocol used by Apple computers is known as AppleTalk. That sounds obvious and even redundant at first, but once we start throwing around some other terms, you'll understand why it's important. The important thing to remember is that AppleTalk itself is *not* the cables and the wires that join the computers together. AppleTalk is the "language" the computers on the network speak to each other.

GETTING YOUR LAB NETWORK-READY

The computers in an AppleTalk network can be any mix of Apple IIe, Apple IIGS, Macintosh, and even IBM PC and Amiga computers. Since this is *II Alive,* though, we'll concentrate on what you need to get your Apple IIs on a network. If you have Apple IIGS computers, you need nothing. The IIGS is network-ready and needs no additional interface cards—you'll attach the network cables to the computer's printer port.

The important thing to remember is that AppleTalk itself is not the cables and the wires that join the computers together. AppleTalk is the "language" the computers on the network speak to each other.

If you have Apple IIe computers, you may be in for a little more work. First, you need an Apple IIe Workstation Card, which costs around $200, for each computer. Furthermore, the Apple IIe Workstation Card won't work in just any Apple IIe, it requires a 128K *enhanced* Apple IIe. All Apple IIes sold since 1984 are enhanced, and many also have 128K already.

If a IIe says "`Apple //e`" at the top of the screen when it's turned on or rebooted, it's enhanced; if it says "`Apple ][`," it's not enhanced and will require upgrading. You can check for 128K memory by booting a copy of AppleWorks; if AppleWorks reports a Desktop size greater than 10K, you have enough memory. You can install an enhancement kit for $50 or so; you can upgrade 64K IIes to 128K with an Extended 80-Column Card (about $30). These are upgrades you probably will want anyway—much of the IIe software being written today requires either an enhanced IIe or 128K—but it's vital for networking.

If you intend to put your printers on a network, you'll need to make them network-ready as well. Many laser printers have built-in network capabilities. You can make Apple's ImageWriter II network-ready by adding a LocalTalk Option Board for under $100. If you have other printers, you can put them on the network via generic printer network interfaces that are designed to work with standard parallel and serial printers.

CABLES AND WIRES

You can take your pick of two types of cables. Apple's recommended solution is called LocalTalk. LocalTalk cables are fully shielded as insurance against interference, and they're the simplest way to put a network together. They're also the most expensive, of course—LocalTalk cabling can cost you up to $50 per computer. Additionally, LocalTalk cables in lengths other than six feet must be specially ordered—and the total length of cables in a LocalTalk network cannot exceed 1,000 feet.

More popular is the "unshielded twisted pair" wiring option, commonly known as PhoneNet. (PhoneNet was developed by Farallon as a less expensive alternative to LocalTalk. The word is trademarked, though, so only networks that use genuine Farallon equipment can truthfully be called PhoneNet. Other companies now make similar connectors.) With unshielded twisted pair (henceforth referred to as UTP), you connect a small adapter box to the back of the computer, then run ordinary phone cabling from adapter to adapter.

Continued on next page

UTP adapters cost in the $10-$20 range, but even so, you save so much money that nearly everyone uses UTP. You can buy a 500-foot roll of phone cable, cut it to the exact lengths you need, and attach "snap-on" modular plugs in seconds, for just a couple of bucks per computer—including the special tool you need for the plugs. You may even be able to use the unused pair of wires in your existing phone lines for the network. Furthermore, a UTP network can run up to 2,000 feet, and can be further extended with repeaters and network hubs (we won't talk about them here, but they do exist and can help).

THE SERVER

You'll also need a file server (unless, of course, you only intend to share printers). The file server is the most expensive part of setting up a network—it's really nothing more than a Macintosh computer with a hard drive, running special software. (The computer must be a Macintosh—there's no server software for the Apple II.) Even a Mac Plus will do, if it has at least 4 MB of RAM—although Apple suggests a faster machine, like a Classic II or SE/30. Shop around—even a used machine would do the job.

The hard drive doesn't have to be particularly large. I use a 40 MB drive on our server, although naturally, the more programs you want available via the network, the more hard drive storage you'll need. Adding a Syquest cartridge drive to the basic setup might be a good alternative to a larger drive; with such a drive, each teacher who brings a class to the lab could have a cartridge with that class's programs and data.

The file server, as I mentioned, requires special software: AppleShare 3.0. This software may well cost as much as the computer it runs on—its suggested retail price is $1199. The AppleShare software lets you share hard drive space and CD-ROM data, and also provides printer spooling.

With printer spooling, the software "intercepts" the printer output from each workstation, stores it on the server's hard drive, and then sends it to an available printer. (You can specify which users can use which printers.) An added benefit is that the user of the workstation can get back to work right away, instead of having to wait for a printer to become free. The server will automatically make sure the printed output gets to a printer as soon as possible.

OTHER SOFTWARE

You'll also want a menu management package, such as Apple's *Aristotle* ($199) or Electronic Learning's *Menu Master* ($150). These programs allow you, the network administrator, to create sets of menus for individual students or classes. When students come in to the lab, they see a menu which allows them to select only the programs that they and their class are authorized to use.

Aristotle is functional and easy to use. Its main drawback is that the network administration software requires an Apple IIGS with 1 MB of RAM. The menus will appear on any of the Apple IIs on the network, but when you want to change them, you need to use a IIGS. *Menu Master* lets you do administration tasks on any computer, IIe or IIGS, and additionally provides a "hot key" you can press at any time, on any computer on the network, to access the administration functions.

And, of course, you should consider your applications software needs as well. You'll need network versions of all the programs you use frequently in your lab. This is where the network will finally begin to save you money, since, as we mentioned, network versions of software are usually bargains compared to several copies of the single-user version.

SETTING UP THE NETWORK

First, decide where each of the components will be located. The locations of some items are dictated by convenience, cabling constraints, and security considerations. For example, the printers should be located in an easily accessible area. If you have more than one printer, try to keep them together.

The server, on the other hand, should be located in a secure area where it won't be tampered with or shut off inadvertently (the latter can be particularly disastrous). If that's not possible, unplug the keyboard and the mouse from the server during normal operation to reduce the risks.

If you are using LocalTalk and can't afford custom lengths of cabling, make sure there is never more than six feet between networked devices. Some means of protecting cabling from foot traffic (and foot traffic from tripping on cables) is also needed if the cables run along the floor.

Now, install the network cards in devices that require them (IIe, ImageWriter II, and so on). Once all the necessary cards are installed, connect all the devices together. Designate one computer as the "beginning" of the network, and connect it to the next computer on the network. The "first" computer on the network isn't necessarily the file server; your choice will likely be dictated by the physical layout of your lab. Continue "daisy-chaining" one computer (or printer) to the next, until you reach the "last" machine in the lab. Don't close the loop—don't connect the last device back to the first!

If you're using unshielded twisted-pair connections (also known as PhoneNet), you'll need to "terminate" the beginning and end of the network. (Special "termination" plugs were probably provided with your network connectors.) No, it's not to keep the data from leaking out the end of the network—actually, the terminators *absorb* the signal at the end of the line, keeping it from bouncing back. (Strange but true!)

The Apple IIGS computers on the network must be configured to use their printer port for a network connection. To do this, access the Control Panel (hold down Option while turning on the computer, then press "1" when the menu appears). In the Slots section of the Control Panel, make sure Slot 7 is set to "AppleTalk" and Slot 1 is set to "Your Card." (If "AppleTalk" isn't an option for Slot 7, you have a newer model IIGS and should instead set Slot 1 to "AppleTalk.") Also make sure that the Startup Slot setting is set to "Scan."

Next, set up the server software. Apple's instructions are a model of clarity, so you should be able to install the software without much difficulty. You'll also install the networkable applications you've chosen. Most come with detailed instructions—some need to be installed from a workstation, while others go directly onto the server via the Mac's disk drive.

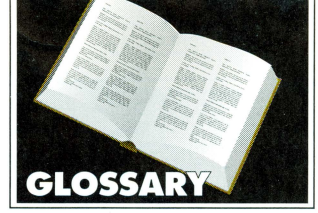
You'll also want to install *Aristotle* or *Menu Manager* on the network now. If you'll be running IIGS-specific programs on the network, you may want to install GS/OS, the Apple IIGS Operating System, on the server as well. (Frankly, we suggest using the Apple IIGS Installer to create bootable 3.5" "workstation" disks and booting those, since booting GS/OS over the network redefines "molasses." The Apple IIGS System Software Users' Manual has more information.)

At last, it's time to prepare the network for users. Before a person can use the network, you must create an account for them. (You can allow all the students to share a single account, or assign an account to each computer in a lab, but we suggest giving an account to each student and teacher who will use the network. This will allow maximum flexibility when creating groups.) Assign each user to one or more groups—you can have as few as two groups ("Student" and "Teacher") or you can create one group for each class which will use the network. The latter option lets you easily keep students out of programs that their class (or age group) should not use.

After setting up the users, you must assign each user a startup path and a printer. The startup path defines each users "personal" storage area on the server and determines which program they'll start up into (usually your menu system). You can assign printers to a particular user or to groups of users. Finally, you're ready to use the menu software to give each user or group of users access to the software they need to use. And aside from some inevitable fine-tuning and tweaking, that's it!

THE RESULTS

All the users of your network can use its resources as if all of the devices were connected directly to their own computer! A network is a cost-effective way to maximize the usefulness and life-span of your Apple II computers and to introduce your school to the world of networking and shared information. ■



In each issue of *II Alive,* we'll include a list of Apple terms that will help you understand your computer better. This month, as a follow-up to last month's "RAM On The Run," we present a few terms pertaining to memory.

80-Column Card: A card that installs in an Apple IIe's *auxiliary slot* and enables the computer to display 80 columns of text on the screen. The circuitry to display 80 columns of text is actually built into the IIe; the card merely contains an extra 1K of memory to store the extra columns.

Applesoft: A variation of the BASIC programming language which is built into the Apple II.

ASCII: The American Standard Code for Information Interchange. This code defines which numbers are used to represent letters inside a computer's memory. Since the code is standard, all computers that

Auxiliary Slot: The slot inside an Apple IIe in the front left corner of the main circuit board, used to install an *80-column card,* an *extended 80-column card,* or a larger memory card.

Bank-Switching: A memory addressing technique that lets you expand an Apple II past its 64K addressing limit. Multiple chunks of memory can share the an address space; software can address the memory one bank at a time.

Bit: The smallest unit of information a computer can operate on. The word "bit" is an abbreviation for "binary digit," and a bit can have two values—0 and 1—enough to represent false/true or off/on status.

Byte: Eight bits. A single byte can hold one alphabetic, numeric, or other type of character. A screen full of text is about 2,000 bytes; a page of printed text is about 5,000 bytes.

CAS before RAS: Memory chips have two signals called CAS (Column Address Strobe) and RAS (Row Address Strobe). Exactly what these signals do is rather technical. Apple II computers use "CAS before RAS" chips, which means that the chip is expecting the CAS signal first, followed by the RAS signal.

Chip: A tiny sheet of silicon containing equally miniscule circuitry; packs the equivalent of a room full of vacuum tubes into a fraction of a square inch of space. See also *DIP.*

DIP (Dual Inline Package): The standard black package that most chips are installed in—the square plastic things with lots of legs. When most people talk about RAM chips, they mean the entire package: the DIP with the actual silicon microcircuit inside.

DMA (Direct Memory Access): A technique which allows an interface card to bypass the computer's main processor when moving data to or from the computer for maximum performance.

Extended 80-Column Card: An *80-column card* that also contains 64K of auxiliary memory, bringing an Apple IIe up to 128K of memory.

Hexadecimal: A number system in which there are sixteen digits (0-9 and A-F) instead of the normal ten. Because of certain aspects of the way computers work, it makes sense to think of many computer-related numbers in hex instead of decimal For example, a kilobyte (a very un-round 1024 in decimal) is a nice, even 400 in hex. Hex numbers are often preceded by a dollar sign, and they can contain the letters A-F as digits.

Kilobyte (K): 1024 bytes. Computer memory, file sizes, and disk drive capacity are often expressed in kilobytes.

Megabyte (M): About a million bytes, or a thousand kilobytes. (The actual numbers are 1024 kilobytes—a K of K—or 1,048,576 bytes.) Hard drive and memory card sizes are usually measured in megabytes. Some manufacturers use the simpler "one million" definition of megabyte, leading to "42 megabyte" hard drives which are actually only 40 megabytes (41,943,040 bytes) in size.

Memory Expansion Slot: The slot in the front right corner of the Apple IIGS, used for installing up to eight megabytes of expansion memory.

Monitor: The Apple II Monitor is built-in ROM software (firmware) that handles the computer's most primitive operations: clearing the screen, printing things on the screen, accepting input from the keyboard, etc.

Preloading: Some programs (including AppleWorks and AppleWorks GS) can use extended memory by loading the entire program into memory when you start up. A little extra time spent at startup can save time and frustration later by virtually eliminating disk access as you move from one part of the program to another.

RAM (Random-Access Memory): Computer memory which can be changed, but whose contents vanish when the computer's power is turned off. (A better name would be Read/Write Memory.) The computer keeps the program you're using and the documents you're working on in RAM until they're saved to disk.

RAM Disk: A super-fast *simulated* disk drive within your computer's extra memory. The contents of a RAM Disk disappear when you turn off the computer, but its speed makes it perfect for temporary storage of programs and data.

ROM: Stands for *Read-Only Memory.* A type of memory which cannot be changed and which remains intact when the computer's power is turned off. ROM is used to hold your computer's built-in programs, such as the Monitor, Applesoft BASIC, and the IIGS Toolbox

SIMM: Single Inline Memory Module. SIMMs are small circuit boards with memory chips soldered on. They're much easier to install because they just snap into place, so you don't have to install eight independent memory chips. Most Macintosh models use SIMMs; the Apple IIGS can also use SIMMs with a Q RAM memory card from Quality Computers.

Slinky: The informal name for an Apple IIe memory card that works in Slot 1 through Slot 7 but not in Slot 3 or the Auxiliary Slot, so named because "Slinky" was Apple's internal code-name for the card.

Toolbox: The IIGS Toolbox is a set of programs built into the Apple IIGS that handles memory management, user interface, and other common tasks to allow programmers to easily create programs that look and behave similarly. The Macintosh includes a similar toolbox.

ZIP: A new package for computer chips. Instead of having two rows of pins on either side of the chip, as DIP chips do, ZIP chips have a single zig-zag row of pins. (Don't confuse ZIP memory chips with Zip Chips, the IIe/IIc accelerators from Zip Technology.)

computer clubs

To get more information about the Apple User Group nearest you,

If you want your computer club to be mentioned in II Alive, send a letter describing your club to:

Quality Computers
c/o Bob DeMaggio
P.O. Box 665
St. Clair Shores, MI 48080

ALASKA

Anchorage Apple Users Group
P.O. Box 110753
Anchorage, AK 99511-0753
Contact: Timothy Odell 373-7459

ARIZONA

Tuscon Apple Core
P.O. Box 43176
Tuscon, AZ 85733-3176
Contact: Clay Evitts (602) 296-5491 days
$20 per year
BBS: (602) 882-2945

ARKANSAS

Apple Tree of the Ozarks
HC 62 Box 540
Flippen, AR 76234
$20 per yr; $15 initiation

CALIFORNIA

Apple Corps of San Diego
P.O. Box 87964
San Diego, CA 92138-7964
Contact: Tom Kasner (619) 693-0331

Appleholics Anonymous
Apple II User Group
3875 Telegraph Rd. Suite A202
Ventura, CA 93003
Contact: Tony Pizza (805) 482-3453
$12 per year

Fresno Apple II Computer Users Group
P.O. Box 1682
Clovis, CA 93613

GravenStein Apple IIGS Users Group
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Windsor, CA 95492-1454
Contact: Bill Bartles (707) 838-7970
$25 per year per family
BBS: (707) 585-0865

Newton's Fruit Users Group
11590 Peach Ave.
Hesperia, CA 92345-2702
BBS: (619) 955-6725

Orange Apple Computer Club
25422 Trabuco Rd., Bldg 105, Ste-251
El Toro, CA 92630
(714) 770-1865
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Original Apple Corps
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Los Angeles, CA 90009
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BBS: (310) 454-4660

Peninsula Apple User Group
Redwood City, CA
Contact: Roger Lakner 367-8657

Tri-City Apple User Group
P.O. Box 93123
Pasadena, CA 91109
(213) 258-0281
$20 per year
BBS: (818) 288-5640

Tri Valley Apple II User Group (TVAIIUG)
P.O. Box 2096
Dublin, CA 94568
Contact: Jerry Carleton (510) 828-0959

Valley Apple Computer Club
12978 Crowley St.
Arleta, CA 91331
Contact: William Trent (818) 988-1752
$24
BBS: (818) 782-6471

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Computer C.A.C.H.E. (Colorado Apple & Compatable Home Enthusiasts)
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Denver, CO 80237-7313
$18 per year
BBS: (303) 745-4960

Denver Apple Pi
P.O. Box 280668
Lakewood, CO 80228-0668
$18 plus $7 new member application fee
BBS: 972-2672

CONNECTICUT

Applelist Computer Club
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Hamden, CT 06517

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Greens Farms, CT 06436
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Hartford User Group Exchange (H.U.G.E.)
P.O. Box 380027
East Hartford, CT 06138-0027
Contact: John Lorch (203) 646-2621
$15
BBS: Bit Bucket (203) 569-8739

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Apple IIGS Computer Club
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Wilmington, DE 19808-0956
$20

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Fort Lauderdale, FL 33329-1557
$30 1st year; $20 renewal

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see above
BBS: (305) 431-5189

M.A.U.G. Chapter (A.C.E.S.)
see above
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North Dade Chapter (A.C.E.S.)
see above
BBS: (305) 431-5189

South Broward Chapter (A.C.E.S.)
see above
BBS: (305) 431-5189

West Palm Beach Chapter (A.C.E.S.)
see above
BBS: (407) 483-8426

Apple Tree of Central Florida
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Orlando, FL 32809
$35 annually
BBS: 366-0156

Spring Hill Apple Computer Enthusiasts (SPACE)
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Spring Hill, FL 34609
$20
(904) 686-7069

SWACKS Apple Computer Club
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Port Charlotte, FL 33952
$20 per year; $12 for Newsletter only

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Rockmart, GA 30153
Contact: Donald Sullivan
(404) 684-5909
$15 per year

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Honolulu Apple Users' Society
P.O. Box 29554
Honolulu, HI 96820-1954
Contact: Bill McGarry 422-1963
$20, Supporting $10 for Newsletter only

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Apple Tree Computer Club
P.O. Box 823
Homewood, IL 60430-0823
Contact: Mary Ann Trzyna
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$28 family, $14 auxiliary per year
BBS: (708) 597-6942

Aurora Area Apple Core
P.O. Box 2901
Aurora, IL 60507-2901
Contact: George Murphy (708) 357-0759
$20

Northern Illinois Computer Society
P.O. Box 547
Arlington Heights, IL 60006
New $30, Renewal $24,
includes entire family
BBS: (312) 351-4374

Northshore Apple Users Group
c/o Babette Simon
5331 Carol
Skokie, IL 60077
Contact: Babette Simon (708) 967-7483
Family $20 per year

INDIANA

Apple Pickers
P.O. Box 20136
Indianapolis, IN 46220
Contact: Steve McGuirk 257-3366
New $25, $30 per family per yr;
Renewal $20
BBS: 897-1989

Apple Users Group of Michiana
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South Bend, IN 46634-1398
$15 per year

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Apple Computer Users' Group
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Ft. Wayne, IN 46850-0004
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7526 Independence St.
Merrillville, IN 46410
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Davenport, IA 52809
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P.O. Box 407
Roland, IA 50236-0407
Contact: Dave Graham (515) 388-4700
$10 per year

KANSAS

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Shawnee Mission, KS 66201
Contact: Sandy Brockman
(816) 523-1007
$30 first year; $25 renewal

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306 West 5th Street
Larned, KS 67550
Contact: Shane Blanchett
$15 Initiation Fee; $20 Individual,
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Parsons Apple Users Group
P.O. Box 1081
Parsons, KS 67357

Plane Apple User's Group
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Wichita, KS 67201
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$24 per yr
OMEGA PRO (316) 721-7735

Topeka Area Apple Group
5419 SW 28th St.
Topeka, KS 66614-1713
Contact: Ron Hurd (913) 272-5033
$15 family

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Louisville Computer Society
P.O. Box 9021
Louisville, KY 40209-9021
$26

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Milford, ME 04461-0550
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Maryland Apple Corp.
Dave Smythe (410) 882-9234

Washington Apple Pi, Ltd.
7910 Woodmont Ave., Suite 910
Bethesda, MD 20814
(301) 654-8060

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Contact: Ron Church (508) 540-2517
$20 per yr

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Apple P.I.E.
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Warren, MI 48090-5055
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Apples for the Teachers
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Mt. Clemens, MI 48043
Contact: Jim Wenzloff (313) 469-7206

Flint Apple Club
P.O. Box 460
Flint MI 48501
$20 per year
BBS: (313) 230-7754

Grand Rapids Apple II Users Group
P.O. Box 1811
Grand Rapids, MI 49501

Lansing Users Group
P.O. Box 27144
Lansing, MI 48909-7144
$18

Michigan Apple Computer User Group
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Warren, MI 48090-0567
$25 to start, $20 renewal per year

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1710 West St. Andrews
Midland, MI 48640

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Lake Superior Apple Users Group
Duluth, MN
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Minnesota Apple Computer Users Group
P.O. Box 796
Hopkins, MN 55343
Contact: Rand Sibet (612) 566-8571
$25 per year, $15 student

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American Public Domain Club
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St. Louis, MO 63128
Contact: Michael Young
$12

Apple Squires of the Ozarks
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Ozark, MO 65808-3986
Contact: Doug Kahler 833-4362
$15 initiation fee; $20 individual, $25 family

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Billings Apple Users Group
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Billings, MT 59104-3005
Students $15, Individual $20, Family $25, Corp $50
BBS: 256-3454

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Apple-Link
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Lincoln, NE 68516
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Las Vegas, NV 89112-1715
Contact: George Lewis (702) 364-9093
BBS: Apples Only (702) 646-7007

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The BASIC FACTS; 26-31A Warren Rd.
Fair Lawn, NJ 07410
Contact: Nancy Alexander 652-5632
$15 per year
SSA-BBS: 472-8312

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Albuquerque, NM 87176-5508

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Putnam Valley, NY 10579
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P.O. Box 31424
Raleigh, NC 27622
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Salem, OR 97303-0053
$15 per yr
WAC BBS 390-9321

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Apple Butler Users Group
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Wayne, PA 19087
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Rumford, RI 02916-4726
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AppleCore of Memphis
P.O. Box 241002
Memphis, TN 38124-1002
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Music City Apple Core
c/o Gerald Dooley
1085 Woodcock Hollow Road
Kingston Springs, TN 37082
Contact: Gerald Dooley 952-2367;
George Emge 833-1508;
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TEXAS

Apple Valley Computer Club
Tony Rodriguez, Pres. 5900 N. 28th Lane
McAllen, TX 78504
Contact: Tony Rodriguez 682-9625
$10/yr

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Corpus Christi, TX 78468-8391
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San Antonio, TX 78280-1428
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Northern Virginia Apple Users Group
P.O. Box 8211
Falls Church, VA 22041
PRO-NOVA BBS: (703) 671-0416

TideWater AppleWorms
P.O. Box 68097
Virginia Beach, VA 23455
Contact: Jim Davis (804) 455-1308

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Apple Users Group of Charleston
2105 Weberwood Drive
South Charleston, WV 25303
Contact: John Howell 343-6422, or Chas. Szasz 965-6965
$10 per yr

Club Apple User Group
125 North Pinch Rd.
Elkview, WV 25071
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Milwaukee Apple Users Symposium
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Milwaukee, WI 53225
Contact: Helmut Wittbecker

Wisconsin Apple Users Club
P.O. Box 21709
Milwaukee, WI 53221-0709

CANADA

Kelowna Apple Users Group
1622 West Kelowna Rd.
Kelowna, B.C., Canada V1Z3B7
Contact: Robert Ashton
(604) 769-3140 6 to 9 pm
$2 per month

Winnipeg Apple Users' Group
P.O. Box 1798
Winnipeg, MB R3C 3R1
Contact: Don Soutter 256-0095
$20 indiv, $25 family;
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GERMANY

Kaiserslautern Apple Users Group
PSC 1 Box 8851
APO AE 09012

Ramstein Apple Club
PSC 2 Box 18
APO AE 09012

Rhein-Neckar Apple Users Group (RNAUG)
P.O. Box 525,
APO New York, NY 09063
Contact: James Clark
$10/yr

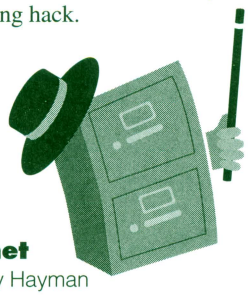
ITALY

Apple II Survivor Club Italy
Vis Dal Fabbro 4
37122 Verona Italy
Contact: Manuel Turtula

SoftDAC

Scott Alfter
43 Megan Dr.
Henderson, NV 89014
Freeware

SoftDAC is a program that allows you to play digitized sounds on your Apple II+, IIe, IIc, or IIGS. Yes, that's right, it plays digitized sounds on 8-bit machines, using the machine's standard sound capabilities. Magic? Well, not really—there have been programs that can record and play back sampled sounds for these machines for a long time. This program is unique in that it lets you play back IIGS format sounds on the IIe. While the sound is distorted by a high-pitched squealing noise, the samples are definitely recognizable. It's not for everyone, but it's an interesting hack.



Magic File Cabinet

Magical Software - Gary Hayman
8255C Danning Terrace
Geenbelt, MD 20770
$15 shareware (plus $2 shipping)

Magic File Cabinet (MFC) is a set of database, word processor, and macro files for AppleWorks 3.0 and TimeOut UltraMacros 3.1. With MFC, you can "attach" specific parts of a word processor file to a database record. You can make this database as simple as an index of a word processor document, or as complex as a complete product information database with long descriptions. Essentially, MFC links the word processor and the database to allow any record to have a "free form" data entry field (the word processor document) which isn't limited by AppleWorks' usual database restrictions.

DuelTris

DreamWorld Software
Steve Chaing
P.O. Box 830
Iowa City, IA 52244-0830
$15 shareware, $20 Limited Edition (comes with jewel case, full color insert, and manual)

Just when you thought the Cold War was over, yet another version of Tetris is here—only this one comes from Iowa, not the former U.S.S.R. My first thought when I saw this file on America Online was, "Does the world really need another Tetris clone?" But, on the other hand, these are the same guys who programmed *DreamGrafix,* the 3200-color paint program that pushed IIGS graphics to their limit. A hunch told me to download the game despite my reservations. It was worth it, to say the least.

Like all good clones, *Dueltris* remains faithful to Tetris but also has a new twist. You play the game against an opponent (computer or human). As in Tetris, you try to fill in solid horizontal rows—when you complete a row, it disappears. If you've filled in four rows, all four rows are sent (minus one block) to your opponent's side, giving them four more rows they have to clear. Now that's cruel! Adding to the fun are new "arcade style" pieces, like the "armed block" that shoots the blocks below (a quick way to clean out your excess blocks for sure). The object of the game, of course, is to force your opponent over the top. When no more blocks can fall on one side or the other, the game is over. (You can also play for points and allow the surviving player to continue playing.)

Exciting, colorful, and fun to play—a game that must have been a real challenge to create in these days of fifty bazillion Tetris clones. *Dueltris* does for Tetris what *Arkanoid* did for Breakout. Highly recommended.

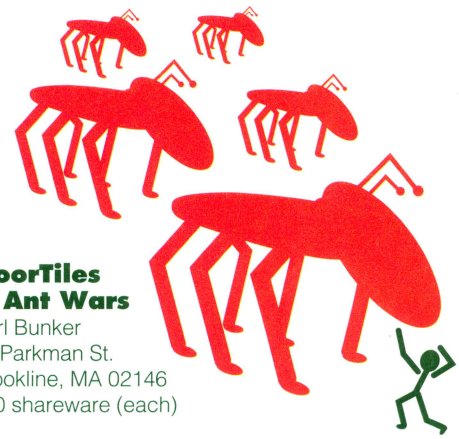
Spy Hunter GS

Shane Richards
PO Box 1317
Lane Cove. NSW. 20066
Australia
$10 shareware

Spy Hunter GS is a IIGS remake of a classic arcade game. (There was also an Apple II version that lured many of us from our homework to waste untold hours pretending we were James Bond.)

In the game, you drive a specially equipped sports car, armed with an arsenal ranging from machine guns, to oil slicks and smoke clouds, to guided surface-to-air missiles. When you finish a level, you pull into a semi trailer, where your vehicle is equipped with the next weapon. You'll need the oil slicks to deal with those indestructible bulletproof cars, and watch out for those cars with the spiked hubcaps! Oh, and did I mention the helicopter?

Your mission, should you choose to accept it, is to stay alive for as long as possible, while your computer opponents try to thwart your mission. While this version lacks some of the polish of the arcade original, Spy Hunter IIGS is still loads of fun.



FloorTiles & Ant Wars

Karl Bunker
59 Parkman St.
Brookline, MA 02146
$10 shareware (each)

FloorTiles is a unique strategy game in which you place randomly-colored tiles on a blank grid. You can rotate the tiles for best matching possibilities. When you match a tile's colors on three sides with other tiles, the tile disappears. A cruel twist—the three tiles that caused the vanished tile to disappear all rotate ninety degrees. If you match a tile's colors on four sides, all five tiles (the original one plus the four other tiles) disappear. Since placing the third tile would usually make the original tile disappear, getting four sides to match will take a little strategy. To add pressure, there's a timer that determines the value of each tile placed. When the timer runs out, the game places the tile for you—in the first available space.

AntWars is also played on a grid, with black and red ants. You control the red ants by dragging them around. When a black ant is attacked on two sides by your red ants (meaning your ants are on any two sides and are actually facing the black ant), it is killed. Naturally, the computer-controlled black ants are trying to do the same thing to you.

Both games, while simple, are professionally done and are subtly addicting. Sound effects and graphics get the point across and are not tacky or overdone. You'll like these games, and your wallet will like the price. ■

Classic Adventuring

by Jeff Hurlburt

The game was Infocom's *Sorcerer,* and we (my father and I) were dead stuck. Ahead lay a cave which surely held the goal of our lengthy quest—and, wouldn't you know, the place was infested by fearsome grues! Worse yet, thanks to a wind at the entrance, our torch was useless, so the old "shine a light" trick was out. (Being horrible lurking creatures of darkness, grues naturally fear light.) As for a nearby pool, repeated dives had revealed only a heavy growth of "beautiful water plants." Stuck. So, it was into the pool for one last search. Again, nothing but the plants... except, this time, my dad decided to try our Whither scroll. ("Gasp! How gross. You would wither the beautiful plants?!") Right, and *tzappo!* there it was—the plants had concealed an old circus costume crate marked "Grue Kit!" Just what we needed.

Such is the stuff computer adventuring is made of. Victory is sweet, rewarding, and (for sure) lots of fun! Since entertainment is such an important part of home computing—and of life— it seems only right that I dedicate this installment to getting 'up to speed' on what's available in the realm of Apple adventuring.

Unfortunately, many of these classics are out of print now, but you may be able to find them at garage sales, swap meets, and user groups. Somewhere you'll find a stalwart adventurer who still has all the games he mastered long ago on his shelves—and he or she may well be willing to let you buy or borrow some of them.

WORDS

Once *Adventure* was an established hit on time share systems it wasn't long before *everyone* began writing text adventures you could run on the Apple II. Many employed basic two-word parsing. In Pyramid of Doom, for example, you might GET SHOVEL, OPEN TOMB, HIT PURPLE WORM... It looked so easy and so fun that programmer Don Brown developed the Eamon system for writing adventures, and "The Wonderful World of Eamon" Main Hall program became a kind of jumping-off place for every kind of scenario. Today, Tom Zuchowski runs the Eamon Adventurer's Guild, which keeps watch over more than 200 Eamon games.

There's not much disputing that Infocom has produced the best text-only adventures. Their "secret"—really no secret at all, as it was obvious to anyone who played an Infocom game—was a smartened-up parser which could actually make sense of complex inputs like "PUT THE RING IN THE SLOT AND PRESS THE BUTTON." Though Infocom's success was built upon the wacky, magical "Great Underground Empire" described in detail in *Zork I, II,* and *III,* the best Zork adventures can be found in the four-adventure series beginning with *Enchanter* and concluding with *Beyond Zork.* Each is good for many puzzle-busting evenings of enjoyment. Once you're hooked, you'll want to try *Wishbringer* and some of the many non-Zorkian challenges including *Infidel, Starfall,* and the two games designed in cooperation with British humorist Douglas Adams, *The Hitchhiker's Guide to the Galaxy* and *Bureaucracy.*

PICTURES

Though pictures were soon tacked on to text adventures, the graphics were so poor and/or slow that few of the early picture-text adventures merit a try. Because of disk and memory constraints, most of the programs "dumbed down" the parser or abbreviated room descriptions to get the graphics to fit. A notable exception to the rule is DataMost's *Sherwood Forest,* a cute, colorful quest in which you, as Robin Hood, seek to rally the Merry Men, win Maid Marian's hand, and establish your fortune. Others classics include your quest to extinguish a vampire in Penguin's *Transylvania* and the world-hopping fun of Activision's *Tracer Sanction.* For exceptional IIGS super-res/super-sound adventuring, try a teenager's weird imaginings in Baudville's *Dreamzone,* a quest to rescue Gramps from another dimension in Activision's *Tass Times in Tone Town,* and Mindscape's spooky empty-mansion mystery *The Uninvited.*

ULTIMA-STYLE

Ultima was the first major adventure to place your character on an aerial-view landscape map dotted with towns and mazes you could enter and explore. The long-play quest to vanquish the evil wizard Mondain includes an outer space sequence (you qualify as a Space Ace) but nearly all of the real action is swords & sorcery style monster bashing spanning four continents. A classic labor of love, the first Ultima remains a favorite among Apple adventurers. (Be sure to seek out the original version. The last time I tried Origin's "improved" re-release, it had a serious bug in the Space Ace combat routines.)

Of the five for-Apple *Ultima* adventures available, only the second *Ultima* rates a "forget it." Installments IV and V are worthy, displaying advanced sound/ graphics technique, but begin the somber Avatar series, which saddles the player with computer-controlled party members and concerns for "nice" behavior. *Ultima III: Exodus* is the one where all the elements—graphics, sound, and scenario—truly synergize. Featuring a party of characters *you* create, town personages you can talk to, good tactical combat, and a great music score, it's a solid "must play."

Thanks to the success of the format, it was widely imitated, so players who enjoy Ultima-style exploration, character building, and combat can look forward to many, many hours of adventure. SSI's *Questron* launches you on yet another single-hero crusade to topple an evil wizard (Mantor) and seize his Book of Magic. *Questron* looks and works so much like the first *Ultima* that some purchasers thought they were playing its sequel! In fact, Questron's storyline, magic system, weapons, transportation, and monsters all combine to provide an entirely different, very entertaining quest.

Alas, once the spectacular victory celebrations are concluded, it is discovered that Mantor's awesomely dangerous Book can not be destroyed! In *Questron II* (available in a IIGS-specific version as well as a IIe/IIc version) someone must journey back in time and thwart the book's creation. That someone, of course, turns out to be *you.* Though shorter-playing than many such adventures, *Questron II*'s realistic forward-view dungeons, auto-mapping feature, engrossing soundtrack, simple mouse interface, and beautiful town maps and landscapes make it a unique treat. Add an engaging

scenario and you have a quest guaranteed to grab you attention and hold it.

Questron II represents the sound/graphics high point in *Ultima*-look gaming, at least to date. Still, as SSI's *Eternal Dagger* demonstrates, there's ample room for new wrinkles and more fun in "plain old high-resolution" map/maze adventuring. Second in SSI's *Wizard's Crown* series, *Dagger* portals your party into Middle World to stem an invasion of monsters entering through a crack in space that connects Middle World to the demon dimension. You can write-off *Shards of Spring* and *Demon Winter* (buggy and boring); the *Phantasie* series is worth a look (auto-mapped mazes, decent combat, but generally poor graphics); and Origin's *2400 AD* is a good single-hero bet for players ready to take on robots to free a future metropolis.

THE WIZ

SirTech took a different approach, placing the adventurer's party exclusively in a forward-view 3-D perspective gamescape. Starting with *Proving Ground of the Mad Overlord,* the *Wizardry* series "makes do" with simple line-drawn mazes. The game's strong points include its emphasis upon interactions with maze personages, its sense of humor, and its plethora of clever puzzles. *Wizardry* combat is "semi-tactical:" you run into some hostile creatures (which do show up in colorful high-resolution) and, round-by-round, trade sword blows, arrow shots, a host of ghastly attack spells. You can also use a turn to set up defenses or healing. Despite the graphics, the game is extremely challenging and loads of fun!

Once through the *Proving Ground* you can play the other adventures in any order (your character transfers from one game to the next). The exception to this qualification rule is *Wizardry V: Heart of the Maelstrom.* By far the largest and most-involved of the series, *Maelstrom* launches your party on a long-play quest to defeat the designs of a power-crazed sorceress and reseal The Gate to separate the Elemental Forces before all is lost! (Not, to be sure, as easy as it sounds.) Get a stack of quarter-inch map paper and look forward to months of absorbing adventure; *Maelstrom* is one of the true greats of computer gaming.

Though forward-view games are very popular in the '90's, few developers sought to duplicate the Wizardry look and feel. A notable exception is *Realms of Darkness* from Electronic Arts. Beginning as a series of progressively more difficult sword-and-sorcery mini-quests, the game eventually moves you to a new locale and into some major-league, major-fun puzzle/maze/combat challenges. More Wiz? Well, you could enter Tellurium's *Shadowkeep* and navigate its *solid-walled* mazes to rescue its rightful lord from the wicked Dal'brad.

REAL

DataSoft's *Alternate Reality* adventures do away with the lines, too, and offer something like a realistic forward view (solid walls, arches, doors, and so forth). Other innovations include monsters and personages you can see approaching from a distance and a fresh scenario. Having been kidnapped by UFO types and dumped in an alien city, you must learn to survive, earn guild memberships, build your powers, and find a way back to Earth. You can begin in *The City* or (if you don't mind a very rough start) in its sequel, *The Dungeon.* Since the series was slated for six scenarios, you won't be able to get back to Earth until someone produces at least one more AR adventure. You can, however, make the bad guys pay dearly for snatching you, and enjoy many hours of fine maze questing in the process.

New World's multi-character *Might & Magic* games look a bit like *Alternate Reality;* but the graphics are much larger and more attractive, especially in the double-high-resolution *Might & Magic II.* The first adventure is a long-duration quest to reach the mysterious Inner Sanctum, spanning over fifty 16 x 16 maps filled with towns, dungeons, and countryside areas. The sequel is another major undertaking—this time you must save the once peaceful land of Cron. The second adventure incorporates auto-mapping and delivers frame after frame of colorful, detailed 3-D perspective graphics. Both adventures feature Wizardry-style combat backed by large magic and weapons systems. Expect scads of interesting mini-quests and more puzzles than you can shake a wand at.

MORE?!

You will surely want to oppose the evil forces at work in the Forgotten Realms and on the world of Krynn. SSI's *Pool of Radiance, Curse of the Azure Bonds,* and *Champions of Krynn* were developed in cooperation with TSR, the official Dungeons & Dragons company. So, besides story lines you can really sink your teeth into, you'll find a well-developed collection of mage and cleric spells, piles of interesting artifacts, and solid systems for weapons and armor. Add attractive, 3-D perspective "exploration mode" graphics plus easy-to-manage tactical combat and you have, quite simply, one of *the best* formats in adventure gaming!

Pool and *Azure Bonds* comprise a two-part epic centering about the ancient Moonsea city of Phlan. A very powerful personage known only as "the Boss" is promoting the spread of an evil which threatens to engulf the entire region. In *Champions* you discover that minions of the Dark Goddess are creating a fresh army of draconians in a bid to sweep aside the recently victorious forces of goodness. Both adventures offer long play, far-ranging explorations, puzzles, minions you'll love to hate, and many challenging encounters.

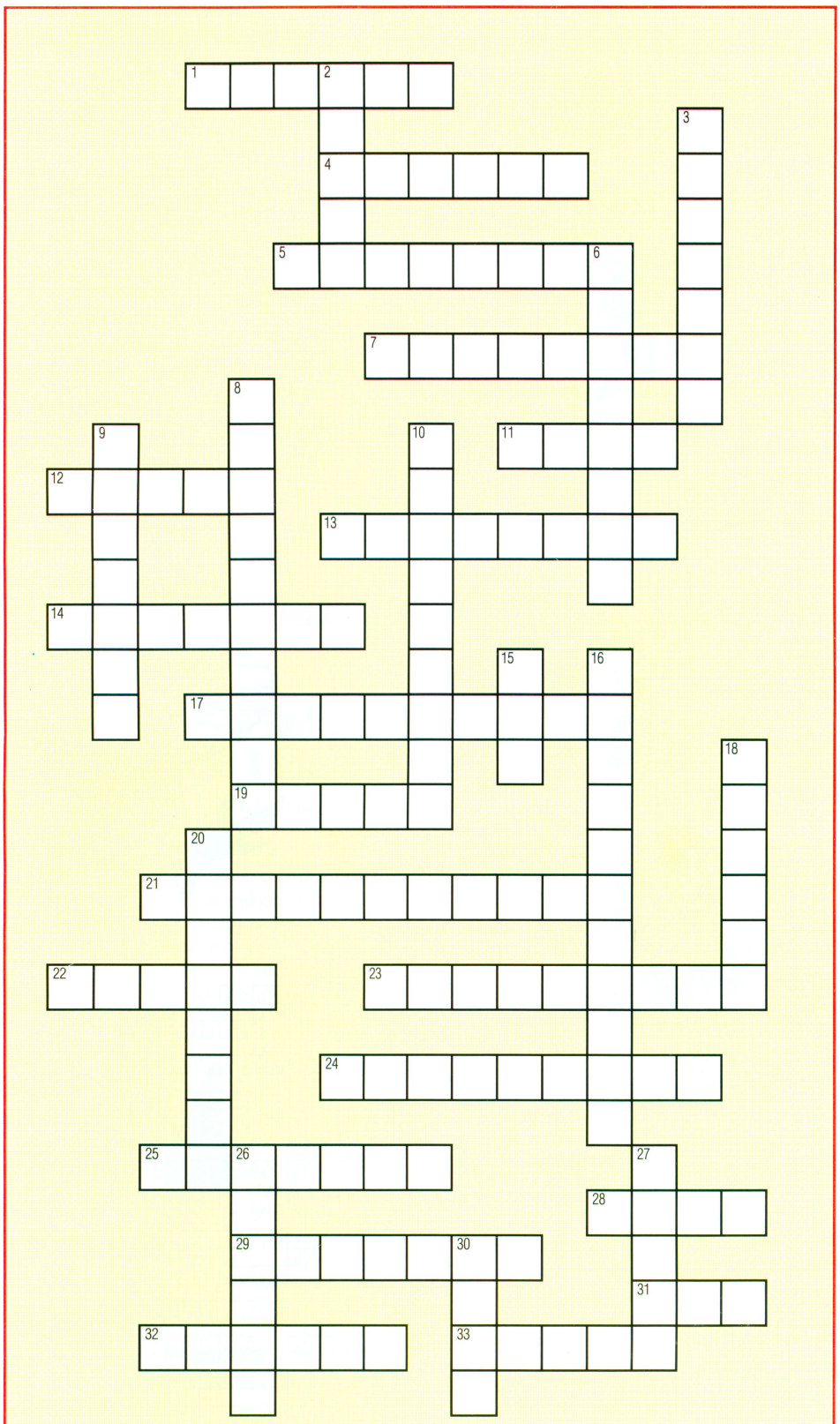
No decade would be complete without a plunge into Mindcraft's *Magic Candle.* Predictably, obtaining the spell to save the Magic Flame (imprisoning the dread arch demon Dreax) is no easy quest. It spans towns, castles, and dungeons sprinkled across several islands and continents. Eventually, you realize that nearly everyone has some useful bit of information, even if it's just when so-and-so usually visits the local tavern. Yes, *Candle* delivers exceptional slant-view high-perspective dungeon displays and entertaining tactical combats, but the main attraction is a chance to become immersed in the land of the Magic Flame. "Plunging" can be fun!

Indeed, atmosphere counts. For skeptics, the ultimate convincer is, probably, a few hours with Interplay's *Bard's Tale IIGS* (a IIe/IIc version was also produced). Leave behind the cheerful fireplace and music of the Adventurer's Inn, walk out into the night-darkened streets of Skara Brae, and enter the Temple of the Mad God! If the droning chant of the monks doesn't send a chill down your spine, then the snakes slithering in and out of skulls in the catacombs will. And it's just a *hint* of what awaits your party in the two long-play IIGS *Bard's Tale* quests. (Three adventures are available in IIe/IIc format.)

It's too bad, but all that's GS isn't gold. Activision's *Last Ninja* action adventure sticks you with impossibly clumsy controls. Electronic Arts' high-challenge *Immortal* does everything right (including the mind-blowing diagonal perspective graphics)—except supply an opportunity to save your position in mid-level. And the only thing SSI's *Roadwar 2000* does right is show attractive maps. With luck, you'll miss out on PBI's *Towers of Myraglen* and Three-Sixty's *Dark Castle.* (Do not, however, pass up PBI's *Alien Mind* or Three-Sixty's *Warlock,* two very entertaining "arcade adventures.") That's the biz, though—any publisher that produces great stacks of gameware is bound to come up with a few lemons.

FTL Games's one IIgs effort is definitely not a lemon. I've never tried picking a "Game of the Year", much less a "Game of the Decade"—there are just too many excellent games of too many types. If I did, FTL's *Dungeon Master* (for the IIGS) would be a prime candidate. Beautifully detailed super-realistic 3-D perspective views and spectacular sound place you *in* a multi-level dungeon until, somehow, you manage to rejoin the good and evil personalities of a powerful arch mage. The place is positively crammed with clever puzzles. And fireball traps, and pits, *and* ultra-realistic animated monsters.

Enough for a decade? Maybe. Even so, I didn't even mention Origin's *Windwalker, Tangled Tales,* and *Space Rogue,* or *Elite* from Firebird, or Electronic Arts' *Legacy of the Ancients* and *Keef the Thief,* or Sierra's *King's Quest*, or Victory Software's *Cryllan Mission*, or Interplay's *Out of This World,* or... ■



Answers on page 58

CROSSWORD PUZZLER

So you met our last challenge? Here's another one. As before, all the answers can be found somewhere in this issue. Answers on page 58.

ACROSS

1. Materials in the _____ domain are not copyrighted
4. A computer which provides shared disk storage on a network
5. The only thing the StyleWriter can print
7. Program which converts source code to object code
11. Insects that battle each other in this Bunker game
12. Popular adventure authoring system
13. Australian marsupial
14. A French word for "speed" or "quick"
17. A creative work based on another such work
19. Where the Rumormonger is keeping his ear this issue
21. This and a IIGS can help you sell your house
22. A fun multimedia project for the IIGS
23. An often-confusing issue in the multimedia age
24. The "language" that Apple computers speak in a network
25. Apple's user interface used on the IIGS and Macintosh
28. Controversial lubricant and solvent
29. Makers of the best text-only adventure games
31. International standard for 9600 BPS modems
32. Non-impact printer that sprays ink
33. If you can change a light bulb, you can install these

DOWN

2. Coherent light source used in printers
3. Your Control Panel settings are stored in this RAM
6. If you're not part of the _____, you're part of the precipitate
8. A2-Central Summer Conference
9. Speedy "disk drive" stored in RAM
10. A standard test procedure to determine performance
15. Number of disks in IIGS System 6
16. $BEEF and $DEAD are these kind of numbers
18. Printers that strike the paper are part of this classification
20. An MNP connection is often referred to as _____
26. Memory card for Slot 1, 2, or 4-7 (Apple code name)
27. Control Panel Devices
30. Killer whale or ByteWorks mascot

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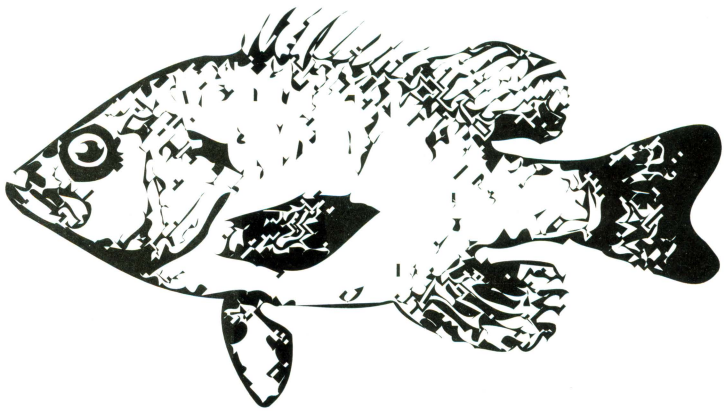

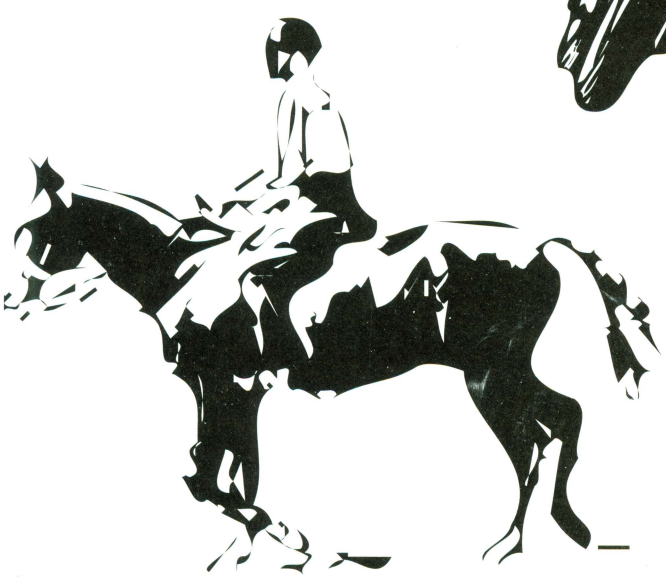

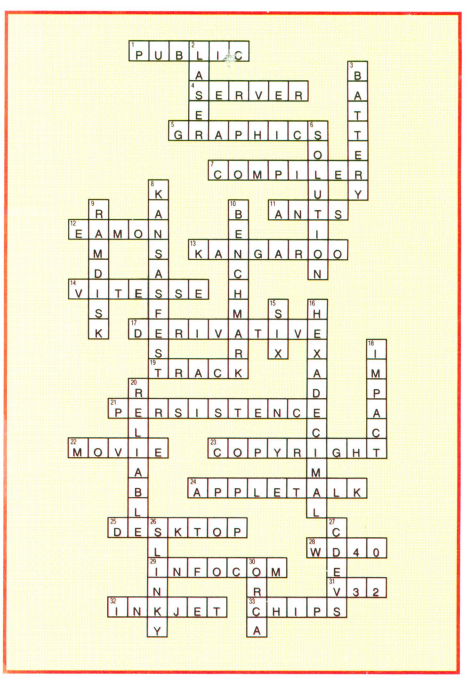

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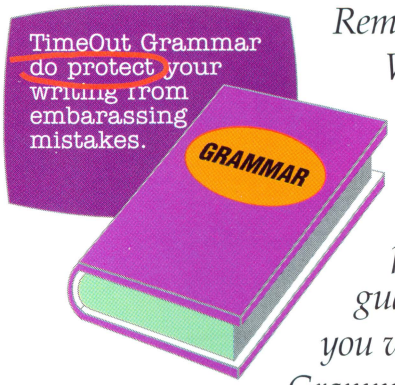

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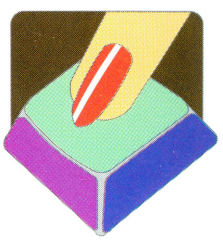

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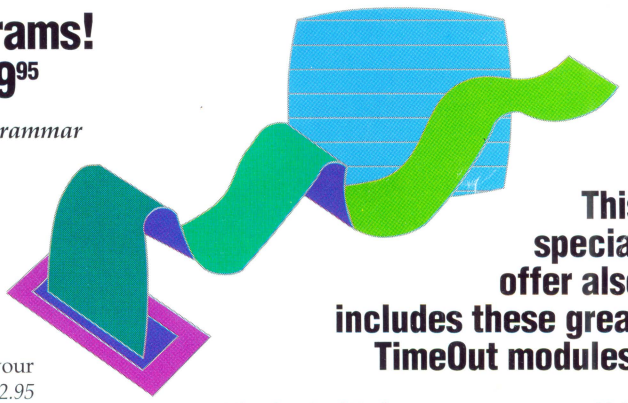

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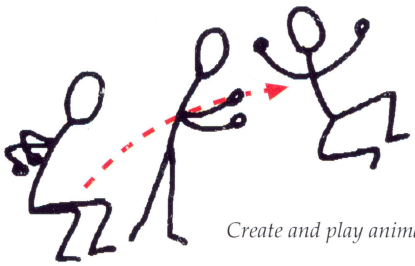
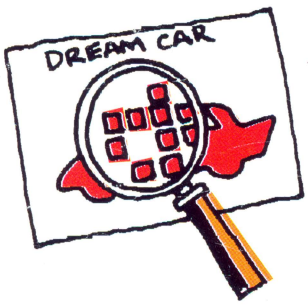
Create and print masterpieces of any size

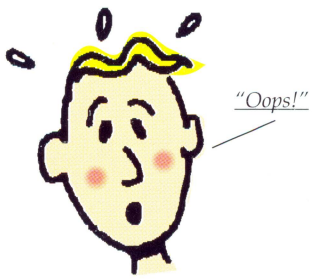


Create and play animations

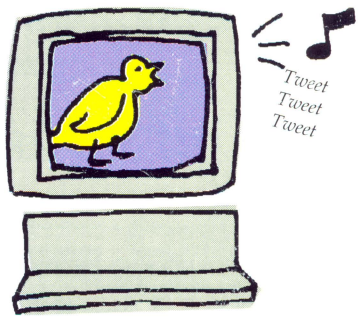
Junior User Option



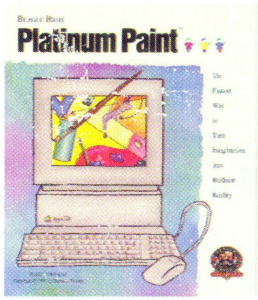
Multiple fatbits magnification



Full-size Undo



Add sounds



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