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April 1991

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100th ISSUE

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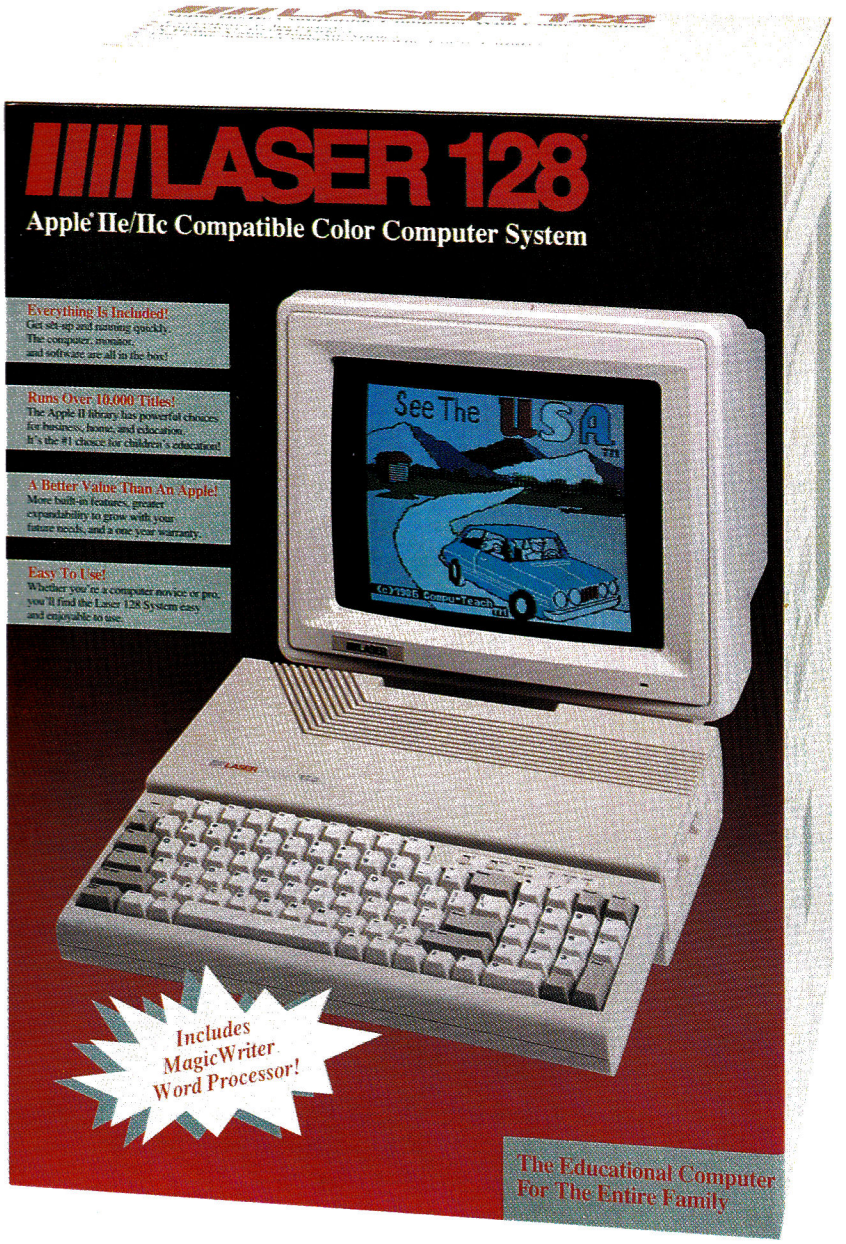

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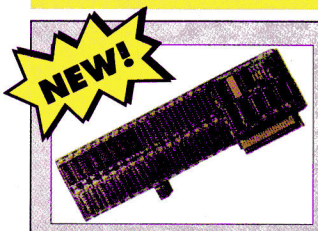

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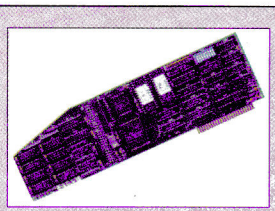

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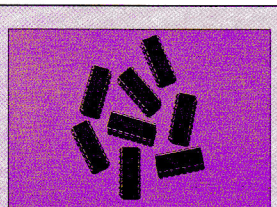

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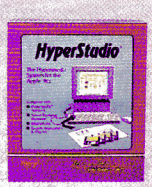

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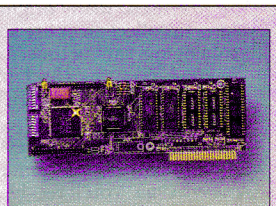

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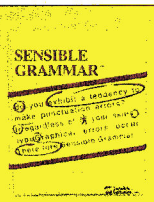

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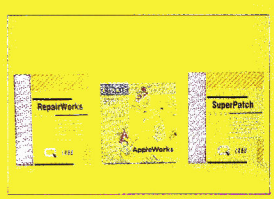

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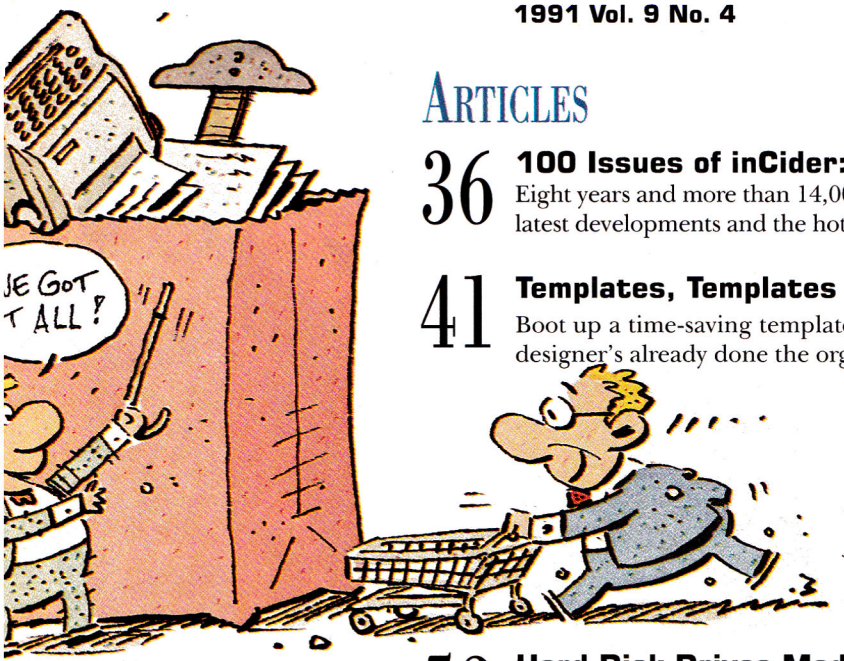

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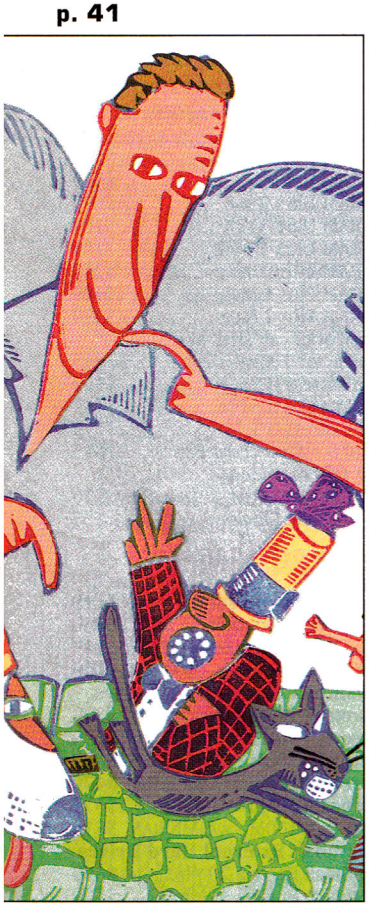

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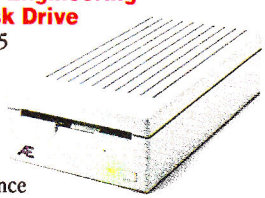

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INCIDER'S VIEW

WHAT A LONG, STRANGE TRIP

By DAN MUSE * EDITOR IN CHIEF

We're not naive enough to think that our 100th issue means as much to you as it does to us.

FOR MONTHLY MAGAZINES, 100TH ISSUES don't roll around very often — only once every 8.3 years, to be exact. In the computer-magazine business, only a handful of publications have seen their 100th issue. So how could we let this opportunity for a bit of nostalgia pass? We also couldn't resist poking fun at some products and some people we've encountered over the past eight years; mostly, though, we pick on ourselves.

While our look back is designed to be lighthearted, and if things go according to plan you should laugh or at least smile as you read our four-page retrospective, history is a great teacher. And we've learned a lot as we prepared this section. We chronicled the highs and lows of the Apple II. We read reports of the original Mac, saw it covered in the magazine, watched that coverage get dropped after only a couple of issues, and saw it added again recently. We mourned the death of the Lisa and the Apple III. But we were also there for the birth of the IIe, IIc, and IIGS.

We can't kid ourselves and pretend that the Apple II is still a headline-making computer to the general public. But it was fun to relive a time when it was — to recall events like the IIc rollout. The image of John Sculley holding a hot-off-the-assembly line IIc high over his head is still etched in our minds, despite Sculley's recent love-hate relationship with the II community.

We also learned a lot about our ability as industry pundits. We marveled at the insight former *inCider* editors Sam Whitmore and Bob Ryan showed as they commented on the Mac in 1984. We were intrigued by our own rumors and predictions of the IIGS. We patted ourselves on the back as we read our initial IIGS coverage, recalling the newsstand success of that issue. In fact, the October 1986 issue — which featured the Woz — won the Magazine and Bookseller award for Best Computer Magazine Cover that year. With a combination like the IIGS and Steve Wozniak, what else would it do?

As we attempted to boil 100 issues down to four magazine pages, the memory of a fierce, but always friendly, rivalry with the folks at *A+* came back to life as we compared the coverage in the two magazines. We beat them to some stories; they beat us with others. They were right about the potential of some products and wrong about others. We had the same types of hits and misses. While the "merger" of the two magazines worked out in a business sense, after the deal was struck all of us at *inCider* felt a little like Celtics with no Lakers to play.

It's also been fun to look at earlier mastheads and discuss the whereabouts of former *inCider* editors. Some have gone on to greatness; some have just gone on. Some we keep in touch with; some disappear; some we still play softball and basketball with.

In case there's any doubt, no, we're not eulogizing *inCider/A+*. We expect that in August 1999, *inCider/A+* will be celebrating its 200th issue. What platforms, products, and technologies will we be covering then? Who knows? But we don't think the editors of the magazine back in 1983 could have predicted where the Apple market would be today. Could they have predicted that Apple Computer would target the Mac for education in the '90s? So we won't even try to predict where the Apple II or the Macintosh will be in another 100 issues. We do predict that *inCider/A+* will always be devoted to helping individual computer users get the most from their hardware and software. That was the mandate in January 1983, and it's the mandate today.

Perhaps our look back is self-indulgent. We're not naive enough to think that our 100th issue means as much to you as it does to us. But whether or not *inCider/A+* has a place in your hearts, we think you'll enjoy a look through the first 99 issues. If you're not the sentimental or nostalgic type, forgive us our frivolity. If you're like us, however, and enjoy a short trip down memory lane once in a while, please join us on p. 36. We promise we won't do it again for another 8.3 years. ❑

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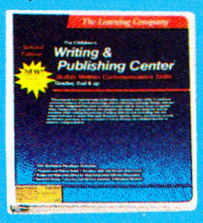

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Points of Order

FIRST OF ALL, LET ME GET SOMEthing straight. I'm not one of those head-in-the-sand types who's opposed to the Mac under any circumstances. On the contrary, I find the Mac appealing in many respects, and I wish Apple success with it. Nor do I object to your decision to split your coverage between the Apple II series and the Mac.

What I don't agree with is Paul Statt's article on the new Mac LC ("Meet the Mac LC: What the Apple IIGS Should Have Been?" in December 1990, p. 40). The price comparison with the GS is particularly deceptive. Mr. Statt loaded the GS with enough options to make a new-car dealer blush. Although it sounds logical to compare "similarly equipped" machines, the GS/LC comparison is like the proverbial apples and oranges.

Mr. Statt correctly points out in the article that clock speed alone isn't necessarily all there is, but the chart on p. 45 makes it look like a comparison between 16 megahertz and 2.8. The Mac is faster than the GS, but not as much as the numbers imply, because Mac software takes more "horsepower" to operate. Therefore, the addition of $349 for a GS accelerator is redundant. The GS isn't a Mac, and doesn't reach the same clock speeds, even with an accelerator, so why add one to the price? Compare the two machines in their native modes! And how can you use a notorious kludge like AppleWorks GS as a basis for comparison? There are other graphics-based packages that run just fine on an unaccelerated GS.

I also have a problem with adding an extra $229 for an additional megabyte of RAM for the GS. Sure, the extra memory is great, but you don't need it to run GS software. The Mac comes with 2 megabytes because it's necessary for System 7.0, but GS/OS runs comfortably in 1 megabyte on my GS.

I agree that an internal hard drive is nice to have, but it hardly seems fair to add $899 to the GS price to get an internal Vulcan drive when you can get a Chinook 40-megabyte external drive for $509. Also, it wouldn't make much sense to buy a SCSI card, as you show on your comparison chart, and then buy a drive with a proprietary interface. What's the SCSI card for? (By the way, I don't know what SCSI interface you're buying, but Apple's new High Speed SCSI Card lists for $129, not $209.)

Instead of spending $239 to get mono input into the GS, I'd far rather buy Roger Wagner's HyperStudio. For $129, you get superb software (better and easier to use than HyperCard) and a no-slot sound digitizer, microphone, and digitizing software. To make a fair comparison by your own standards, you should also add the price of an Ensoniq 15-voice sound-synthesizer board to the Macintosh.

But the biggest issue is software compatibility, and Mr. Statt really misses the boat here. He points out correctly that the Mac was the first and only Apple machine that didn't maintain backward software compatibility. The Mac LC only partially remedies this. Apple is asking its loyal GS owners to trash their GS-specific software and trade it in for a IIe in emulation mode. Unlike the Apple II line, the LC doesn't let you take advantage of its extra memory when running IIe programs, so the picture on the December cover says it all: "39K available." That's certainly small comfort, not only for a GS owner, but also for the IIc or IIe owner who has to work with large spreadsheets or databases.

So you give up both your Apple IIGS-specific software and the added memory and speed of an Apple IIGS. The quote from Apple, assuring us that the IIe emulation is "as fast as the IIe" (p. 45) isn't encouraging. Nor am I impressed by the statement that Apple is "looking at ways" to steal some extra RAM from the Mac motherboard. Come on, Apple, do your homework!

Taking all this into consideration, I find it nothing short of astonishing that Mr. Statt could reach his dramatic conclusion (p. 44) that "although it may be easier to run Apple II software on an Apple IIGS than on the Mac LC, the Apple IIe emulation card will be the reason many people buy the Mac LC."

I haven't even mentioned the fact that when you buy an LC and plug an emulation board into its only slot you give up the GS' true strength: expandability. Mr. Statt does mention this as a limitation, but in my opinion, he doesn't make the argument strongly enough. The entire II line (except the IIc) offers nearly unlimited possibilites for a user to customize and/or upgrade his or her system.

Apple has deliberately stifled sales of the GS in favor of the Mac. It has priced equivalent or similar peripherals for the GS substantially higher than for the Mac: Apple External 40SC hard drive, $1299; 2-megabyte Mac Classic with internal 40SC hard drive, $1499. This is absurd!

What is so disappointing about this article is the way it seems to be little more than a regurgitation of Apple marketing hype, with no real analysis on Mr. Statt's part. I don't mind if you cover Macs, but in the future we as readers would appreciate more objectivity.

Richard S. Albright II
67 Fleisher Road
Marysville, PA 17053

We don't recommend plucking your Vulcan™ off a table and dragging it along the ground.

But it's nice to know you could.

October 30, 1990

Gentlemen:

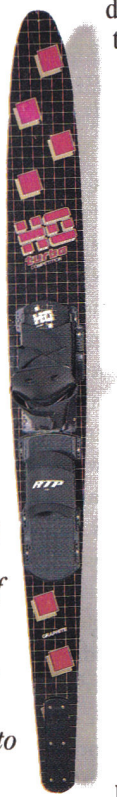
I use my Apple IIGS with a Vulcan and an AE A/D converter at professional waterski tournaments to measure jump distances. I wish to commend you on the durability of your Vulcan Hard Drive.

I was using the computer at the U.S. National Waterski Championships in August when a gust of wind picked up the canopy under which we were operating. Wires running to my system were attached to the canopy and when the canopy blew away, it pulled the computer with the Vulcan off the table and onto the ground, dragging it along the ground some twenty feet. I was actually in the process of writing data to the hard disk at the time.

Even though the incident pulled many of the attaching wires out of the computer, no damage occurred to the computer or the hard drive. I subsequently verified all of the data on the hard drive and found no errors and no bad or damaged blocks in either ProDOS or MS-DOS (I use half my storage for my PC Transporter's MS-DOS files and half for ProDOS).

Needless to say, I am very grateful for a soundly built and well-engineered product.

Sincerely yours,
Roger Dilling
Milledgeville, Georgia



We hope you never drag your hard disk through the dirt, but can appreciate the engineering required to make the above letter possible. Until recently, if you wanted a hard disk for your Apple, you had to add an outdated, external box to your desktop clutter. Now, with Vulcan™ on the scene, you have an internal to consider. One that's lightning fast, clean, powerful and affordable.

A glance at the other computer manufacturers; IBM, Compaq, Dell, Mac, tells you something. They're all very different systems, but all come with internal hard disks (it's hard to even find a Mac these days without an internal hard disk). The reason? Internals are the latest advance. The modern storage solution. They become a transparent part of your system, and in the case of Vulcan, actually enhance the rest of your system.

Enhancing the rest of your system. Many feel Apple's standard power supply is insufficient. Add a Vulcan and you make a significant improvement to the rest of your system. The high efficiency power supply in Vulcan is rated in excess of 70 watts, nearly double the capacity of Apple's standard power supply and that of other drives. Vulcan power supply components are heatsinked to the aluminum case for cool operation and long life. And we added an ultra-quiet, flush-mounted cooling fan to keep things cool inside. Vulcan actually beefs up your power supply. External hard disks drain it.

Ease of use. Most hard disks are pretty intimidating. It's frustrating to bring home a new hard disk, only to discover you've got to spend a lot of time setting up for your particular operating system, partitions and formatting. Vulcan comes pre-formatted, pre-partitioned and includes the latest Apple Operating System. You'll be using your Vulcan within minutes. Just pull out your old power supply, plug the Vulcan in it's place, insert the card and turn on the computer. Vulcan will boot to your familiar Apple Finder in a few seconds. Now *that's* ease of use.

Incider/A+ Magazine put it simply in their "Best of the Best" Holiday Shopping Guide: *"The best internal hard disk is the Vulcan from Applied Engineering - you can use it with DOS 3.3, ProDOS or GS/OS, and it comes with its own fan and power supply".* Vulcan incorporates the most popular standard protocols for a hard disk and includes an ultra-fast 16-bit data bus controller, not the less expensive 8-bit others use. And since Vulcan is fully compatible with our PC Transporter, you can create ProDOS or MS-DOS storage space, in addition to GS/OS, DOS 3.3, CP/AM or Pascal 1.3. No

other hard disk works with all these operating systems.

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I agree with much of what Mr. Albright says. But let me point out several facts:
1. An unaccelerated Mac LC runs software that uses the "Apple interface" faster than an unaccelerated GS runs similar software. With the addition of an accelerator, the GS comes up to speed.
2. Apple's new HyperCard IIGS (February 1991, p. 37) requires 1.5 megabytes of RAM and works best with 2 megabytes. The standard GS comes with 1.25 megabytes.
3. The Mac LC has an internal SCSI port and comes in most configurations with an internal SCSI drive, in addition to an external SCSI port. The Apple II has no internal SCSI port, no external SCSI port, and no standard internal hard-disk drive. It ought to have these features, but Apple decided against them, not I.
4. Our cover photo showed AppleWorks running on a Mac LC with 39K available. At that time, the Apple® IIe emulation board was limited to using 128K of RAM for Apple II applications, but production versions of the board will be able to use more memory.

The argument between expandable computers and all-in-one systems has been going on at least since the introduction of the Apple IIc. I didn't choose to open that discussion again. I believe that the GS' expandability has always been one of its strengths. I believe that the GS is a great computer. I believe that in 50 years historians studying the evolution of the personal computer may ask the same question about the GS that we ask about the Tucker automobile today: "Why didn't they see what a great machine that was?" But I don't believe that Apple will be advertising the GS next Christmas. — P.S.

FRIEND OR FOE?

I SAW A REPORT ON CNN STATING that some Apple monitors emit low-level radiation that could cause cancer. Do you know anything about this?

Mark McDevitt
5501 North 31st Street
Arlington, VA 22207

The key words here are "could" and "risk." No one has proven anything, and the scientific community is currently debating whether or not 60-hertz pulsed magnetic fields are harmful. Nevertheless, it wouldn't hurt to take a few basic precautions:
• Turn off your monitor when it's not in use.
• Keep your monitor at least at arm's length; these fields decay rapidly over the space of a few feet.
• Ask your coworkers to move their computers to walls that don't adjoin your office or cubicle. The fields emanating from the back of a monitor are more intense than those coming from the front.

Whether or not you decide to take action, don't panic. There's still no conclusive evidence to support the theory that these fields are harmful. — eds.

SPECIAL EQUIPMENT FOR SPECIAL NEEDS

WITH A STRONG BACKGROUND in early-childhood education, I couldn't agree more with Gregg Keizer in his November 1990 feature when he says, "Even the best software pales in a preschooler's world when compared to crayons and coloring books, action figures and dolls, backyard trees and playground equipment." (See "Days of Discovery," p. 47.) When a child has a disability that prevents him or her from holding a crayon, manipulating a doll, or climbing a tree, however, a computer can open worlds of discovery, play, and creativity otherwise closed.

I work every day with preschoolers (and other children) who have a variety of orthopedic and developmental delays. Giving these children an alternative method of accessing a computer (other than a keyboard) lets them experience fun, control, and a sense of mastery not often felt by any preschooler. Adaptive equipment such as Sunburst Communications' Muppet Learning Keys, Edmark Corporation's TouchWindow, Unicorn's Assisted Keyboard, Don Johnston Equipment's Adaptive Firmware Card, and Dunamis' Power Pad, in conjunction with appropriate software, lets children access the Apple IIe and Apple IIGS computers in a successful and rewarding way. The child who can't hold a crayon, for example, can use the TouchWindow to create his or her first picture for grandma.

A computer can help teach skills such as language development, spatial relationships, and social interaction, but it can't solve all the problems experienced by specially challenged children and their families. With an interested, involved adult, appropriate software, and adaptive equipment, however, a computer can add pleasure, success, and the opportunity to enhance the potential of children with special needs.

Phyllis O'Connell, M.Ed.
Technology and Resource Coordinator
Children's Programs
United Cerebral Palsy
of Greater Cleveland
2141 Overlook Road
Cleveland, OH 44106

PC TRANSPORTER RAM DISK

I HAVE A SUGGESTION FOR IIGS owners who use both AppleWorks GS without a hard disk and Applied Engineering's PC Transporter. If you boot the GS/OS system disk to the Finder and copy the system disk's contents to PC Transporter's RAM, you can increase the speed of the program dramatically and minimize disk swapping. First, copy the system disk to the card and drag the system-disk icon to the trash, removing it from the desktop. Now rename the AEPC icon to correspond to the name of your GS/OS system disk, so that the computer can find the system disk. Put the AppleWorks program disk in your drive and boot it directly. The program will load without a single disk swap (except to access the utility disk). Although copying the contents of the system disk to PC Transporter's RAM takes some time, this procedure increases the speed of the program dramatically, especially if you're switching from module to module within AppleWorks GS.

Rick Himel
820 Jefferson Drive
Lake Charles, LA 70605

TRANSWARP VAPORWARE

IN YOUR JANUARY ISSUE, APPLIED Engineering included an ad for the new TransWarp II card, but in the April What's New section you state that "Applied has been advised to 'terminate completion of the [TransWarp II] project.'"(See "Zip Wins Rocket Suit," p. 19.) Then in the May issue, I found AE's adver-

tisement for TransWarp III, but in the July issue the company's *AE Update* advertisement contained no mention of this product. What gives?

David A. Sadler
323 Parkshore Drive
Shorewood, IL 60435

Because of a long list of both legal and development problems, neither the TransWarp II nor the TransWarp III is complete or available. — eds.

Turning Face

I DISAGREE WITH GREGORY Betzel's and Joe Abernathy's point that Apple II users will encounter a memory limit when scaling up fonts. (See "Face It," p. 11 in August's Letters section, and "Face to Face," March 1990, p. 60.) With a bit of manipulation, I was able to print 12 pages of Publish It!'s 72-point Willmette font. (I use version 1.04.) The GS Font Editor doesn't display this font in the *Open* dialog box's list of files, but the file is 74 blocks, making it 37K.

First I used UtilityWorks, a shareware utility program, to copy the Willmette file to the RAM disk. (This is one shareware program that's well worth the $20, so contact George Wilde at 24402 Broadwell Avenue, Harbor City, CA 90710, 213-325-4456.) Then I changed the file type to $C8 — the standard GS font type — copied it to the fonts subdirectory of the /SYSTEM disk, v5.0.2, and booted it to the Finder. Finally I used UtilityWorks to view the font in a window before I printed it.

Kyle Hasselbacher
RR#1, Box 88
Brimfield, IL 61517

Protect Thyself

OUR RESPONSE TO BILL SMITH'S letter in the September 1990 Apple Clinic ("RAM Additions," p. 34) needs several corrections to provide adequate protection for both Mr. Smith and his RAM chips.

"Jumpering a wire between your person (such as a metal wristwatch band) and the case surrounding the power supply on your IIe or the plate on a grounded wall socket" is a dangerous practice. If you contact a live electrical source, the plain wire will provide an excellent ground and the opportunity for electrocution.

A commercially available wrist strap such as one from Radio Shack ($3.29, part #2762397) is the best protection for your body and your system. Commercial wrist straps contain a 1-megohm resistor, a value that will bleed static-electricity charges high enough to prevent lethal current flows through a body.

Secondly, you should be grounded before removing the memory cards from the computer. Although less vulnerable than loose chips, both the cards and the computer can be "zapped" by an errant static charge.

As suggested, the case of the Apple II power supply provides a good ground if the computer is plugged into the wall. As always, the computer must be off when you install or remove cards.

Several other suggestions can enhance the ESD (electrostatic discharge) protection for your computer and chips during installation. An increase in humidity, ideally 35 to 75 percent, can help bleed off static charges.

Avoid working on surfaces that can create static charges, such as carpets. Using a conductive work mat, available from electronics supply houses, will greatly increase the protection of these static-sensitive devices. Finally, avoid handling the chips by their pins. I recommend using Radio Shack's integrated-circuit insertion/extraction tool (part #276-1581).

Steve Lubliner
Lancaster, CA

Paintworks Patch

IN OCTOBER'S LETTER TITLED "What's It Worth?" (p. 12), Dennis Windrim described his problems with Activision's Paintworks Gold and its incompatibility with ROM 03 for the GS. Thanks to CompuServe's sysop, Jason Harper, we now know the problem exists because of the way Paintworks Gold allocates memory. In the spring 1990 edition of the *Apple IIGS Buyer's Guide*, Larry Miller describes Harper's solution to this irritating problem. As long as your GS has at least 1.25 megabytes of memory, the following remedy should work:

1. Make a backup copy of Paintworks Gold and stow the master for safekeeping.
2. Boot Applesoft BASIC.
3. Use the PREFIX command to tell ProDOS where your copy of Paintworks Gold is located. For example: PREFIX, S5,D1 PREFIX/HARD1/PAINT.
4. Type POKE 768,127.
5. For v1.0, type BSAVE PAINTWORKS .GOLD,T$B3,A$300,L1,B$1FFE0. For v1.5 substitute PROGRAM for PAINTWORKS.GOLD.

Eric Larson
Marketing and Support Representative
Fremont Office Equipment & More
648 North Road
Fremont, NE 68025

DB Master User Group?

I'M LOOKING FOR A USER GROUP that specializes in taking advantage of the enormous power and potential of DB Master Professional. If you don't know of one, I'm interested in starting this organization.

R.G. Nelson
2501 East County Road 32
Fort Collins, CO 80525

How about it? Any takers out there? — eds.

Classic Taste Test

AS AN OWNER OF A NEW MAC Classic, and as a diehard Apple Computer fan, I thoroughly enjoyed the coverage of the new Macs in your December 1990 issue. I'm always curious about what the rest of the computer industry thinks of Macintoshes, and I've found *inCider/A+* to be both thought-provoking and realistic. I thought you might appreciate a few comments regarding your "New Wine in an Old Bottle" sidebar review of the Classic. (See December 1990, p. 43.)

The article calls the Mac's 9-inch screen "notorious." I purchased my first Mac back in 1985 and have never regretted the small screen size. Because it's much crisper than anything I've ever seen on a Commodore ➪

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LETTERS TO THE EDITOR

UPDATES

GIF Stripper 1.1a, mentioned in the feature article "Apple II to Mac and Back" (March 1991, p. 77), is a freeware product for 8-bit Apple IIs available on line or from the author, Joseph Schober, 3528 Pinetree Terrace, Falls Church, VA 22041-1418. (Enclose a self-addressed, stamped envelope and a 3.5-inch disk.) Product support is available via the StarPort bulletin-board system at (703) 931-0947 at 300, 1200, or 2400 baud. A GS version of GIF Stripper is in development; it will provide all standard GIF Stripper features, plus high-speed image conversion and palette processing.

or an Apple II, I can sit at it for longer periods of time without eyestrain. In addition, the sharp display lets a full page width of text be displayed at 100-percent scale. I just wish Apple would release a compact color Mac.

As for the supposed lack of external monitor options, there are several already available for use with the Classic. They attach right to the circuit board (just as third-party models do with earlier Macs that lack an expansion slot). There's also a product for attaching an eight-color monitor to the SCSI port.

The Classic uses the same 68000 Motorola processor as its five predecessors, but it doesn't run any faster. All Macs using the 68000 run at 7.8 megahertz. What Apple did was improve the rest of the hardware and software to optimize them for speed. Also, the entry-level model comes standard with 1 megabyte, not 2.

The January 1991 issue of *Consumer Reports* included an article about home computers in which the Mac Classic, the Tandy 1000RL, and the IBM PS/1 were compared. The winner? "The Apple Macintosh Classic is the best choice . . . ."

Nitpicking aside, it seems clear which company makes the best computers.

Martin Wixted
67 Centre Street
Boston, MA 02119

WHERE'S DUET?

WHAT HAPPENED TO THE Duet card from Cirtech that you mentioned in November's What's New section (p. 17)?

Erol Sommer
7770 Riverview Road
Brecksville, OH 44141

Cirtech has suspended the product's development owing to "lack of marketing support for the IIGS." Vocal Apple II users can write to Cirtech's American distributor, A2-Central at P.O. Box 11250, Overland, KS 66207, and make their feelings known. — *eds.*

INCIDER/A+ WELCOMES READERS' COMMENTS. WE RESERVE THE RIGHT TO EDIT LETTERS FOR CLARITY, STYLE AND SPACE. PLEASE ADDRESS YOUR CORRESPONDENCE TO LETTERS, *INCIDER/A+*, 80 ELM STREET, PETERBOROUGH, NH 03458.

CORRECTIONS

Make the following changes in "The Taxman Cometh" spreadsheet (AppleWorks in Action, February 1991, p. 60) to ensure accurate calculations:

- **The personal exemption this year is $2050 (not $2000), so Formula 9 in B51 should be +F3*2050.**
- **Cell I16 should contain 8050 (not 7050).**
- **Formula 14 in K20 uses the MAX (not MIN) function. It should be @IF(F4=H20,@MAX(F42.F45),""). Then copy it two cells down, per the instructions in the text.**
- **The portion of Formula 23c that reads (B52E55) should actually be (B52E44).**

The Triad Ventures address listed in the Product Information box on p. 44 of the February 1991 issue ("The Apple II Culture Reborn") should be P.O. Box 12201, Hauppauge, NY 11788.

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WHAT'S NEW

edited by Paul Statt

TOM SNYDER SOFTWARE

Tom Snyder Productions has taken its concept of "groupware" — educational software that more than one student can use at a time — to new computers and new subjects, with Dr. Know-It-All's InnerBodyWorks, MacTimeLiner, and Decisions, Decisions: The Environment.

InnerBodyWorks ($119.95, for 1-megabyte Apple IIGses and Macs) lets students explore the human body without cutting one open. It's a database of body parts that includes a presentation mode: Teachers can illustrate anatomy lectures with a visual tour. For students needing extra incentive, InnerBodyWorks features a game mode. This product, like all Tom Snyder software, is designed for small groups, large groups, individual students, or lab partners.

InnerBodyWorks is a complete classroom kit, including software, 30 body maps, and glossary books for students. It comes in two versions: one, suitable for grades 7–12, uses scientific terms; the other, recommended for grades 4–6, uses words appropriate for elementary students.

MacTimeLiner ($69.95, for 1-megabyte Macs) combines the flexibility and power of the Mac with the ease of use of Tom Snyder's TimeLiner, his best-selling Apple II (and MS-DOS) program. MacTimeLiner creates and prints proportionally correct time lines — students or teachers merely type in events and dates. It lets you merge, illustrate, and import a time line into many popular DTP programs. A teacher's guide details some 100 ideas and activities.

Decisions, Decisions: The Environment ($119.95) is the latest in a series of programs that help students address complex issues. It's available for Apple IIs, MS-DOS machines, and color and monochrome Macs.

Students work as a group and take the role of a mayor who's faced with an environmental crisis in a small town. Before taking action they must consider and discuss the advice of four experts. The teacher needs only one computer to lead an entire class in the exercise.

For more information contact Tom Snyder Productions at 90 Sherman Street, Cambridge, MA 02140, (617) 876-4433, or circle 350 on the Reader Service card.

EDUCATION NOTES

⁂ MACNUMERICS Spring Branch Software has announced **MacNumerics** ($189.95), a mathematics program for the Macintosh that, similarly to GS Numerics from the same company, emphasizes the learning and teaching of math at the high-school and university levels.

The program includes 12 tools that cover the basic requirements for calculus and other higher mathematics, starting with graphs and points in the Cartesian coordinate plane, and continuing through integral and differential calculus. MacNumerics will even help the professional who wants to refresh his or her mathematical skills; this program has the power to solve professional-level mathematical problems.

MacNumerics offers extensive graphical displays of functions. These graphs clearly demonstrate roots, slopes, areas, and common solutions. For more information contact Spring Branch Software at P.O. Box 342, Manchester, IA 52057, (319) 927-6537, or circle 351 on the Reader Service card.

⁂ LOGO FOR THE MACINTOSH Paradigm Software's **Object Logo** ($149) is an advanced implementation of the popular teaching language for the Macintosh. This product combines the traditional strengths of Logo — it's easy even for toddlers to learn — with some heavy programming power.

Object-oriented programming simplifies the development of large programs by breaking them into small pieces. This technique also lets the programmer write a routine once and then reuse it in many different programs. Logo's traditional "turtle graphics" are available in Object Logo, as well as extensive mathematics and list-processing functions.

Object Logo fully supports the Macintosh toolbox — meaning your programs will have the Macintosh look, right down to the menus, windows, dialogs, and QuickDraw graphics. But Object Logo is also fully compatible with Apple Logo for the Apple II; therefore, schools won't need new investments in textbooks and time. Object Logo requires a Mac Plus with 1 megabyte of RAM and two 800K floppy-disk drives, or one floppy-disk and a hard-disk drive.

For more information, contact Paradigm Software at P.O. Box 2995, Cambridge, MA 02238, (617) 542-4245, or circle 352 on the Reader Service card.

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Vitesse

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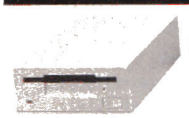

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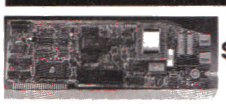

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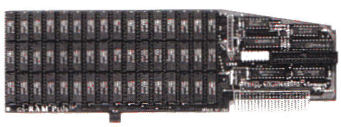

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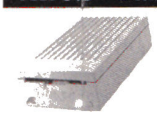

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NOTES from the AppleWorks Programmers Association

Users & Programmers Sharing the Power to Create

AW Tip: Many AppleWorks users store "people-oriented" information in a variety of database files. To maintain consistency of this data try using a standard database-template file. You can create this template from scratch or by renaming and emptying a current database file. Be sure your template has plenty of extra categories. Save your template to disk and lock the file so you won't overwrite it accidentally.

When establishing a new database file that includes names and addresses, first load your "people" template to the desktop and rename it. (Leave the first several categories consistent in order and form — First Name, Last Name, Address, and so on.) Then rename the extra categories and make necessary changes in layouts and reports to suit the immediate purpose. Starting with the standard template eases input and speeds manipulation of data between files.

AppleWorks 3.0 users may create and save multiple-record report formats (tables style) from both the default and working layouts. You can then create various multiple-record (working) layouts quickly from layouts saved previously as report formats (tables style). Saving an identical default layout as a report format in all your people-oriented databases will come in handy when you copy and move data between files.

Many users prefer single-record layout for efficient input. Unfortunately, you can't make this type of layout from report formats (labels style) as you can with tables formats. To act on this tip, though, make a copy of your standard template, reconfigure it for a special single-record layout, rename the file something such as "SRL2," and save it back to disk as a second standard template. Then rename the file and copy records via the clipboard from other files to your alternate template.

A code category will do the work of two or more categories. Using unique strings to select groups such as family, clients, and members of your club or homeowners' association lets you choose the records effectively (Apple-R).

In the example below the small-business owners who are also members of the Tri-Cities Apple User Group are selected. The vertical line between codes makes the example unique. Careful design and consistency of your "people lists" make your databases more useful.

AW Macros: Here's a macro that separates a first-and-last-name category into two categories — one for the first name, the other for the last name. (You'll have to handle last names containing spaces, such as "Di Lorenzo" or "Smith M.D." manually, though.) Revise your layout so that two extra categories are located to the right of the source category before starting the macros with Solid apple-S. (This macro requires TimeOut UltraMacros version 3.1.)

AW Enhancements: Beagle Bros' TimeOut ReportWriter by Dan Verkade is a relational report generator that works from inside AppleWorks. ReportWriter can combine data from several database or spreadsheet files and provides more than 250 categories in a single report. Date arithmetic, math, text functions, its own 240-column editor, and a wealth of other features help the AppleWorks user create sophisticated reports. ReportWriter is compatible with TimeOut UltraMacros, which is a valuable aid in automating routine work.

```
S:<adb : clear : msgxy 0,128 :                    {clean house}:
   x = peek $8520 : if x = 68 then :              {test for MRL}:
   msg ' Multiple Record Layout Required ' : stop :    endif :
   msg ' Place cursor in source category and press Return ' :
   keyto 13 :                                     {wait for Return Key}:
   msg ' WARNING! 2 categories to the right will be OVERWRITTEN!
   Press ESC or RTN ' :
   begin : a = key :                          {get Escape or Return }:
   if a = 27 : msg ' Cancelled ' : stop : endif :  {ESC}:
   if a = 13 : exit : endif : rpt :                {RTN}:
   x = peek $851D :
   if x = 68 poke $851D,82 :{force Cursor move to right}:
   endif : rtn : oa-tab :                     {assure entry accepted}:
   oa-9 oa-c rtn>1<rtn down :           {print end of file marker}:
   oa-y>ENDFILE<rtn : oa-tab oa-1 sa-1>!

1:<asr $0 = cell :                                 { Get source entry }:
   if $0 = "ENDFILE" : oa-d : rtn : oa-1 : {test for end of file}:
   msg ' Operation Complete ' : stop : endif : {Macro ends here }:
   x = len $0  : $9 = $0 :  1 = x : y = x : { Set some variables }:
   sa-2 : sa-3 : rpt >!

2:<asr :  y = y - 1 : $1 = right $0,y : $2 = left $1,1 :
   if $2 = " " : w = 1 - y            { find last space & split } :
   $3 = left $9,w : r = x - w - 1 :    { store first name } :
   $4 = right $9,r : exit : endif :    { store last name } :
   rpt>!

3:<asr tab oa-y : print $3 : rtn :          { print first name } :
      oa-y : print $4 : rtn :               { print last name } :
      oa-tab : oa-tab : oa-tab : down>!     { position for next } :
```

```
Selection: CODE contains |TAUG|
  and      CODE contains |SBO|

Record 23 of 742  (10 selected)
================================================================
===== =====
First Name: John          Last Name: Jones          CODE:
|CHU|HA|SBO|TAUG|
Address: 123 So Main Str
City,ST: Sunny  CA        ZIP: 91234
Phone 1: 818-111-2222     Phone 2: 818-222-333
\/\- - - - - - - - - - -/\/
```

For a 5.25-inch disk that includes a set of templates, macros, and detailed documentation for tips described above, send $4 shipping to APA at the address below. Please include the *inCider/A+* issue date with your request.

APA maintains files, templates, and information that it makes available to AppleWorks Classic users. If you have questions or requests, call, write, or leave a message at the pro-apa BBS.

For membership information contact the AppleWorks Programmers Association, 6531 Lexington Avenue, Los Angeles, CA 90038, modem apa@pro-apa.cts.com (213) 463-9289, voice (213) 469-9916. The AppleWorks Programmers Association is registered with the Apple User Group Connection.

Shareware Solutions

If you're the type who thrives on unraveling complex or abstract problems, there's a good chance you enjoy working on puzzles.

Now that traditional paper-based puzzles have made the transition from the analog world to the digital world, more people than ever can test their mental acuity. Electronic puzzles can provide endless variety, they don't require large amounts of table space, and, most importantly, they let you create your own brain teasers. This last benefit alone makes puzzle programs excellent resources for parents and teachers; adults can customize puzzles for their kids or students.

No matter your age, if you use an Apple II, there's bound to be a puzzle program that will enthrall, mystify, and provide hours of practice in deductive-reasoning skills. Computer-based puzzles are available from local Apple II user groups, on-line networks such as America Online, CompuServe and GEnie, mail-order public-domain houses such as Public Domain Exchange or Big Red Computer Club, and hundreds of local bulletin-board systems.

But the best puzzle programs are available as freeware. (Freeware refers to a program that's free of charge; however, you may need to pay a small disk-duplication fee to your user group or you may incur phone charges or network fees to download the programs via your modem.)

Ed Oest, of Miramar, Florida, has written two Apple II (ProDOS 8) programs that deserve a place in every classroom and home in which there's a puzzle enthusiast. **Crossword Assistant** is an easy-to-use, menu-driven program that creates elegant crossword puzzles from custom word lists you (the user) supply. **Word Search Generator** is an amazing program that creates a matrix filled with hidden words from your list of words. This product's puzzles, long a mainstay of elementary educators, have never been easier to create — and they've never provided so much flexibility for the parent or teacher wanting to reinforce vocabulary.

Both programs sport an interface similar to AppleWorks'. Both are menu driven and come in AppleWorks format with on-disk sample puzzles and excellent documentation. Each allows as many as 80 words and clues in each puzzle, and can store 50 different word lists or puzzles in an on-disk subdirectory. Once you supply the word list, the computer generates the completed puzzle on its own.

Both programs require an ImageWriter or Epson or Epson-compatible printer, and both print beautiful puzzles. They work flawlessly on an enhanced IIe or a IIGS, but some users have reported problems running the programs on a IIc or IIc Plus. If you have an interest in solving or creating word-based puzzles and you use a IIe or IIGS, though, you'll be elated by these programs.

As much fun as language and word problems can be, graphics-based puzzles seem to be the most popular. There are two different freeware jigsaw-puzzle generators available: **Jigsaw Puzzler**, by Anthony DeHart, works on any 64K Apple II model; **PixMix**, by Doug Happel, requires a IIGS. Although these programs are similar — they both load standard graphics images, then scramble the images into smaller separate squares you must reassemble — their interfaces couldn't be more different.

Jigsaw Puzzler operates under the DOS 3.3 operating system, but is only hampered slightly by this older system's limitations. The program requires a 5.25-inch disk drive, and you can't install it on your hard drive. Because the program operates on all Apple II models, it uses standard single-hi-res graphics images.

Users move the parts of the graphics images to the left or right by pressing left- or right-arrow keys respectively. Pressing the A and Z keys moves the puzzle pieces up or down.

When your system loads a graphics image, the program scrambles it into 15 squares and places these pieces, along with one blank square, on screen randomly. (The puzzle operates just like those plastic number puzzles you're sure to remember from childhood.) You move puzzle pieces around the screen in an attempt to recreate the original image.

There are three levels of difficulty and a dozen puzzles supplied on disk. Many puzzles are cartoon characters, but the easiest puzzle to solve contains only numbers.

Once you've mastered the numbers puzzle and feel comfortable with the program's operation, you'll be ready to make Mickey Mouse and his friends whole again. Jigsaw Puzzler is a fabulous program that children and adults will love.

PixMix employs the familiar Apple IIGS desktop interface — it sports pull-down menus and is completely mouse driven. This puzzle lets you load any single-screen Apple IIGS-specific graphics image of filetype $C0 or $C1, and it'll scramble it into six large parts, or up to 80 smaller components.

You move the component puzzle pieces around the screen with a simple click of the mouse. At any point you can use a pull-down menu to display the original image, letting you determine if you're on the right track.

The program includes several types of timers, and offers on-line help anywhere in the program. The optional use of grids makes the program appropriate for even preschoolers. One feature lets you check the placement of a square while you reassemble the graphics image. This capability helps you keep track of the numerous puzzle pieces that look alike.

The program also displays all menu options and help screens in either French or English. For kids of all ages PixMix brings hours of fun.

If these programs intrigue you, start with a visit to your local Apple user group. Chances are it maintains a library of public-domain software that includes these inventive puzzle programs as well as other mentally stimulating software for home or classroom use.

If you don't know the location of your local organization, call Apple Computer's User Group Locator at (800) 538-9696.

— **Joe Kohn**

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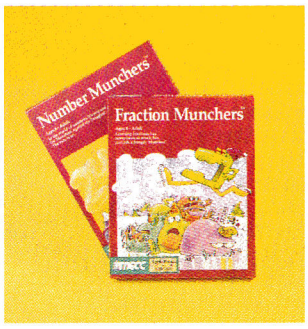

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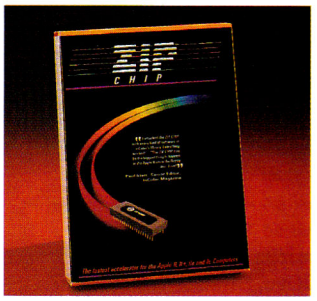

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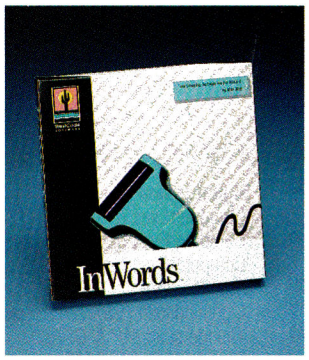

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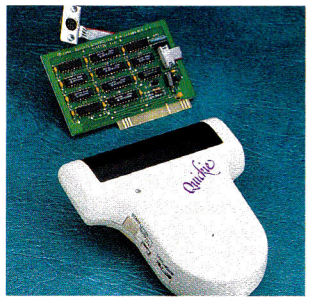

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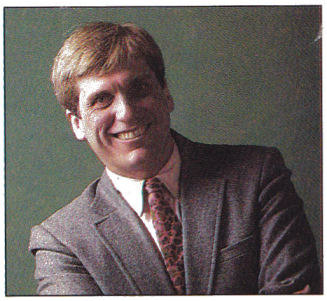


STATTUS REPORT

THE GREAT HUMAN HOPE

By PAUL STATT * SENIOR EDITOR

Everyone's language will change to accommodate the computer as computer languages change to accommodate us.

PITY GARY KASPAROV. THE REIGNING world chess champion is under attack from his opponents, supernatural spirits, and now machines. He even supports the beleaguered *perestroika* movement in the U.S.S.R.

As this issue of *inCider/A+* went to press (late January), Kasparov had just beaten his archrival, Anatoly Karpov, again in the world event. Kasparov once flirted with, and later renounced, a "parapsychological" approach to the game, employing extrasensory influences against his opponents. Karpov tried later, unsuccessfully, to turn those ghosts against Kasparov. And now in *How Computers Play Chess* (Computer Science Press, W.H. Freeman, New York, 1990), David Levy and Monty Newborn argue that Kasparov's "mission in life in the latter half of the 1990s will be to defend man against the machine."

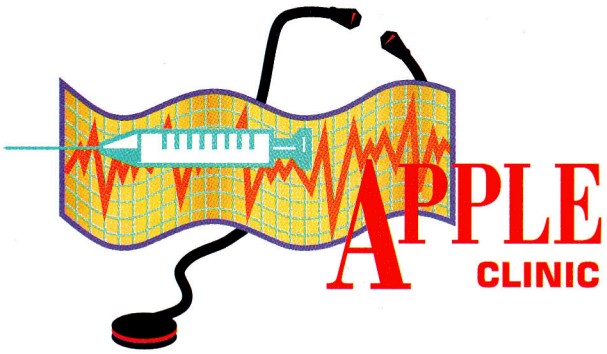
Can computers play chess? As you might guess from the title of this fascinating book, if not from your own experience playing against Chessmaster 2100 or Sargon, computers can certainly put up a convincing fight against a human opponent. Can computers play chess well? That question has been asked ever since Charles Babbage first proposed the analytical engine in the 1840s. *How Computers Play Chess* shows that programmers as early as Babbage had expressed some of the basic ideas, such as "look ahead" and "minimize losses, maximize gains," that were first given mathematical rigor by Claude Shannon in 1949, and continue to inspire chess programmers today.

The book's depiction of the specific details of how computers play chess will force you to consider how you play chess. For example, programmers can consider the endgame from two very different perspectives: the "database manager" and the "expert system." The database manager, taking advantage of the relative cheapness of memory storage, keeps records of "perfect play" for thousands of endgames and uses them as you might look up zip codes in a table. But "the database provides no understanding of the principles," according to Levy and Newborn. The expert system, on the other hand, knows only principles; it can "concisely specify a simple set of rules for optimal play." It's as if you figured that because your friend lives on the West Coast, the code must begin with a 9; because he or she is in Los Angeles, it's probably 90 or maybe 91, and so forth.

For a chess-playing computer, as for an anxious correspondent, brute force works best: The best endgames are played by computers that look up the answer in a large database. But the authors' sympathies, as well as my own, seem to be with expert systems — they're more elegant. My romantic appreciation of intuition has always prevented me from memorizing endgames. Perhaps I should reconsider.

What developments can we expect in the future? "In the long run, computers will be designed to handle richer languages," say Levy and Newborn, "while man will gradually adjust to the structure that computers impose on language." I'm sure the authors meant to include women; Kathe Spracklen is one of the developers of both Sargon and Chessmaster 2100. Everyone's language will change to accommodate the computer as computer languages change to accommodate us.

"However, as hardware improves and software packages and programming languages become more versatile," Levy and Newborn conclude, "the game of chess may become the game of programming chess." It's happened already in other fields. The business of forecasting business trends, for instance, has become the business of writing spreadsheets that can forecast business trends. There's still room for people, even if Kasparov loses someday to both Karpov and Deep Thought, the current computer chess champion, which he defeated twice in 1989. Reeducating the superstitious and rebuilding the Soviet Union may prove too difficult for artificial intelligence. We'll have to rely on ourselves. ❑



DIRECTORY ASSISTANCE

If you have GS/OS, you use subdirectories without even thinking. But those pathnames in ProDOS can look like mysterious selections on a Chinese menu.

By CECIL FRETWELL

KEEPING ORGANIZED

I'M AN AVID APPLEWORKS 3.0 user who keeps numerous files on floppy disk. I understand I can create subdirectories to help me organize and use these files more efficiently. Can you help me find concise directions for this procedure? Is there a way to change the names of these subdirectories or delete them entirely?

Mary A. Hart
Monroe, WI

If you've ever used GS/OS, you've probably created and worked with subdirectories without knowing it — GS/OS calls them folders. *Even if you're using ProDOS, the concept of folders is one of the simplest ways to think of subdirectories. A subdirectory is like a folder into which you place files or even other folders. To open a specific folder in GS/OS, double-click on the icon; to open a file, double-click through its layers of folders first. To open a file or folder in ProDOS, however, just add the file's or folder's pathname to the ProDOS command of your choice. (A pathname is just a set of directions for finding a particular file or folder.)*

For example, if you had a subdirectory called /ARCADE in the subdirectory /FUN, and you wanted to see a list of your arcade games, you'd type CAT /FUN/ARCADE. Similarly, if Tetris was listed under /ARCADE, you could run the game by typing -/FUN/ARCADE/TETRIS. The dash (-) runs a BASIC, machine-language, SYSTEM , or EXEC program.

When you don't specify a pathname, ProDOS commands work within the current subdirectory. When you use a ProDOS command with a specific pathname, however, you also remain in the current subdirectory. To actually change subdirectories (move to different folders) you must use the PREFIX command. You can delete directories just as you'd delete files in ProDOS. The only difference is that you can't delete a directory until you've deleted all files and directories within that directory. (AppleWorks 3.0 won't let you delete an empty directory, though.)

The system disk that comes with a IIc, IIc Plus, or IIe includes a utility program that can create subdirectories — but this disk can't rename them. A good file-management utility such as Central Point Software's ***Copy II+*** *($39.95; 15220 NW Greenbrier Pkwy, #200, Beaverton, OR 97006, 503-690-8090) or Glen Bredon's* ***ProSEL*** *($40; distributed by Charlie's Apple Seeds, 9081 Hadley Place, San Diego, CA 92126, 619-566-1297) will make your life a lot easier if you're dealing with a large number of disks and files. AppleWorks users may be interested in AppleWorks-specific programs such as Beagle Bros'* ***TimeOut FileMaster*** *($49.95; 6215 Ferris Square, Suite 100, San Diego, CA 92121, 619-452-5500) or JEM Software's* ***PathFinder*** *($20 plus $2 shipping and handling; 578 Lamar Court, Arvada, CO 80003, phone/FAX 303-422-4856). PathFinder requires AppleWorks 2.0 or higher or AppleWorks 3.0.*

For a description of subdirectories and other disk-management basics, read The Apple II Hard Disk Primer, *written by Gary Morrison and published by the National AppleWorks Users Group (NAUG, Box 87453, Canton, MI 48187, 313-454-1115). This book includes an excellent section on hard-disk-drive directories, but the principles apply to any disk.*

INGENUITY REPAIR

LIKE MANY OTHERS, I'VE BEEN orphaned by the failure of Ingenuity. My hard drive was D.O.A. out of the box. Before I could get back to the company, Ingenuity was no more. Can anyone repair Ingenuity drives?

Dave Eding
America Online subscriber

Bill Heineman can handle most repairs on Ingenuity hardware for a reasonable fee. You can reach him at Custom Software, Inc., 7734 S. Broadway Road, Whittier, CA 90606. Or you can reach him at home at (213) 695-3966 from 8 to 9 a.m. or 8 p.m. to midnight.

CHOOSING A MODEM

I'M PLANNING TO PURCHASE A modem for my Apple IIGS, so that I can access a bulletin-board system or transfer data from work. What are the facts regarding an internal or external modem? What is an MNP-5? How does it influence data being sent and received?

Michael A. Simard
Syracuse, NY

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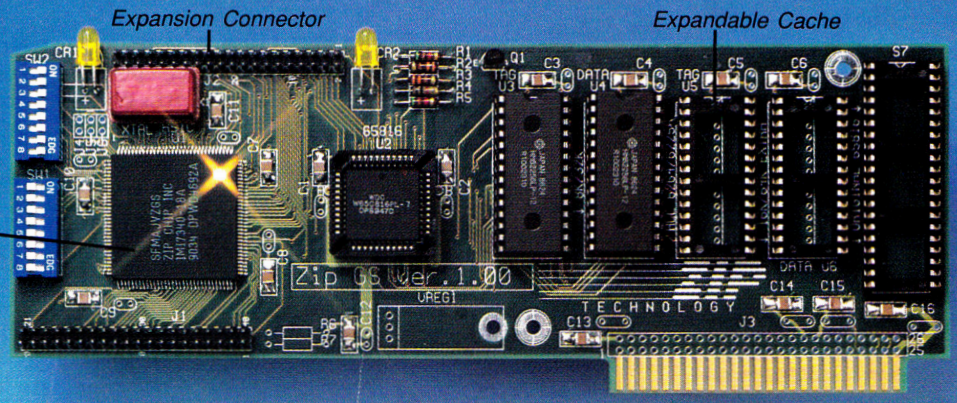

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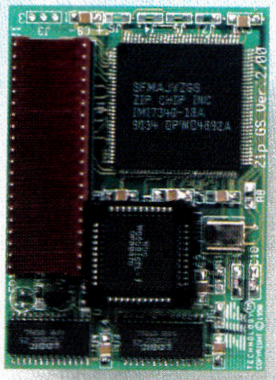

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The only advantage of an internal modem is that it doesn't take up any desk space — so you don't have to dust around it.

MNP *stands for* Microcom networking protocol. *Microcom Inc. developed this technology originally and placed it in the public domain. MNP is a compression/decompression technique with error checking; it uses techniques that recognize repeated sequences of characters and bit stream to compress files.*

The numbers 1 through 5 appended to the MNP protocol indicate its level and take into consideration the computers involved in the data transmission, the software being used, the types of modems being used, and so on.

If MNP is running on your system, it also must be running on the bulletin-board-system computer. Although your terminal software may support MNP, a bulletin-board system may not. Don't worry about this incompatibility too much, though — the bulletin boards that don't have MNP are few and far between.

I recommend paying a few extra bucks for a 2400-baud modem. This modem will usually run at the slower speeds of 300 baud and 1200 baud and will let you expand to a higher speed. Any modem and associated software you purchase should be Hayes compatible, because this is the industry standard.

DuoDisk Revisited

I READ THE ADVICE FOLLOWING D.S. Cronk's letter titled "SCSI DuoDisk?" (November 1990, p. 22) that advised using the interface card in slot 6 rather than the SmartPort in slot 5.

It was my understanding from the DuoDisk manual that you could use the product with the IIGS SmartPort as long as it was the last in a daisychain line. I've used my DuoDisk with the SmartPort for about a year — alone as the boot disk in slot 6 and daisychained to 3.5-inch disks.

For word-processing and general office work I use primarily AppleWorks 3.0 and two Apple IIGS systems equipped with the DuoDisk. Even after a fair amount of use I haven't detected any problems with the DuoDisk.

Disks written to and read from the DuoDisk are perfectly compatible with both the Apple 5.25-inch disk drive on my other IIGS and the ancient Disk II attached to an equally ancient Apple II Plus. I've

AppleWorks Clinic

By Claris Corporation and the National AppleWorks Users Group

Checking Grammar and Punctuation

Does anyone make a grammar checker that works with AppleWorks?

Users report success with two third-party products that check the grammar and punctuation of AppleWorks word-processing documents.

- **Sensible Grammar** ($99.95) checks for common grammatical errors, repeated words, punctuation errors, contractions, cliches, legal terms, and pompous, redundant, vague, wordy, or sexist phrases. The program offers suggestions and can replace any errors automatically with suggested words, punctuation, or phrases. Versions 1H and later of Sensible Grammar are compatible with AppleWorks 3.0. Contact Sensible Software at 335 East Big Beaver Road, Suite 207, Troy, MI 48083, (313) 528-1950 for more information.
- If you use an UltraMacros-enhanced copy of AppleWorks, you can use **Grammar Checker Macros** to check your word-processing documents for passive voice, extraneous words, sexist words, correct punctuation, a preposition at the end of a sentence, and commonly misused words. Unlike Sensible Grammar, Grammar Checker Macros don't offer suggestions; instead they mark each possible mistake with a tilde (~). You find the tilde and correct the mistake with AppleWorks. To obtain Grammar Checker Macros send an SASE, a disk, and a $3 processing fee to developer Will Nelken (Marin MacroWorks, 1675 Grand Avenue, San Rafael, CA 94901, 415-459-0845), or contact your local Apple user group or NAUG's public-domain library, or check out the AppleWorks areas on GEnie and America Online.

Trouble Loading

Most of the word-processing documents I prepare with AppleWorks 3.0 at home load into AppleWorks 2.1 at school. Occasionally, however, I can't load a file into the earlier version of AppleWorks. I don't use tabs or other features that are new to AppleWorks 3.0. Why won't these documents load into AppleWorks 2.1?

Documents you create with AppleWorks 3.0 won't load into earlier versions of AppleWorks if you use tabs, the print-date function, footers, headers, or any of the other enhanced features in AppleWorks 3.0. Once you use a new feature you can't load the file into earlier versions of the program even if you delete the feature from the file. For example, if you press the tab key even once by mistake, the file won't load. The reason becomes apparent when you know how AppleWorks 3.0 works.

The first time you use a new feature, AppleWorks 3.0 inserts a "flag" near the beginning of the data file on your disk. Deleting the new feature doesn't change the flag. As soon as earlier versions of the program encounter the flag they stop trying to load the file and generate the error message.

To convert these files back to the format used by earlier versions of AppleWorks, you have three options:

1. Delete all the new commands and features from the file. Then create a new word-processing document and use the AppleWorks clipboard to copy the file into the new document.
2. "Print" the document as a text (ASCII) file on your disk, then load the text file into the earlier version of AppleWorks. AppleWorks deletes all commands when it prints a file to disk; thus you can load the file into any version of the program.
3. Use Change-A-File, a public-domain program that converts AppleWorks 3.0 documents to the format used by earlier versions of AppleWorks. You can get this product from most local Apple user groups, from NAUG, or from the AppleWorks areas on most telecommunications services.

En Espanol

I'd like to print Spanish characters with AppleWorks 3.0 on an ImageWriter II. Is this possible?

Stop penciling in those tildes and accents — printing with Spanish char-

acters is easy. (You also can print French, German, Swedish, Italian, and Danish characters, too. See your ImageWriter II manual, p. 113, for the codes that let you print in these languages.)

• Add a second ImageWriter II printer from the list of printers in AppleWorks 3.0. When you're asked to give it a name, call it Spanish IW.

• If you use an Apple IIe, add the character-set code in the interface-card area for the language you want to print. If you have an Apple Super Serial Card, enter Control-I 80N ESC D Control-G Control-@ to print with Spanish characters.

• If you use an Apple IIc or IIGS, no interface card is required, so type the language's character-set code in the special-codes section. (For Spanish, type ESC D Control-G Control-@ followed by Open apple-Return.) Now go to Printer Codes and select Special Codes. Define Special Code #1 as "Spanish." Insert ESC D Control-G Control-@ and exit by pressing Open apple-Return. After you enter code #1 at the beginning of your document, you can print "español" by typing "espa|ol" on your keyboard. (On paper, ñ replaces |.)

• Depending on the characters you want to use, you may not need to use these character-set codes at all. If the foreign characters consist of one character on top of another (ñ, for example) you can define another code as a "backspace code" and make the characters print on top of each other rather than side by side. (Insert Control-H as Special Code #2, then exit by entering Open apple-Return. Control-H makes the printer head back up one space and print the tilde over the preceding letter.) To print "español," for example, type "espan," then press Open apple-O for Options, then choose SC and 2. Now press Escape, then press the shift key followed by the tilde, and type "ol." You'll see "espan^~ol" on screen, but "español" on your printout.

Although you can print an ñ with either method, to print an accent mark you must define a Special Code.

Go to Printer Codes and select Special Codes. Press Open apple-O and choose SC and 2, then press Escape. Type the accent mark immediately after the letter that requires it. As in the previous example, the Control-H command makes the printer head back up, but this time it prints an accent. Although you'll see atra^'s on screen, your document will "read" atrás.

Correct Proportions

Is there any way to scale a graphics image proportionally in AppleWorks GS?

AppleWorks GS version 1.1 offers proportional scaling of graphics images. Just follow these steps:

• Save a document containing the image you want to scale in either AppleWorks GS graphics format or Apple Preferred format.

• Open an AWGS page-layout document and import your graphics document by selecting Import File. . . from the File menu.

• Hold down the shift key while dragging the image you're importing — the program will scale it to the dimensions you create when you drag the mouse. If you want to be precise, use the ruler to determine the length and width of the image. You can then copy and paste it back into the graphics module if you want to manipulate it further with the graphics tools.

Not Up to Size

Why do graphics images get squashed vertically when I print in Condensed mode of AppleWorks GS' page-layout format ? How do I get around this?

The AppleWorks GS page-layout print default is set to Normal. Select Condensed mode from the File menu's Page Setup and you'll compress the text and graphics images vertically. Compensating for this graphics compression requires that you stretch the image to approximately twice its usual height.

With AppleWorks GS 1.1 you can import a graphics image and have it come into page-layout mode already stretched. (You won't have to do it manually.) To do this you must import a graphics document into page-layout mode (remember to choose Condensed mode from the Page Setup), hold down the option key (to place the graphic), then click on the mouse while still holding down the option key. You'll import everything in your graphics document in a stretched state.

Uncovering Records

When I select some records in AppleWorks GS and choose "Hide all unselected records" all my records in the database become hidden. Why?

Make sure you select each of the record's fields (columns). If you select only one field the program doesn't register that you selected the record at all.

Can't Save It

My AppleWorks GS 1.1 program occasionally doesn't let me save files to my floppy disk. Instead of saving the file or giving me an error message, the program doesn't save the file at all. What's the problem?

This problem occurs with AppleWorks GS 1.1 whenever you try to save a file with an invalid name. Valid names for ProDOS-format files begin with a letter, include 15 characters or fewer, and contain no spaces or punctuation marks except periods.

When you try saving a file with a bad name, AppleWorks GS will move to the next volume or partition as if you'd pressed the Volume button. This quirk is a function of the operating system, not the program itself. Although the old version of AppleWorks GS wouldn't let you enter invalid characters, version 5.2 of the GS/OS operating system lets you enter a name, without warning you that it isn't in the proper format.

This problem, however, isn't an oversight. GS/OS 5.2 developers designed the program so it'd be flexible enough to let you open and save files with Macintosh-style filenames — if an appropriate disk becomes available.

Faulty Impression

How do I copy a formula in one cell of the AppleWorks GS spreadsheet to a range of adjacent cells? When I press Open apple-C to copy the source cell to the Clipboard, then use the mouse to select the destination range, and press Open apple-V to paste to that range of cells, the source cell is copied to only the first cell of the destination range. How can I copy the source-cell formula to the entire destination range?

Use the Fill option (pull down the Edit menu or press Command-F) instead of the copy and paste options to copy a formula or text from a source cell to an adjacent destination range. Position the pointer on the source cell, then drag down or across the destination range. In other words, include the source cell and the destination range in the same selec-

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also successfully used AppleWorks GS, HyperStudio, and the System 5.0.2 Finder on the same computers, with the DuoDisk daisychained to Apple 3.5-inch disks.

I'd say that using the SmartPort is possible with the IIGS and that the DuoDisk control card isn't needed on the IIGS at all.

James E. Mullins
Alexandria, VA

Thank you for taking the time to pass on your experience with the DuoDisk. I should've mentioned that the DuoDisk works fine as the last physical device in a daisychain.

Do I Have It?

WHAT'S AN ENHANCED APPLE IIe and how do I know if I have one? What extra features does it have? Do I need those extra features?

Alfred Roberts
Livingston, NJ

The enhanced IIe cleared up some ROM (read-only memory) software bugs that existed in the original IIe. For the user, the enhanced IIe provides the mousetext characters introduced by the IIc.

For the developer, the big advantage (besides the bug fixes) is that the enhanced IIe with its 65C02 microprocessor offers a more powerful assembly-language instruction set. The disadvantage is that if you include new 65C02-compatible instructions in an assembly-language program, nonenhanced IIes (those with a 6502 microprocessor) can't execute them.

If you have a IIe, activate Applesoft and enter the command PRINT PEEK(64448). If your screen displays the number 234, you have the original Apple IIe. If it displays 224, you have an enhanced IIe.

APPLE CLINIC IS A FORUM FOR ANSWERING YOUR QUESTIONS ABOUT APPLE II HARDWARE AND SOFTWARE. ADDRESS YOUR CORRESPONDENCE TO APPLE CLINIC, *inCIDER/A+*, 80 ELM STREET, PETERBOROUGH, NH 03458. BECAUSE OF THE VOLUME OF LETTERS, MOST WON'T APPEAR IN PRINT, BUT WE'LL TRY TO RESPOND IF YOU ENCLOSE A SELF-ADDRESSED, STAMPED ENVELOPE.

AppleWorks Clinic

tion. Once you've made the selection choose Fill and you'll copy the formula to all the destination cells. (See pp. 190–191 in the AppleWorks GS User's Guide for more information.)

To copy a formula to a set of nonadjacent cells, paste one duplication of the formula to the first cell of the desired destination, then use the Fill command to copy that formula to the entire destination range.

And/Or Functions

I want to use the And and Or functions to select records in an AppleWorks GS database. For example, I want to select all records in which the last name is SMITH and the state is CA; I want to select all records in which the last name is SMITH or the state field is CA. Each time I try, I get an error message that my selection condition is incorrect. Can you list some examples showing the correct usage of these functions?

Enter selection conditions, then choose Match Records from the Organize menu.

•To select all records that contain the last name Smith and the state CA, enter the following condition:

And([lastname] = "Smith", [state]= "CA"), where [lastname] and [state] are field names.

•To select all records in which the last name is SMITH or the state is CA, enter the following condition:

Or([lastname] = "Smith", [state]= "CA"), where [lastname] and [state] are field names.

You can simplify the entry of selection conditions by double-clicking on the desired field names such as State, the operators such as +, / , or the functions such as Concat from the Fields, Operators, and Functions windows in the dialog box that appears after you select Match Records.

Speed It Up

I like the look of my document when I print in Better Color mode. Is there any way to speed up my ImageWriter and still get a quality output?

If you don't have the time to wait for documents to print in Better Color mode, AppleWorks GS 1.1 now offers two intermediate print settings for those who want attractive documents without waiting for the ImageWriter to print graphics fonts. These modes let you access the near-letter-quality and the correspondence-mode fonts built into your printer.

Because AppleWorks GS doesn't need to take the time to draw each letter and send the dot pattern to your printer, your work prints at a faster speed.

Here's how to access the modes from the print-dialog box.

- To get near-letter-quality output, select draft mode, then hold down the Option key as you click on "Ok" to start printing.
- To get correspondence-quality output, select draft mode, then hold down the Apple key as you click on "Ok" to start printing.

If you don't hold down any keys at all, you'll get standard draft-mode print. Because most AppleWorks GS text effects are beyond the capabilities of the built-in ImageWriter fonts, your printouts in this mode won't reflect any of the size, style, or font changes you've made to the text in your document; you also can't print "extended" or foreign characters.

This method, however, makes simple memos and reports look professional in a fraction of the time Better Text output requires.

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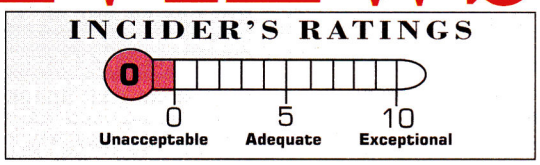
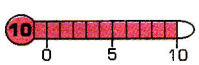


PLATINUM PAINT

Beagle Bros
6215 Ferris Square, Suite 100, San Diego, CA 92121, (619) 452-5500

Paint program; 1-megabyte Apple IIgs; one 3.5-inch disk drive, two recommended; color monitor; System Software 5.0.3 or later; no copy protection; $99.95



Since the early days of personal computing, unearthing the rare program that merits an unequivocal recommendation from the *inCider/A+* staff has been like searching for the Holy Grail. Unlike that legendary treasure, though, our latest find isn't gold, it's platinum — as in Platinum Paint, an astonishingly rich creativity program for professional artists and "artistically impaired" hobbyists alike.

If you're familiar with other existing — or even discontinued — paint programs for the Apple IIgs, Platinum Paint may give you a fleeting case of déjà vu, but similarities between this Beagle Bros product and programs such as Deluxe Paint II and Paintworks Gold are only skin deep.

PRECIOUS METTLE

Platinum Paint works in tandem with System 5.0.3, which the package provides on a second 3.5-inch disk. This recent version of the Apple IIgs operating system sports a graphical Control Panel with which you can set preferences including mouse-click speed, sound volume and pitch, and option-key translation. Accessing Platinum Paint's special option-key commands should prove attractive to power artists.

As you may surmise, a product requiring separate system and program disks works more seamlessly with two 3.5-inch disk drives than with a solitary one, but disk swapping isn't bothersome enough to prevent you from considering Platinum Paint if you have just a basic GS system. Platinum Paint isn't copy protected, so you can install it on your hard-disk drive, and the program takes advantage of memory beyond the 1-megabyte minimum required.

You can print Platinum Paint creations in black-and-white on an Apple LaserWriter — or in black-and-white or color on an ImageWriter II. Color printouts will disappoint you if you compare them to the brilliant RGB-screen appearance of your paintings, signs, illustrations, or scanned images. Thanks to the growing popularity of desktop presentation and hypermedia applications, however, we wouldn't be surprised if many Platinum Painters end up using the program to design decorative title frames for home-grown videotapes or to create illustrations and animations for HyperStudio or HyperCard GS stacks.

Photography by * Frank Cordelle

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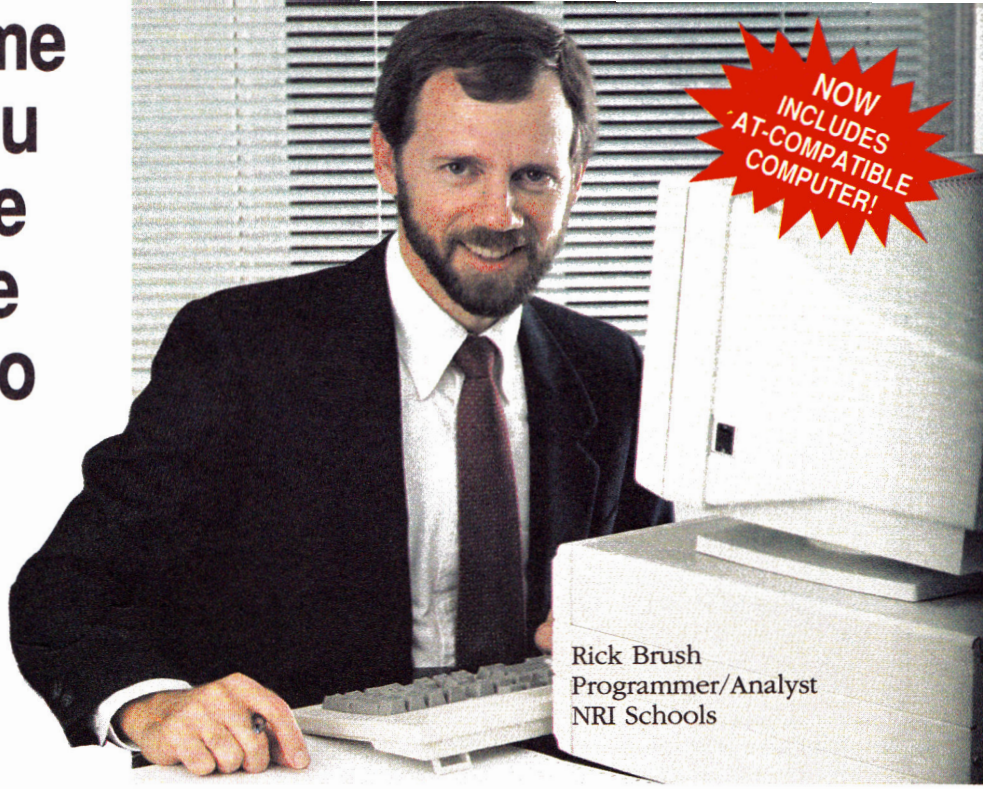

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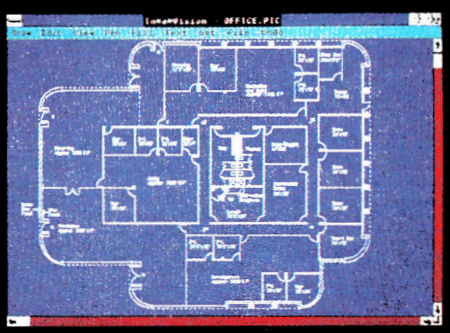

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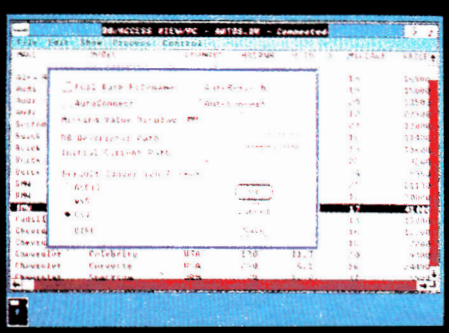

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If you just want to have some fun, playing with Platinum Paint is like being home alone in a warehouse of art supplies. Like most other paint programs, Platinum Paint provides a host of taken-for-granted tools: a lasso, a marquee, a hand tool, a text tool, brushes (dozens of them!), an airbrush, a paint bucket, an eraser, and a pencil. There's the usual assortment of solid and hollow shape tools, too — and pop-up palettes (with 16 colors and as many patterns) for pen, border, and background design.

Platinum Paint tools have more "smarts" than usual, though: They work with modifier keys (Apple, Option, Control, and Shift) to perform powerful tasks effortlessly. For instance, Apple-clicking the pencil tool (pressing the apple key while clicking the mouse on the pencil tool) switches the screen view to *FatBits* (four times the magnification) mode. Pressing the open-apple key while selecting the airbrush tool lets you resize its nozzle. Pressing the option key while using the lasso doesn't cut an image; instead it makes a copy. Press the control key and a shape tool will drop a shadow automatically. Press Shift, and the brush tool will be constrained to slather paint horizontally or vertically.

The program's ten pull-down menus — *Apple*, *File*, *Edit*, *Misc*, *Window*, *Mode*, *Mask*, *Font*, *Style*, and *Size* — store a wealth of features. Two of these menus (*Edit* and *Misc*) stock so many surprises that they extend beyond the normal screen limits, requiring you to scroll to see every option.

For an inkling as to Platinum Paint's countless capabilities, just take a look at the *Edit* menu. Besides the usual cut, copy, and paste options, other choices let you take anything lassoed or marquéed and brushify (make a custom brush), invert, lighten, darken, shade, wash, smooth, halve, double, stretch, slant, or rotate it. You can even flip it or mirror the image — horizontally or vertically. Make further refinements via pop-up dialog boxes such as the one that lets you choose the degrees of rotation.

LIVING COLOR

A stroll through the *Misc* menu provides even more insight into Platinum Paint's treasure trove of features. Select and edit one of the program's default patterns or one of the half-dozen built-in paint palettes. Create a custom palette by selecting colors from the series of 16 "pages" that display 256 colors each, for a total of 4096 possible colors. Building a Platinum Paint palette this way is almost as easy as picking colors for your home from the paint-chip display at your local hardware store.

The *Fill/Range* option lets you select and mix colors in up to four sets and use these ranges either for color-cycling animation or in conjunction with the paint bucket and gradient-fill methods. These techniques can enhance a painting's realism and reduce its "computerish" appearance.

Other features that make Platinum Paint shine include an invisible (although adjustable) alignment grid, a word processing-like search-and-replace function for swapping colors, masks for protecting selected colors or areas, a medicine dropper tool for changing pen color quickly,

Platinum Paint: An artist's tool.

and full page-preview mode for figuratively stepping back to evaluate your work.

The Platinum Paint package doesn't provide any clip art, but more than a dozen sample files let you view or play around with an assortment of program capabilities. Our favorite sample file lets you brushify a digitized image of the Woz (Steve Wozniak, designer of the original Apple II) to try out the program's *Squish Brush* feature. Another file lets you view the effects of various editing commands on Bart Simpson's head.

Platinum Paint supports animated sequences created by Paintworks Plus or Paintworks Gold. When we couldn't find the Paintworks animation file referred to in the program manual, we tested this feature with some Paintworks animation sequences we acquired years ago from reader Clark Andrews, and they worked fine. Feel free to use any of your own Paintworks animations.

One of our favorite Platinum Paint features is *Preferences*, a dialog box that lets you choose custom program defaults. For example, we like to paint in the GS' high-resolution 640 mode, even though that means the program must use dithered as opposed to pure colors. But thanks to Platinum Paint's *Dither Lock* feature our work usually looks good just the same.

The *Preferences* dialog also provides *Shadow* and *FastPort* options to speed up the drawing process as well as a *Screen Blank Delay* function that blacks the screen after a specific time period. Without screen blanking, bright images can become engraved permanently in the monitor screen.

POWER PAINTING

Instead of repeatedly accessing menu options with the mouse, you can choose from the dozens of keyboard commands that Platinum Paint supports. Pressing the *5* key, for instance, changes the brush to charcoal style automatically, precluding the need to select that method from the *Mode* menu. Other keys let you switch to normal or matte brush mode and smear, slide, shade, wash, smooth, or blend paint.

Some Platinum Paint keyboard commands — such as Open apple-S (OA-S) to save, OA-P to print, and OA-Z to undo or "zap" the previous change — may already be familiar to you. With practice, you'll master additional shortcuts. Meantime, the *Key Command Reference* section of the program's well-written, well-organized manual provides a somewhat handy reminder list. Because a full-featured art program such as Platinum Paint is no easier to learn than a full-featured anything else program, we think Beagle Bros should consider including a separate laminated quick-reference card listing the program's alternative keyboard commands.

Besides its storehouse of hi-tech paint tools, Platinum Paint provides plenty of canvas, too. In fact, you can display and work on as many as four separate documents (paintings) simultaneously. Moreover, each document can have its own "spare page" on which to try out ideas before incorporating them into your work.

Another feature that should appeal to many traditional artists is Platinum Paint's capability to let you customize the program screen. You can hide virtually everything (tools, shapes, menu bar, title bar, and so

on) and enjoy a clean drawing board free of distracting clutter. Thanks to an optional *Info Bar*, you can view x, y, and delta coordinates, as well as gain quick access to pull-down tool and paint/pattern palettes.

Amateur artists who have no intention of creating original artwork can still nurture their latent talent by editing or embellishing canned clip art. This product imports Apple IIGS graphics in Apple Preferred, SHR (super hi-res), and Print Shop GS format. (Platinum Paint didn't recognize our AppleWorks GS graphics, though.) In addition, the product successfully imports MacPaint files as well as single- and double-hi-res graphics images from 8-bit Apple II programs, including The Print Shop, Dazzle Draw, and Publish It!.

Kudos to Matthew Reimer and Beagle Bros! Their quest for the perfect paint program means that GS users itching to stretch an artistic muscle or two need supply only a modicum of talent. This state-of-the-art art program will do the rest.

Cynthia E. Field, Ph.D.
Wakefield, RI

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Scanman for Mac+, SE, II. $149.00

Mimimum Shipping & Handling Charge $5.00. Some Products may be used/refurbished but still carry a 90 day warranty, inquire at time of purchase for more info on specific products. Above Prices are subject to change without notice. Refunds subject to 20% restocking fee. We are not responsible for products purchased in error. Our liability is limited to purchase price only.
IIe& IIc Keyboards, Apple II and Mac P/S, other products are subject to exchange, some credit available for other bad parts.

Circle 103 on Reader Service Card.

GENESYS 1.2

SIMPLE SOFTWARE SYSTEMS INTERNATIONAL
4612 NORTH LANDING DRIVE NE,
MARIETTA, GA 30066, (404) 928-4388

Programming utilities for GS user interface; 768K Apple IIGS; one 3.5-inch disk drive (additional memory and disk capacity recommended); no copy protection; $150

DESIGN MASTER

THE BYTEWORKS
4700 IRVING BLVD. NW, SUITE 207,
ALBUQUERQUE, NM 87114, (505) 898-8183

Programming utilities for GS user interface; 768K Apple IIGS; one 3.5-inch disk drive (additional memory and disk capacity recommended); no copy protection; $95

Being an amateur programmer who wants to write desktop-interface programs for the IIGS isn't easy. After you choose and learn a programming language, you must understand the basic structure of desktop programs, then master the material in Apple's three-volume *Toolbox Reference*. Genesys and Design Master are designed to make your life easier by letting you "draw" the typical user-interface elements of a IIGS program. Genesys is the more ambitious of the two, but Design Master gives the beginning IIGS programmer a first-rate introduction to desktop programming with a well-written manual and a more structured work environment.

The IIGS desktop is designed around templates and tool calls. There are three dozen commonly used templates for desktop items, such as windows, lists, icons, pop-up menus, text-edit areas, and so on. Many templates, such as those associated with menus and windows, are grouped together and provide easier programming and consistency in the Apple interface. To create a menu bar, for example, you only need to manipulate the menu-bar template that's already available, and then call the appropriate toolbox routine.

Genesys and Design Master, though, go a step further. With these utilities you "draw" your windows on screen with a mouse, then type in what you want them to contain. The utilities generate the source code for the template. Genesys and Design

Master support the new-style resource-based programming (System 5.0.2 and later) and the older form of templates that are included in the *data fork* (the part of the program containing information the commands act on). Both utilities create the most common templates, although Genesys supports a few more, including alert strings, tool tables, and cursors.

Overall, Genesys is more flexible, but its open style may intimidate beginners. This product lets you choose any of 22 templates instantly, and you work with them in any combination. Design Master, however, is more straightforward. From its *File* menu you may choose to create a new menu bar, dialog box, or window. All other templates are associated with one of these three structures and you can work on only one type of structure at a time. But if you're developing a program with a more sophisticated user interface, Genesys' flexibility is an important asset.

After designing an item such as a menu bar, both programs let you "test drive" the item. Genesys and Design Master have aids for positioning items accurately on the IIGS graphics screen and context-sensitive help screens, and both support the same common IIGS programming languages, including ORCA/APW and Merlin assembler, C, Pascal, and REZ, a special language that creates *resource forks* (the part of the program that contains commands). Genesys also supports three different kinds of Pascal — ORCA, TML, and MPW. Design Master, however, creates a general source code so that most Pascal compilers should understand it with few modifications.

THE FAVORITE

After working with both programs, I found myself returning to the less restrictive Genesys. If you want to reposition an item within a menu, Design Master makes you delete all subsequent items and rebuild the menu. With Genesys all you need do is click on the item and drag it into place. You can also customize Genesys in a number of ways — the *New Application* command found in the *File* menu creates a default set of templates; you can define those you want to include. You can even tailor source-code generation to your particular compiler.

Although Design Master creates resource forks, Genesys reads and writes them, making this utility truly a resource editor. Design Master uses a custom file type to store template definitions, while Genesys uses resource forks for all its storage requirements.

Genesys even can edit the resource forks of other programs. If you don't like a particular interface feature, whether it's the look of an icon or the message in a dialog window, this utility will let you change it. Make any changes with caution, though, because fouling up a program is easy.

Design Master's chief advantage is its manual, which is primarily a tutorial on using Design Master to create a functional text editor. The manual covers the basics of desktop programming using both the data and resource forks.

Although the manual uses ORCA/Pascal for its examples, both ORCA/APW assembler and ORCA/C versions of the same program are included on the distribution disk. Genesys features sample sessions in its manual, but the Continued on p. 76

Outstanding in its Class.

"they're willing to take risks, the simplicity gives them courage. The results are positive without a hassle, there are no problems because there is nothing to be afraid of...an easy threshold to step across."

John B. Bishop, Judge Baker Children's Center, Boston MA

Now Shipping, **Delta Drawing Today** is the most flexible software written for PreK-3. Self-paced for individualized instruction, it's so easy that users create successful drawings with the first keystrokes. The more Delta Drawing is used, the more skills are acquired. Some of these skills include:

- Basic concepts of left, right, up, down
- First phonics with simple letter commands
- Shapes, colors, patterns and mathematical logic
- Letter and word recognition
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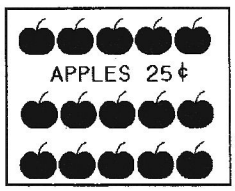

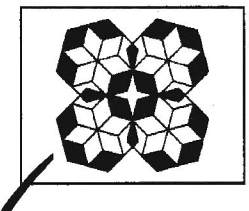

Delta Drawing Today works on all Apple II/IIGS and Mac LCs with the Apple II board.

Call Power Industries : 800-395-5009

Delta Drawing™ Today

Software for Exploration and Discovery

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Circle 121 on Reader Service Card.

100 ISSUES OF INCIDER

The year was 1983. The IIe and the Mac were only rumors. The III was alive and well, and everyone was an Applesoft programmer.

❖ A LOOK BACK ❖

Surprise! After eight years and more than 14,000 pages, *inCider* is still going strong.

By THE STAFF OF INCIDER/A+

INCIDER SCOOPS

October 1986

Our biggest scoop ever: the **Apple IIgs**, a truly "amazing" machine, as Apple Computer cofounder Steve Wozniak pronounced it. inCider agreed: calling it "a sensation . . . a world-beater . . . a phenomenal achievement . . . a hi-tech tour de force." What was all the fuss about? Sporting a true 16-bit microprocessor, dazzling super-hi-res color, sensational sound capabilities, and a mini-IIe on a Mega II chip, the GS was the first totally new machine that remained hardware- and software-compatible with an older model. Subsequent developments over the next four years — including the release of GS/OS, a powerful operating system that finally tapped the machine's true power, and third-party support in the form of scores of 16-bit programs displaying the Apple (Mac-style) standard interface — established the GS as the Apple II model that could meet all home, school, and small-business needs.

December 1986

It was kind of clunky, kind of homely, but Video Technology's (later Laser Computer's) enhanced-IIe knockoff, the **Laser 128**, surprised the Apple world with its low, low price and 95-percent compatibility with 8-bit programs. Subsequent incarnations, sleeker looking and faster — the 128EX ("a power user's hot rod," according to Eric Grevstad), the 128EX/2, and the 128 Color System — have continued to sell for well under $1000, including monitor, disk drive, and bundled software. It's the right computer at the right price for thousands of 8-bit Apple II software fans.

March 1988

GEOS — the ProDOS-compatible Graphic Environment Operating System from Berkeley Softworks, with a Mac-style desktop plus integrated desk accessories, paint program, word processor, spelling checker, and more

THROUGH THE PAST IN 15 COVERS

We wouldn't want you to judge 100 issues of inCider by looking at just 15 covers; however, this brief chronology brings back a few memories.
For example, do you remember when the Apple IIe was brand new?
Do you recall the orignal name of AppleWorks GS?
Can you name the famous folk singer who uses AppleWorks?
And, just for fun, count the number of times our logo changes.

THE COMPETITION

— was a welcome shot in the arm for 8-bit Apple II users. According to our March 1988 cover story, "GEOS [was] the biggest Apple II software news in years." Not only was the base package revolutionary in its own right, but it paved the way for other GEOS productivity programs to follow, such as GeoCalc and GeoFile (reviewed in February and March 1990).

July 1988

In our July 1988 issue, we broke the story of a most ambitious new product: **GS Works**, a 16-bit program sporting the Apple (Mac-style) interface in six integrated modules. With word-processing (plus spelling checker and thesaurus), database-management, spreadsheet, graphics (painting and drawing), page-layout, and telecommunications functions, Styleware's package promised to be a formidable force in the GS marketplace. Claris knew a good thing when it saw it; within a year the company bought GS Works and renamed it AppleWorks GS. It's the all-in-one solution — slow-moving, but with a degree of integration unprecedented among Apple IIs.

May 1989

Apple Computer moves into video in a big way with the release of the **Apple II Video Overlay Card** for the IIe and GS. It's the first genlock board ever made for the Apple II: Connecting your computer to a VCR, video camera, laser-disc player, or TV signal, it synchronizes the two sources and lets you merge computer graphics — text, pictures, and animation — with video the way the professionals do (not just adding text frames between video frames). For family projects, school reports, and presentations, the Video Overlay Card promises a high-quality solution that's fun, too. Of course, inCider went right to the top for its first project: We "embellished" Marilyn Monroe's beautiful face in a series of frames from "The Seven-Year Itch."

Apple's original logo

The Apple Family Tree

Woz & Jobs

Apple I

Unnamed MS-DOS Clone

Apple II

Apple III

Apple IIe

Franklin Ace 1000

Xerox Star

Lisa

Orange +

Mac

Apple IIc

Laser 128

Apple IIGS

Franklin Ace 2000

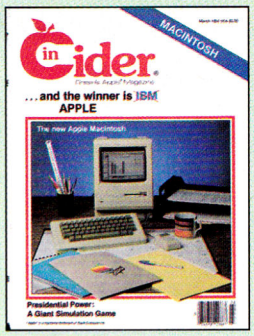
Apple IIc Plus

Laser 128 EX/2

Mac LC

March 1983

It's Apple's new IIe under there. What you probably didn't know was why we kept the IIe on the cover under wraps — at press time we had no idea what it would really look like.



March 1984

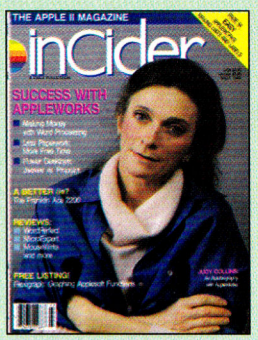
This was the last Mac on a cover until the introduction of the LC in 1990. Our coverage of the original Mac lasted two months, and featured reviews of MacWrite and MacPaint.

July 1984

A new look for Apple and for inCider: the sleek Apple IIc, crafted by frogdesign, the firm that later created the Apple IIGS and the Mac LC, and a stylish new inCider, by designer Judy Oliver.

January 1985

We didn't call it hypermedia, but even in 1985, inCider recognized the power and promise of multimedia (though we didn't call it that, either).



March 1986

Even computer geeks get to meet the famous. Singer/songwriter Judy Collins brought individualism to her Apple IIc, and Paul Statt came back from NYC with a grin that lasted for weeks.

WE PREDICTED IT

"I have no wish to quibble with Apple Computer, Inc., but it does seem as though they are totally neglecting one type of system, the low-end system."

— Hartley Lesser, January 1983

"The Apple will cost a bit more if mail-order discounting is discontinued."

— Wayne Green, March 1983

"Barring unforeseen technical glitches and assuming that a reasonable software library is in place by the end of the year, the Macintosh should establish itself as the next standard in personal computers."

— Bob Ryan, March 1984

"The design philosophy behind the Apple IIc is similar to that behind the Macintosh. Apple designed the IIc to be an appliance. You don't have to know how the computer works, only how to use it."

— Bob Ryan, August 1984

"Quark, MegaHaus, and Broderbund will offer desktop-publishing software that will take advantage of the built-in LaserWriter drivers in the Apple IIGS firmware."

— Paul Statt, October 1986

WHERE ARE THEY NOW?

Wayne Green

Nut? Genius? You make the call. Wayne did come up with the name inCider. That's all we'll say about our founder. What's he up to these days? After selling his stable of magazines to IDG Communications in the summer of 1983, Green took a still-undisclosed wad of cash across town, where he started Wayne Green Enterprises. While there were only a handful of titles available on compact disc, mostly classical music, Wayne recognized the potential of this new medium and started Digital Audio. The magazine is called CD Review now, and it's going strong. We're waiting for Wayne's next great idea. He's due.

Eric Grevstad

The best writer to ever work for inCider, Grevstad shed his affinity for the cryptic (MS-DOS) for almost two years as inCider's review editor. Grevstad singlehandedly persuaded Laser Technology to improve the color and contour of the Laser 128 after he described the original computer as "about as pretty as a barracks-beige Army jeep." After endearing himself to the Apple II community, he went on to hold the executive editor spot at PCResource. Today, Grevstad freelances for computer magazines. Look for him to return to inCider/A+ in an upcoming issue with a comparison of grammar checkers.

Mike Perlis

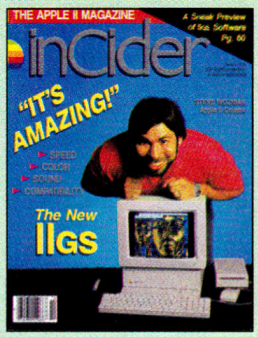
inCider's publisher for only five issues (April 1985 to August 1985), Mike is perhaps our most prestigious alumnus. After his promotion from publisher of inCider to president of IDG Communications/Peterborough, Mike remained involved with the publication through our 1989 merger with A+. In the summer of '89 Mike left for a job some people (not us, of course) might envy: publisher of Playboy. He reports that it's not as glamorous as you might think and that it's really not much different from running any other large magazine. Yeah, right.

Bob Ryan

Bob (on the right) was inCider's technical editor from November 1983 to February 1986. Ryan, who's been referred to as an "electrical engineering god," broke stories on the IIc and the Mac. Bob's at BYTE now, where he's writing and editing stuff we don't understand. He's also just completed a book called The AmigaDOS2 Companion. Hey, it's his first book — give him a break.

Sam Whitmore

Sam was assistant editor of inCider during its inaugural season and frequently wrote inCider's commentary, called Fermentations (swear to God). Sam's reporting talent took him to PC Week; today he's editor in chief of that monolithic computer industry weekly. Contacted on the 100th issue of inCider, Sam responded, "inWhat?"



October 1986

The Apple IIGS was the computer that Woz always wanted Apple to build — but why didn't it run Mac software? Not much GS software was availble at rollout — an ominous sign.

July 1987

Say what you will about inCider, but at least we outlived Max Headroom. We just hope we outlast the popularity of New Kids on the Block and Vanilla Ice, too.

July 1988

Styleware introduces a revolutionary product called GS Works. Within a year this six-in-one integrated product belongs to Claris and is renamed AppleWorks GS.

November 1988

Of the new IIc Plus we asked, "Fast and compact, but is the price right?" Evidently not; the IIc Plus was dropped from Apple's price list just two years later in November 1990.

August 1989

With AppleWorks 3.0, Claris proved it could gild the lily. If you felt the "need for speed," our article on accelerators told you who could get you where and how fast.

DUBIOUS ACHIEVEMENTS

(Sorry, Esquire. You can borrow the title "Apple Clinic" if you want.)

THE GLORIA STEINEM AWARD FOR THE MOST-SEXIST AD

Taxan, March 1984 (p.19)

There are probably sleazier ads to choose from, but we couldn't resist this rich-blonde-in-a-fur-coat cliché. We can just hear the Taxan art director now: "Damn it, honey, smile, and don't smudge the Rolls!"

OXYMORON OF THE DECADE

"Apple Standard Interface"

Abbott and Costello could have done a better job of keeping things straight. Come on, Apple — the first step is to keep the same number of pins! Even Lou could count in a straight line when Bud wasn't interrupting him.

THE GEORGE BURNS LONGEVITY AWARD

Dan Bishop

Dan's been writing Applesoft Adviser since our premiere issue, and hasn't complained yet about his paycheck . . . uh, whoops.

BEST-LOOKING COVER MODEL

Orvis, June 1988

We examined all our covers carefully in search of the perfect candidate. We looked for intelligence, taste, a winning smile, good teeth, and a personality that just said, "Boy, I'm glad to be alive!" The final decision was easy. It's Orvis.

MOST IRRELEVANT COMPARISON ARTICLE

PCJr vs. IIc, August 1984 (p. 80)

Who's faster? Who's easier? Who's more expandable? Who's cuter? Who cares? The only reason we ran this article is because Bob Ryan said, "Fish Heads forever!" at the end.

KEITH CARRADINE ZEN QUOTE OF THE DECADE

Paul Statt, March 1987 (p.14)

"The existence of something doesn't imply that you can count it or measure it." (Special thanks to Confucius, Jose Cuervo, Stephen Hawking, Buckaroo Banzai, Sartre, Plato, Tim Leary, Socrates, Jack Daniels, Aristotle, Bob Dylan, Johnny Walker, Buddha, Sir Francis Bacon, Hunter S. Thompson, Karl Marx, Larry, Moe, and Curly, William Carlos Williams, Mohammed, H. L. Mencken, Jim Beam, The Reverend Sun Yung Moon, and L. Ron Hubbard for this one.)

THE JOHN BELUSHI LOOKALIKE AWARD

Ingenuity Inc., July 1990 (p. 86)

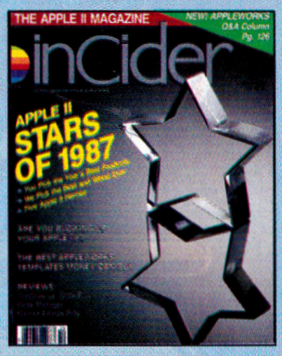
Most people remember Ingenuity's ads for their style and wit; we remember this one because it reminds us of "Saturday Night Live."

MOST INANE EDITORIAL

"Under My Wheels," Wayne Green, October 1983 (p. 6)

A lot of weak editorials have graced the pages of inCider, but at least all the others mentioned computers. Green spent this entire column discussing the repair problems he had with his Jaguar.

THE WE JUST THOUGHT WE'D ASK AWARD



December 1987 (cover)

The cover cutline "Are You Blowing Up Your Apple IIe?" made it, but the article didn't. (It was cut at the last minute.) Apparently, people just didn't want to know if they were nuking their CPUs, because no one ever called or wrote to ask where the article was.

GEEK GADGET OF THE DECADE

Seiko PC Datagraph, December 1984 (p. 75)

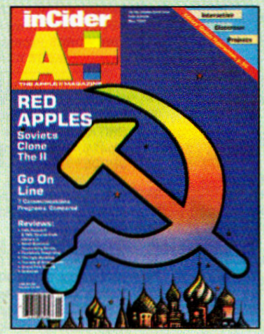
And we thought calculator watches were bad — did anyone actually own one of these Nerd Alerts?

September 1989

Roger Wagner's HyperStudio was the lead article in our big education issue. We also helped you get the most for your money from mail-order houses and Apple's free upgrades.

November 1989

Who said football and computers don't mix? Not Mike Walter, Tom Holmoe, and Keena Turner of the San Francicso 49ers — all winning Apple IIgs owners.



May 1990

inCider/A+ ventures into international politics, thanks to a Bulgarian-Soviet Apple II clone called the Pravetz. We're still waiting for it to emigrate.

December 1990

With this issue inCider/A+ takes the plunge. Finally a Macintosh that runs Apple II software — now if we could just find an Apple II that runs Macintosh stuff.

February 1991

You already know that the IIgs is a great multimedia machine. Apple shows that it recognizes some of the machine's potential with the release of HyperCard IIgs.

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MEMORY & INTERFACE

APPLIED ENGINEERING Transwarp GS	255.
Audio Animator	160.
Ram Works III 1MB (IIe)	187.
GS-Ram PLUS 2MB	229.
GS-Ram II 1MB	137.
Z Ram Ultra 2 - 1MB (IIc)	240.
Ram Express II 1MB (IIc+)	180.
PC Transporter 768K	255.
MAC Ram Classic	Call
CHINOOK	
Ram 4000 1MB	129.
Ram 4000 2MB	162.
DIGITAL VISION Computer Eyes (IIGS)	195.
HARRIS LABORATORIES SE Max (MAC)	Call
Velocitas (IIe, IIGS)	259.
MC Meg CI (1MB MAC Classic)	135.
GS Sauce 1MB	132.
GS Sauce 2MB	169.
MEMORY Dram	Call
THUNDERWARE Lightningscan (IIGS)	196.
ZIP TECHNOLOGY Zip Chip	Call

HARD/FLOPPY DISK DRIVES

APPLIED ENGINEERING	
Vulcan Hard Drive 20MB	499.
Vulcan Hard Drive 40MB	649.
5¼ Drive (IIc/IIe, IIGS)	125.
3½ Daisychainable Drive (IIe/IIGS/IIc+)	199.
3½ Daisychainable High Density	250.
CMS Hard Drive 20MB w/Apple SCSI	499.
Hard Drive 40MB w/Apple SCSI	575.
Hard Drive 60MB w/Apple SCSI	680.
LASER COMPUTER	
External Disk Drive (5¼")	90.
Universal Disk Controller	45.

MODEMS

APPLIED ENGINEERING Datalink 2400	160.
Datalink Express Ext. w/soft	160.

COMPUTERS

LASER COMPUTER Laser 128E	325.
Laser 128EX	370.
Laser 128EX/2 (5¼" Drive)	400.
Laser 128Ex/2 (3½ Drive)	430.
Laser 128 Color System	495.
Laser 128 Amber System	385.
Laser 128EX Color System	585.
Laser 128EX/2 (5¼) Color System	610.
Laser 128EX/2 (3½) Color System	635.

MONITORS

MAGNOVOX Color Monitor (Analog, TTL)	299.

ACCESSORIES

APPLIED ENGINEERING Conserver	73.
GS Power Supply	87.
CH PRODUCTS Mach III	31.
KENSINGTON System Saver (IIGS)	69.
Anti-Glare Filter (IIGS)	34.
LASER COMPUTER Mouse	45.
RIBBONS	Call

PRINTERS

LASER COMPUTER	
190A (ImageWriter I Compatible Serial)	223.
PANASONIC KX-P 1180	180.

UTILITY/LANGUAGE

APPLE Hypercard	CALL

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HOWARD SOFT

Tax professionals choice since 1979. Automates the preparation of tax returns for individuals by not only looking up numbers in the tables and performing the arithmetic, but automatically completes and computes Numerous IRS worksheets to handle the true letter of the law.

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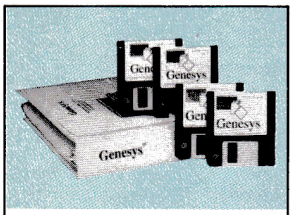
Textools	31.
Superforms, Superfonts	ea. 42.
BYTE WORKS ORCA/C, Pascal (IIGS)	ea. 80.
ORCA/Desktop (IIGS), ORCA/M 1.1	ea. 39.
CENTRAL POINT Copy Two Plus	25.
GLEN BREDON ProSel 16	54.
INSYNC Proterm V2.2	78.
ROGER WAGNER Hyper Studio (IIGS)	82.
WESTCODE Inwords	79.
VITESSE Exorciser (IIGS)	27.
Renaissance (IIGS), Guaradian (IIGS)	ea. 29.
Wings (IIGS)	49.
Harmonie, Deliverance	ea. 29.
Salvation Supreme	132.



GENESYS **$89.00**
SSSi, INC.

Allows the creation, editing & maintenance of program resources using a truly WYSIWYG. Menu bars, menus, menu items, windows, dialogs, strings, icons, cursors, alerts, controls and much more can easily be created or edited without compiling or linking a single line of code.

HOME/PERSONAL

ABRACADATA Landscape (IIGS)	59.
Architecture (IIGS), Interior (IIGS)	ea. 59.
BEAGLE BROS. Platinum Paint (IIGS)	58.
BRODERBUND The New Print Shop	30.
The Print Shop (IIGS)	37.
The Print Shop Libraries (IIGS)	ea. 23.
The New Print Shop Libraries	ea. 17.
Bannermania	23.
INTUIT Quicken	38.
MECA Managing Your Money	89.
MECC Calendar Crafter	33.
MOUSE SYSTEM ADB Track Ball	72.

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Outliner (Appleworks 3.0)	41.
BRODERBUND Bank Street Writer Plus	47.
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Appleworks V3.0	168.
SENSIBLE SOFTWARE Sensible Speller	68.
Sensible Grammar Checker	52.
SEVEN HILLS Graphics Writer III GS.	75.
TIMEWORKS Publish It 3	74.
WORDPERFECT Wordperfect (IIGS)	104.

EDUCATION

BARRON'S Study Program For SAT V2.0	32.
BRITANNICA Jigsaw (IIGS)	25.
Algebra 1st Sem., 2nd Sem. (Bundle)	ea. 47.
BRODERBUND Science Tool Kit	49.
Where in USA (IIGS), VCR Companion	ea. 30.
Where in Europe, Where in USA	ea. 27.
Where in World (IIGS), Where in Time	ea. 29.
Geometry (IIGS)	53.
The Play Room (IIe, 3½)	27.
McGee, Katies Farm (IIGS Bundle)	50.
DAVIDSON & ASSOCIATES	
Math & Me (IIGS), Reading & Me (IIGS)	**ea. 32.**
Word Attack Plus, Math Blaster Mystery	ea. 29.
Math Blaster Plus, Alge Blaster Plus	ea. 29.
ELECTRONIC ARTS	
Mavis Beacon Teaches Typing (IIGS)	32.
Mavis Beacon Teaches Typing (IIe/IIc)	25.
MECC World Geograph (IIGS)	56.
U.S. Geograph (IIGS)	56.
Oregon Trail	27.
PYWARE Music Writer Level 1 (IIGS)	79.
Music Writer Level 2 (IIGS)	199.
STUDYWARE Computer Prep SAT	33.
THE LEARNING COMPANY	
Reader Rabbit (IIGS)	36.
Children's Writing Publishing Center	ea. 36.
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Shapes, Opposites, ABC's (IIGS)	ea. 30.

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Test Drive II (IIGS), Hardball (IIGS)	ea. 28.
CALIFORNIA DREAMS Blockout (IIGS)	27.
Tunnels of Armageddon (IIGS)	27.
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Solitare Vol. II (IIGS)	27.
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ELECTRONIC ARTS Bard's Tale	Call
Immortal (IIGS), Chessmaster 2100	ea. 32.
Pipe Dream, Hunt for Red October	ea. 22.
MEDIAGENIC Battlechess (IIGS)	ea. 30.
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Captain Blood (IIGS), Hostage (IIGS)	ea. 30.
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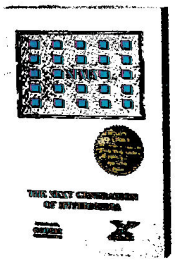

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TEMPLATES, TEMPLATES

EVERYWHERE

Boot up a time-saving template and tap into the power of AppleWorks' versatility.

What's your favorite AppleWorks feature? Those easy open-apple key commands? The clipboard's cut-and-paste function? The abundance of third-party utilities that expand the program's capabilities? My own favorite is the program's built-in desktop — that area of random-access memory that keeps as many as a dozen files literally at your fingertips. Combine the dexterity of the desktop with the wide spectrum of AppleWorks templates on the market, and you'll be calculating travel distances on an authentic-looking map of the United States one moment and printing golf-awards certificates, geometry worksheets, or birthday keepsakes the next.

What's a template? It's living proof of AppleWorks' versatility. A template is an AppleWorks data file — built with the word processor, the spreadsheet, or the database manager — tailored to a particular application, with all the formatting, formulas, or data fields already in place. You just fill in the blanks with your own specific data — the template's ➪

By CYNTHIA E. FIELD, Ph.D. * CONTRIBUTING EDITOR

Illustration * Randy Enos

designer has already done the organizational work. Let's take a look at a small sampling of templates for home, school, and business, and see what AppleWorks power is all about.

PORTRAIT OF THE ARTIST

No one would ever confuse AppleWorks with a drawing program — unless they saw **AppleWorks Text Portraits**, a series of ready-to-print likenesses, including a Siamese cat, a bassett hound, and a butterfly, not to mention W.C. Fields, Garfield, and Alfred E. (What, Me Worry?) Neuman — complete with cowlick and string tie.

A singular characteristic of each illustration is that it's composed entirely within the word processor. Blends of ordinary text characters create each picture's detail and shading. Most portraits look like "gibberish" on screen, but that makes the final printed output all the more remarkable. Even better, this disk, available from Kula Software for just $3, is in the public domain; you're free to copy and share it with friends.

AROUND THE WORLD IN 80 CELLS

Another AppleWorks "artist," Robert Corvello, has used the spreadsheet's calculating prowess to enliven original text-based drawings, producing **MapWorks Atlas**, a series of accurately detailed maps of the United States, nine selected states, and two Canadian provinces. A map of Connecticut, for example, displays not just major highways and topographic elements, but dozens of cities and towns as well. Its Florida counterpart sports these features as well as close-ups of major metropolitan areas. All maps include interpretive legends.

And estimating the distance between two points on one of Corvello's maps is easier than saying "Pythagorean theorem": Count the number of cell-to-cell cursor moves on the spreadsheet map and press OA-K. MapWorks Atlas includes thorough on-line documentation with suggested classroom activities and a "drawing board" template for creating your own maps.

APPLEWORKS AUTO SHOW

Car buffs of all makes and models should check out **The Automotive Almanac: History Guide** and **The Automotive Almanac: Spec Guide**. These multidisk reference sets highlight more than 200 car manufacturers from A.C. to Zagato.

Each auto bio describes critical events in a company's development. A.M.C.'s history, for example, begins with the turn-of-the-century release of the single-cylinder Rambler and progresses to the company's 1987 acquisition by Chrysler Corporation. The Spec Guide provides engineering details for models ranging from the 1910 Austro-Daimler Prince Henry to the 1952 Bentley Continental to the 1990 Daihatsu Rocky. Contact Auto Epoch for a free demonstration disk of this "new concept in automotive literature."

TEE TIME

While some AppleWorks users polish their hood orna-ments, others prefer to polish their golf games — or try to, at least. If you're among the latter group, take a look at Bemak Enterprises' **Golf Scores**. Like most other AppleWorks template disks, this product features on-line documentation with step-by-step instructions.

Golf Scores' offerings include word-processing layouts that print 3-by-5-inch score cards and templates that produce a variety of golf awards. These certificates, complete with stylish borders, are easy to fill in and to print. Their size — 5 by 7 inches — makes them perfect for framing. Two spreadsheet templates help you record scores, birdies, bogeys, and pars and calculate statistical totals, percentages, and averages. The smaller template handles seven nine-hole rounds; the larger one requires an Apple II with at least 256K of RAM, but can tally results from more than two dozen games.

TEAM SPIRIT

Keeping personal performance stats is one thing; supervising a sports team or league is an even bigger challenge. If you're an AppleWorking coach or team manager, put the **SportsWorks** series from MECC through its paces. Custom disks are geared toward particular activities such as baseball, basketball, football, soccer, softball, swimming and diving, track and field, and volleyball.

The **Club/League Organizer** disk, on the other hand, takes a generic approach. Its word-processing, database, and spreadsheet templates treat aspects of team management such as fund raising, maintaining

Helping Hands for AppleWorks Users

Whatever your occupation or profession — or your level of AppleWorks expertise — help is just a phone call or postcard away.

• If you use AppleWorks in your classroom, why not join other teachers who do by subscribing to the Teachers' Idea and Information Exchange? Each month TI&IE members receive a two-sided disk that's packed with teacher-tested templates. All subject areas are fair game for TI&IE's — and coordinator Jim Carlisle's —scrutiny. A recent disk (#79/80) featured, among other projects, a database and a **StoryWorks** stack to help students learn about the Middle East. (For more information about StoryWorks, see "Exploring Hypermedia," November 1990, p. 36, and Reviews, April 1990, p. 32.)

• Many AppleWorks-using teachers are already acquainted with David Chesebrough, publisher of **The AppleWorks Educator** newsletter and author of the **AppleWorks Teacher Resource Disk**. For AppleWorks initiates, Chesebrough recommends **Teacher's TimeSaver**, a five-disk collection of templates and tutorials designed by the pros at Willy Billy's Workshop.

• Whether or not you're an educator, you'll want to invest in yourself by investing in a membership subscription to the National AppleWorks Users Group. According to NAUG's president, Dr. Warren Williams, the organization boasts nearly 16,000 members worldwide, an achievement that makes NAUG "the largest user group for any computer platform in the history of computing." For $29 per year NAUG members receive the 36-page, monthly **AppleWorks Forum** newsletter (a publication that's taught us a thing or two about the program), free technical support from fellow members, unlimited access to NAUG's computerized bulletin-board network, generous discounts on AppleWorks-related products, and healthy price reductions on public-domain software from the group's catalog. — **C.F.**

equipment inventories, balancing budgets, compiling rosters, scheduling events, and calculating stats.

WORDS TO LAUGH BY

One team's loss is another team's victory. So the next time you're asked to speak at an awards banquet, let **Quote Disk** break the ice. The 1001 quotes in this collection are arranged in categories such as *Advice*, *Age*, *Knowledge*, *Life*, *Love*, *Wealth*, and *Wisdom*. Developer Matt Whitcomb says Quote Disk provides considerable fodder for desktop-published creations, such as New Print Shop greeting cards or "Quote of the Day" calendars. As we prepared this issue, we found a timely thought: "While only death and taxes are certain, most people wish that was also the correct sequence."

WORDS TO LIVE BY

If recent stories in newspapers and news magazines are right and Americans are indeed returning to religion, there's probably no better way to prepare for the stampede than with Classic AppleWorks. Whether your aim is individual study or sermon preparation, **Bible Disk** can help. The series encompasses all 66 books of the Bible written in AppleWorks word-processing file format.

A database index helps you locate the files that are stored on the six 3.5-inch or 17 5.25-inch disks provided in the package. Searching for a key word is as easy as pressing OA-F. Both King James and New International versions are available.

SPIRITED TEAMWORK

ParishWorks, from Software Sharing Ministries, is so impressive that even laypeople should take a close look at the disk's six dozen superbly designed templates. Virtually any organization or business can use ParishWorks' planning forms, telephone logs, to-do lists, meeting-agenda forms, invoices, purchase orders, and calendars, to name just a few of the package's easily adapted designs.

Naturally, ParishWorks includes a rich medley of church-oriented templates that monitor membership, attendance, and contributions, among other things. A series of simulation games on disk help kids learn about the Bible and church history. ParishWorks' $25 shareware registration fee brings you the software, one year of support, and "gratis" assistance in developing custom applications for your church.

READERS' DIGRESS

Instead of wasting precious time flip-ping through back issues of computing magazines to find reviews, articles, or columns dealing with topics that interest you, keep a copy of the **Kula Index** in your Apple II software library. Each yearly edition of the Index covers publications such as *inCider/A+*, *A2-Central*, *ALUG*, *The AppleWorks Educator*, *Call-A.P.P.L.E.*, *Nibble*, and *Scarlett*.

Michael Ching, the Index's creator, compiles citations and brief annotations from published works in AppleWorks database-file format. Finding information is a snap, whether you're looking for a particular author, title, or key word. The Kula Index is a valuable reference if you subscribe to Apple II publications — and an indispensable one if you don't.

RECESSION FIGHTER

Another time-saving consumer guide is **The Nationwide Wholesale Directory** created by Dean DeWitt, Jr. The Directory consists of nearly three dozen databases devoted to product categories such as *Crafts & Hobbies*, *Health & Beauty*, *Home Furnishings*, *Office & Computer Supplies*, *Surplus*, and *Toys & Games*.

DeWitt's databases incorporate information about hundreds of companies that sell at discounted prices to the public. Each listing includes the company's name, address, and phone number — with toll-free number, if available. Other fields provide a description of merchandise offered, the company's percentage markdown, and the availability of a free (or low-cost) mail-order catalog. Because most companies offer discounts of at least 50 percent off suggested retail prices, you could readily recoup the $20 cost of DeWitt's databases with your first purchase.

HALLMARK ALERT!

Who Was Born on Your Birthday? is one of the most entertaining template disks we've ever used. Besides providing ready-to-customize page-header templates, the disk contains a dozen databases — one for each month of the year. These files store the names, birth dates, nationalities, and occupations of some 10,000 famous people. Remember, these are AppleWorks databases, so you can add even more "celebrities" if you want to do so.

Using the files is easy. Just select a header and a database ⇨

What About AppleWorks GS?

No, we didn't neglect **AppleWorks GS** — Classic AppleWorks' six-module integrated counterpart designed for the Apple IIGS (page layout, graphics, and telecommunications added). But having reviewed the half dozen or so template disks we solicited for possible inclusion in this article, we don't have much good news to report. In fact, we'd be hard pressed to recommend any of the templates we've seen so far.

Our biggest gripe is that the purveyors of so-called AppleWorks GS template disks haven't taken the time to design files spotlighting the program's unique features. Sure, one database file we saw incorporated attractively digitized images of the United States presidents, but that same file listed Vice President J. Danforth Quayle's first name as "Daniel." Oops.

Worse, most files we previewed were public-domain templates "ported" (roughly translated) from Classic AppleWorks. That means database fields lacked labels and word-processing files sometimes sported tabs run amok. Perhaps most disappointing of all was that no one had bothered to clean up the files before offering these products to consumers. And in at least one case, we got the feeling that someone was just trying to make a quick buck.

Are we being too finicky? We don't think so. You shouldn't have to pay for second-rate stuff. When we do find some reasonably priced, better-than-simply-adequate AppleWorks GS templates, you'll be the first to know. **— C.F.**

"month." Personalize the header and print it. Customize a database report (use the open apple-R command) and print it under the header. Use parchment paper and document frames and you'll have unique birthday greetings to "wow" your friends and relatives.

CARMEN WHO?

One fictitious celebrity who's familiar to almost every Apple II user is Carmen Sandiego, the antiheroine of Broderbund's "Where in the World" geography adventures. Each program comes with a prodigious reference guide, such as the *World Almanac and Book of Facts*. The problem is that class periods are limited and kids often don't have the time to thumb through these resources to find the answers they need to finish a game.

To make sleuthing less time-consuming, Tracey Zigo has assembled program clues into a series of databases collectively named **Carmen's Companion**. Run a Carmen game on one Apple II and Carmen's Companion on another. Zigo's files not only reduce research time, they teach kids how to use computerized databases, too.

THE SHAPE OF THINGS

Among the many outstanding products offered by the National AppleWorks Users Group (see the accompanying sidebar, "Helping Hands for AppleWorks Users") are Mitchell Bernstein's **Geometry 1** and **Geometry 2** activity disks. Each disk furnishes a special geometry font, or character set, that's capable of printing segments, rays, lines, and other mathematical structures on Apple ImageWriter printers.

If you don't want to create custom documents right away, use the copious numbers of tests, worksheets, vocabulary lists, quizzes, or "quizlets" that Bernstein supplies. A database index on disk lets you view and print the names of all files and the topics they cover.

Thanks to clever programmers and enlightened publishers like those described here, you can load up your AppleWorks Desktop with an unprecedented variety of practical — or at least entertaining — applications. So go ahead: Switch from that list of discount musical-instrument dealers to a brain-teasing geometry quiz — to a mind-bending text portrait of Madonna! Whoever said "variety is the spice of life" must have been using AppleWorks, don't you think? ❑

CYNTHIA E. FIELD IS A FREE-LANCE JOURNALIST SPECIALIZING IN COMPUTER-RELATED TOPICS. SHE'S ALSO THE AUTHOR OF PRESS ROOM, *INCIDER/A+*'S MONTHLY COLUMN ON DESKTOP PUBLISHING. WRITE TO HER AT 60 BORDER DRIVE, WAKEFIELD, RI 02879. ENCLOSE A SELF-ADDRESSED, STAMPED ENVELOPE IF YOU'D LIKE A PERSONAL REPLY.

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Santa Clara, CA 95052-8168
(408) 727-8227

The AppleWorks Educator
Level 1: subscription $25 per year
Level 2: subscription and AppleWorks Teacher Resource Disk $34.95
Level 3: subscription, disk, and bound version of newsletter volume 1 $45.95

AppleWorks Teacher Resource Disk, $12.95
Dave Chesebrough
P.O. Box 72
Leetsdale, PA 15056
(412) 741-5129

AppleWorks Text Portraits
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The Kula Index: 1990 Edition
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MapWorks Atlas, $29.95

StoryWorks, $49.95

TI&IE Disk 79/80 (Middle East database), $8
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$75.95/year membership
(includes monthly template disk)
Teachers' Idea & Information Exchange
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Lincoln, NE 68506
(402) 483-6987

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$12 (3.5-inch)
$2 shipping

Public Domain Catalog
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$8 nonmembers
$29/year membership (includes **AppleWorks Forum** newsletter)
NAUG
National AppleWorks Users Group
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Canton, MI 48187
(313) 454-1115
(313) 736-8102 BBS

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Alton, IL 62002
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(5.25-inch)

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Dean DeWitt Jr.
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Elm Hollow Road
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Livingston Manor, NY 12758
(914) 439-3536
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The New Print Shop, $49.95

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$44.95 IIe/c and GS

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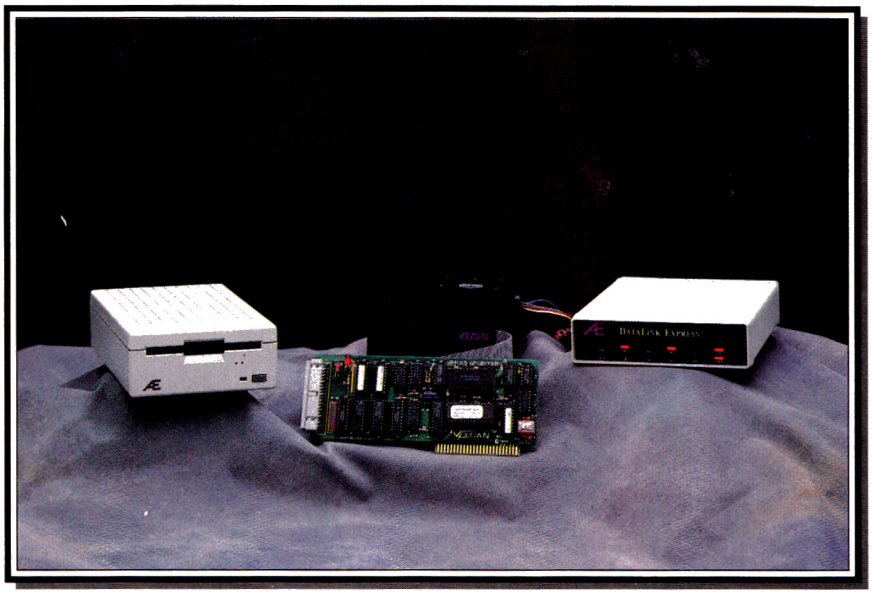

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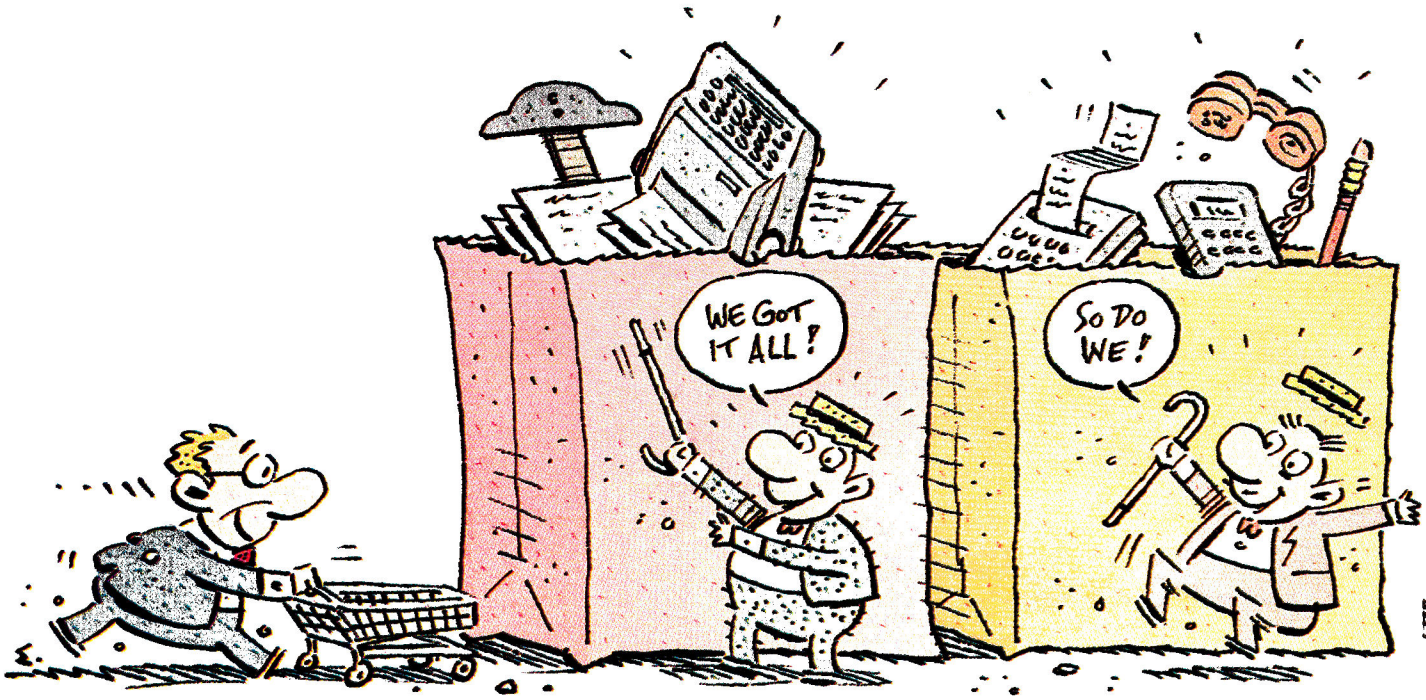


Ready to make your first investment in Macintosh software? Shop wisely. You have a range of options — from jack-of-all-trades integrated programs to bundled package deals that combine standout stand-alone modules in one well-rounded (but less convenient) product.

By GREGG KEIZER

Book a guided-tour vacation package and someone else makes all the arrangements, from choosing your hotel room and restaurants to plotting out your daily schedule. Your travel agent does all the legwork — all you do is sit back and enjoy the holiday.

You pay for that convenience, though — not only in dollars, but in flexibility. You can't stray from the timetable for interesting side trips or abandon the group to sample some strange cuisine. You're locked in.

Running your Macintosh isn't quite a two-week vacation, but you can put together a package deal on software almost as easily as you can call your travel agent. These software collections, or integrated programs, offer an all-in-one solution to most Macintosh productivity problems. The basic tools of word processor, spreadsheet, and database manager usually combine with several extras — communications software, charting and graphing programs, or even a drawing package — to equip you instantly with Mac essentials. Integrated software isn't simply a bundle of programs. A good integrated package lets you share information, data, and even documents easily among its various parts.

Whatever its sophistication and power, an integrated program makes perfect sense as your first Macintosh software purchase. Like the novice tourist who books a guided tour to sample a foreign country, you can depend on integrated software to give you a taste of Macintosh applications. You simplify your software decisions and save money besides: Few programs provide more value for their price than an integrated package.

Still, you've got to pick both travel agent and integrated program carefully. An integrated package locks you into a tool set just as the guided tour locks you into a whirl-

...WHAT'S THE BEST DEAL?

wind schedule. Of the three integrated programs and two software bundles now available for the Macintosh, you must select the one that suits your computing needs and personality best.

MAC AT WORKS

It's no surprise that **Microsoft Works** holds the top spot on Macintosh integrated-software sales charts. The oldest integrated program for the Mac (and for several years, the only one), Works has long offered a four-module set of applications that at least covers the basics and, for many, provides plenty of power.

Works groups a word processor, spreadsheet, database manager, and communications program under one interface umbrella, then adds some simple drawing tools to the word processor and spreadsheet, and builds graph- and chart-making capabilities into the spreadsheet.

The database and spreadsheet can handle most home, home-office, small-business, and classroom chores, but the word processor can't match something like MacWrite II in ease of use, or Microsoft Word in power. The communications module, though limited to the basic features, can connect you to on-line services and electronic bulletin boards quickly and cleanly.

Up to 14 Works document windows can be open on screen at any one time. That makes it easy to swap information from one module to another. If you're writing a report, for instance, it's just a matter of copying and pasting from one open window to another to incorporate numbers from a spreadsheet into a word-processing document.

Works 2.0 also includes macros, recorded strings of commands or even blocks of text, to speed up some tasks. You play back a macro and it's as if you'd actually typed at the keyboard or used the mouse to select commands.

Microsoft Works is almost five years old, and its age is beginning to show. Add-on extras like the drawing tools bring some desktop-publishing possibilities to Works, but you really have to work at it to produce a newsletter layout. The word-processor and telecommunications modules need an overhaul, if only to make it easier to import files from other word processors and automate sign-on procedures to on-line services.

Works may be the best-selling integrated package for the Mac, and a perfect pick for many Mac owners, but unless it's updated soon it risks getting passed by integrated newcomers.

SMARTEN UP

One of those new up-and-comers is **SmartWorks**. Still under development as this issue went to press (though scheduled ➪

Illustration * Elwood Smith

Integrating with the Apple II

You may be a new Macintosh user, but you've probably put an Apple II or two through its paces. Keeping in touch with the II world after moving to a Mac isn't only important, it's crucial to anyone who works in a den, classroom, or office where Apple II and Mac machines share space. Since most writing, calculating, and record keeping on an Apple II is done with AppleWorks, evaluate how your Mac software integrates with that program.

If SmartWorks delivers on its publisher's promises, it's going to be hard to beat for all-around Apple II/Macintosh integration. Although not all the pieces were in place in the prerelease version I examined, SmartWorks plans to let you open most AppleWorks files, and even save them again to disk for later use on an Apple II. And according to Leonard Development Group, SmartWorks will even let you insert Apple II ProDOS disks in the Mac's disk drive, forgoing the cumbersome Apple File Exchange procedure.

In the here and now, Microsoft Works works hard at connecting to the Apple II. Works comes with an Apple File Exchange translator that lets you transport AppleWorks word-processing, spreadsheet, and database files to Works, without losing document, worksheet, or database formatting. The translation works only one way — you can't move Works files to an Apple II running AppleWorks.

MacWrite II, part of the Power Package, also includes XTND translators for AppleWorks and AppleWorks GS word-processing files, one of the reasons why it's so popular in the classroom. If most of your Apple II work is on the writing side, MacWrite takes care of the Apple II/Mac links you need.

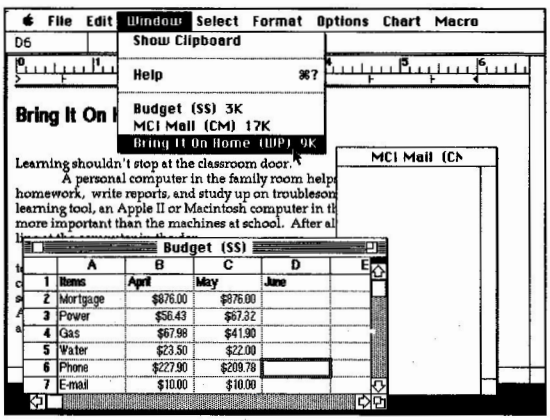
If you're working with both systems — Apple II and Macintosh — your integrated choice should depend on the number and type of files you want to share between the two machines. Swapping only on occasion, and then only word-processing documents? Try Power Package. Need only Apple II to Mac, not back? Works works. Want it all, from Apple to Mac and back to full AppleWorks file support? SmartWorks is the smart choice.

Whatever you do, think about the Apple II, and think ahead, before you buy an integrated program for the Mac.

— G.K.

for release by the time you read this), SmartWorks offers more tools, and in some cases more sophisticated tools, than Microsoft Works.

SmartWorks gathers together eight modules: word processor, spreadsheet, database manager, communications, drawing program, painting program, charting application, and outliner. The first four modules generally match their Microsoft Works partners, though none comes close to a full-featured stand-alone program. The drawing and painting programs put a wider range of graphics tools in your hands than does Works, while the outliner lets you collect and organize your thoughts before you begin writing.



You can keep up to 14 windows open simultaneously in Microsoft Works, then switch quickly from window to window to cut and paste information between documents.

SmartWorks is a wise choice if you want to work with files, documents, and graphics from other Macintosh or Apple II programs. Because SmartWorks includes XTND file translators (see "Bridging the Gap," March 1991, p. 100), the program can open and save all kinds of file formats, from Microsoft Word to AppleWorks and AppleWorks GS.

Powerful tools and impressive palettes mark the painting and drawing programs within SmartWorks — you can create much more dazzling artwork in this integrated package than you can in Works.

And the database manager, though it's clumsier than that found in Works, offers valuable features such as a memo field, where you enter long notations into a scrollable box. If you have a Macintosh LC or IIsi, you can even record and store sound in the database simply by clicking on a button and speaking into the Mac's microphone. (Other Macintoshes need Farrallon's MacRecorder to do this.)

The core applications — word processor, spreadsheet, and database manager — are comparable to those found in Works. SmartWorks' word processor edges out Works, though, primarily because of its thesaurus and beefier dictionary, and because it's more like MacWrite II. Home, small-business, and classroom users of SmartWorks won't find many gaps in the package's offerings. SmartWorks eats more memory than Works (1024K versus 768K) and doesn't snap like its competitor. In fact, everything from screen redraws to document scrolling takes noticeably longer in SmartWorks, even on a Macintosh LC (at least in the prerelease beta version).

SmartWorks may not be the AppleWorks of the Macintosh, but its variety and power top those of Microsoft Works, especially in its file-exchange and graphics skills.

A RAGTIME TUNE

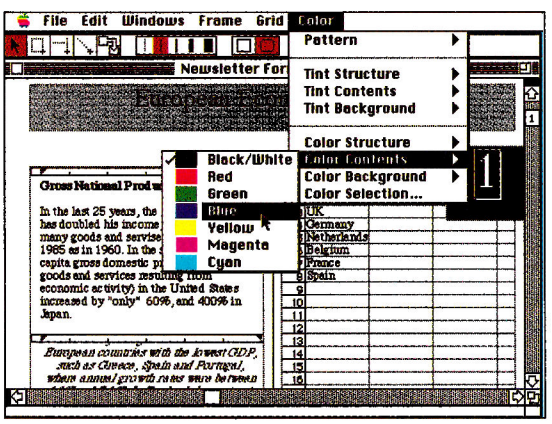
Marching to a different drummer, the program **Ragtime Classic** takes an unusual approach to integrating applications on the Macintosh. Rather than collect several modules that act as much like individual mini-programs as they do parts of a package, Ragtime integrates the documents you create, setting aside some areas for text, others for graphics, and still others for numbers — so in some ways it's more integrated than Works. Introduced more than five years ago, Ragtime Classic retains much of its original desktop-publishing flavor. (Ragtime also sells a newer, more sophisticated package called **Ragtime 3** for $599.)

Unlike other integrated programs, there are no separate modules in Ragtime. Instead, you build a document by creating *frames*, or areas, to hold specific kinds of data. Most frames contain text, so Ragtime includes basic word-processing tools for entering and editing text. Don't mistake Ragtime's word processor for MacWrite II or WriteNow, though — it offers fewer features than the word-processing modules of Works or SmartWorks. Other frames hold graphics you import into a Ragtime document. (Only limited drawing tools are available within Ragtime Classic.) But it's

the spreadsheet frame feature that's most interesting. Integrating numbers and words is easier in Ragtime than in any other package highlighted here, once you climb the program's learning curve. With practice, you can create documents that contain numeric areas that update automatically when you change other, nonprinting spreadsheet sections of the document.

Partly because of its frame-based approach to document creation, partly because of its abilities to turn any document into a form for later repetitive use, Ragtime feels more like a page-layout program than anything else. Ragtime focuses on pages and parts of pages, even going so far as to demand that you link text frames if you want your words to flow from one page to the next. On the plus side, this page-based mentality makes the program's interesting spreadsheet/text link possible.

Ragtime Classic offers no database manager, no communications program, no extensive drawing tools. For that reason it's unlikely to find wide acceptance among Mac users looking for an integrated start to their software libraries.



You can color the contents of Ragtime's frames for special emphasis.

If most of your work centers around desktop publishing, however, a package such as Ragtime Classic that integrates numbers, text, and graphics directly in a single document is worth considering. If you expect more from integrated software — database management, say — consider one of the other packages mentioned.

POWER PACK MAC

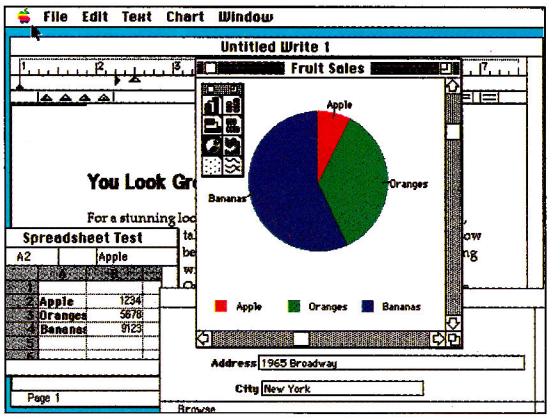
No one says you have to buy an integrated package. That's especially true when you own a Macintosh; with Multifinder and a RAM-filled machine, you can switch between full-blown applications as fast as you can shift between modules in Works or SmartWorks.

Claris takes just this tack, bundling three applications in its **Power Package** and putting them in educators' hands for less than $200. (Unfortunately, Power Package is available now only to schools and teachers.) Because Power Package is missing a spreadsheet, it covers only two-thirds of an integrated program's traditional core applications. But since each of the applications is a stand-alone program filled with top-of-the-line features and functions, Power Package can be considerably more valuable to some Mac users than any integrated grab bag.

MacWrite II, MacDraw II, and FileMaker Pro pack the box. MacWrite II, the offspring of the original Macintosh word processor, is still one of the easiest-to-use Mac writing tools, but now features everything from a spelling checker to excellent file-exchange capabilities. MacDraw II, an object-oriented drawing program, lets you create and print artwork up to 100 inches square and even includes a slide manager that helps you make and print overhead transparencies. You can use the package's FileMaker Pro to build custom databases of names, inventories, budgets, and more.

One of the biggest benefits of an integrated package is its ability to exchange information between modules almost instantly. You can do the same thing with these applications by running them under Multifinder, the program switcher included with every Mac. With Multifinder active, you simply click on an icon to zip from one program to another. Cut a graphic from MacDraw II, then paste it into a MacWrite II document or copy an address from FileMaker Pro and slap it down on a MacDraw II design. Power Package also avoids the mediocrity of most integrated programs. None of the three applications compromises features or ease of use to squeeze itself into a small frame.

There's a flip side to this, though. You'll need at least 2 megabytes of RAM in your Mac to use Multifinder. Even then, you can keep only two of Power Package's three applications in memory simultaneously.

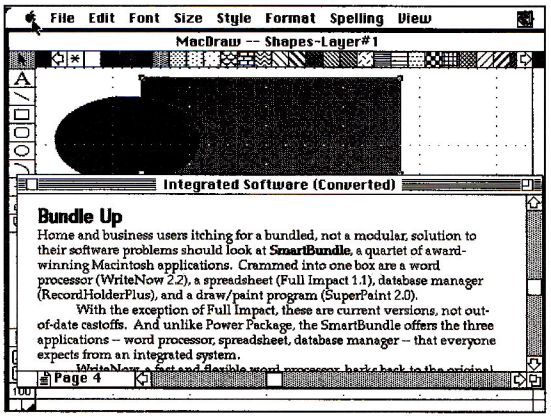


Using data from the spreadsheet, you can call on SmartWorks' charting module to build colorful business graphics and charts.

And because Power Package doesn't include a spreadsheet or communications program, it won't handle every classroom demand. Some first-time Mac users won't mind such omissions. All they'll notice is three top-notch applications for about the price of one.

BUNDLE UP

If you're a home or business user itching for a bundled, not a modular, solution to your software problems, take a look at



Using Multifinder, you can keep more than one Power Package application in memory at a time. Here, MacWrite II and MacDraw II appear on the same screen — simply click on either's document window to activate the program.

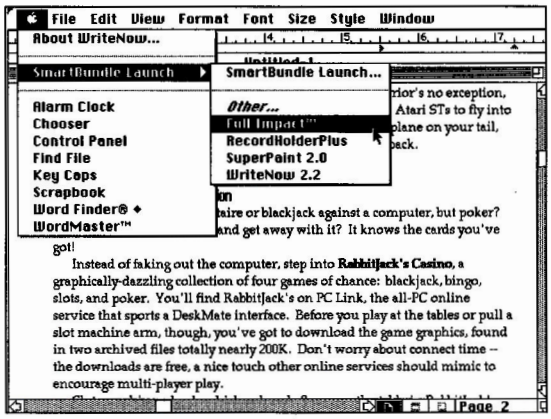
SmartBundle, a quartet of award-winning Macintosh applications. Crammed into one box are a word processor (WriteNow 2.2), a spreadsheet (Full Impact 1.1), a database manager (RecordHolderPlus), and a ⇨

drawing/painting program (SuperPaint 2.0).

With the exception of Full Impact, these are current versions, not some out-of-date castoffs. And unlike Claris' Power Package, for instance, is only about $35). Is the higher price worth it?

All four programs more than match the modules within Microsoft Works and SmartWorks. A similar level of integration is possible, though difficult, without a RAM-jammed Mac. SmartBundle compares less favorably when stacked against the Claris trio: WriteNow is a slicker writing tool, but MacDraw II and FileMaker Pro best the SmartBundle competition. For many the point is moot, though, because Power Package is currently available only to educators.

The bottom line? If you're attracted to integrated software simply to equip your new Mac with the basic software, SmartBundle shines. But if you're looking for synergy between the individual pieces, something only a Works or SmartWorks really provides, then walk on by.



SmartBundle includes a customized program launcher so that you can move quickly from one application — in this case WriteNow 2.2 — to another, such as Full Impact.

SmartBundle offers the three applications — word processor, spreadsheet, database manager — you've come to expect from an integrated system.

WriteNow, a fast and flexible word processor, harks back to the original MacWrite in its ease of use, but is a more polished writing tool than MacWrite II, offering a larger spelling dictionary and better formatting control. Full Impact, an Ashton-Tate spreadsheet, specializes in producing high-quality presentation charts and graphs from the numbers you crunch. RecordHolderPlus, though no FileMaker Pro, manages your record keeping in customized databases that can include graphics fields. SuperPaint rounds out the SmartBundle pack: This painting and drawing program beats the original MacPaint but can't match software such as MacDraw II in power or features.

Although you can use Multifinder to integrate two or more of these programs, you'll need lots of RAM — 2 megabytes to run any two, 4 megabytes to run all four. SmartBundle sticks an alternative, SmartBundle Launch, in the box. This customized version of CE Software's DT Launch, a desktop accessory for starting and switching programs and documents, lets you jump from one application to another without returning to the Finder.

You'll pay more for SmartBundle than you will for any of the other four packages (though if you buy by mail order, the difference between it and Microsoft Works,

MOTIVATE YOUR MAC

It's so simple to pick an integrated program for the Apple II — AppleWorks Classic or AppleWorks GS. Choosing an integrated system or software bundle is tougher when you have a Macintosh.

Of the three truly integrated programs, SmartWorks gets a tentative nod. If it meets expectations and delivers on its promised features and abilities, it can challenge the market leader, Microsoft Works. But Works is the safest integrated choice. The program is a proven commodity that's backed by a powerful company that's sure to be around for years to come.

Of the bundles, Claris' Power Package wins the teacher vote (and if it were available on retail shelves, the home and small-business vote as well). SmartBundle, though not as impressive in price and application set, can handle more demanding tasks than any modular system.

There's no AppleWorks for the Macintosh. But with the Mac's inherent look-alike software and Multifinder flexibility, an all-in-one package may not be the perfect solution. That's why Power Package's MacWrite II/MacDraw II/FileMaker Pro combination is an offer no educator should refuse. Three exceptional programs cover a trio of application needs with grace and power. Until Claris wises up and extends the offer to those at home and in the office, SmartWorks is worth the risk. Its XTND file translators integrate not only Macintosh, but also Apple II and MS-DOS applications. Buy it.

Integrated software doesn't put you on a plane for Paris, but it does put you in charge of your Macintosh. And there's little chance of a rude waiter spoiling your computer travels. ❑

GREGG KEIZER WAS THE FOUNDER AND EDITOR OF *COMPUTE!'S APPLE APPLICATIONS*, A BIMONTHLY PUBLICATION, AND IS CURRENTLY THE AUTHOR OF BRIDGING THE GAP, *INCIDER/A+*'S COLUMN ON MAC/APPLE II CONNECTIVITY. WRITE TO HIM AT 614 LINDEN STREET, SHREVEPORT, LA 71104. ENCLOSE A SELF-ADDRESSED, STAMPED ENVELOPE IF YOU'D LIKE A PERSONAL REPLY.

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Claris Corporation
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Ragtime USA
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(415) 780-1800
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T/Maker Company
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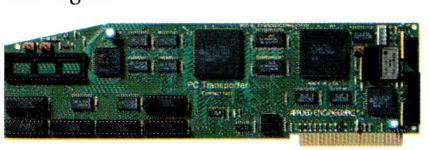

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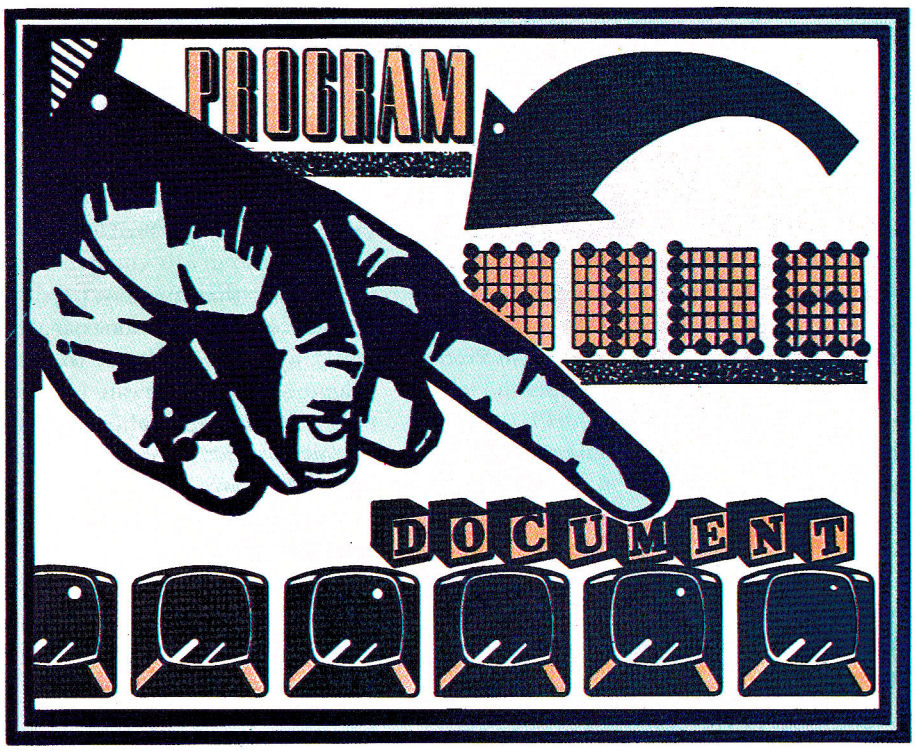
THE WIZARD OF OS



A little operational sleight of hand lets you install your system software and device drivers with a minimum of fuss.

By Gary R. Morrison and Walker Archer

Ever wonder how your computer "knows" which peripheral to talk to — without getting its wires crossed? Simply put, the mastermind of this operation is a program or group of related modules collectively called *system software*. Every Apple II and Macintosh computer requires system software to save your data to disk or load a program.

Back in the days when floppies were the only storage media, the formal name for this type of software was "disk operating system." Now that there are so many alternative devices for data storage, though, it's known as "system software." Basically, it manages your computer's input from and output to whatever peripherals you've attached.

As a separate disk that comes with your machine or as part of an application package, system software is also the program that lets you turn on your computer and boot into a Finder-type screen, a main menu, or some other "user friendly" environment, depending on which computer model you're using. In relation to the topic of this series, it tells your hard drive how to retrieve and save your files. In addition, placing ("installing") the operating system on your hard drive will let you boot your computer fast without inserting any disks.

Which operating system should you install? Over the past several years, there have been many different versions of system software for the Apple II line. In the early days, the most popular operating system was the plainly named DOS. Alternatives included the Pascal operating system, which was considerably more difficult to use, and CP/M (Control Program for Microcomputers) if you were interested in adding a Z80 coprocessor board to your Apple.

In 1983 Apple developed ProDOS (Professional Disk Operating System), which allowed for a wider variety of connected devices and much larger storage capacity. Then, soon after releasing the GS in 1986, Apple came up with ProDOS 16 and renamed the old software ProDOS 8. ProDOS 16 was a 16-bit operating system written specifically for the Apple IIGS, yet it also ➪

Illustration * Chris Spollen

remained compatible with 8-bit ProDOS.

In 1988 Apple released a considerable enhancement to ProDOS 16 called GS/OS version 3.2, a robust operating system that takes full advantage of the machine's power. Another difference is that while ProDOS 8 was written to be compact, GS/OS was written to be highly modular. That is, it's designed so that you need to install only the parts you're going to use.

This feature saves memory and makes the system much faster for most users. On the other hand, it also makes installing and using the operating system more complicated. While ProDOS 8 needs only one file, GS/OS disks may contain well over 100 files.

Modularity allows for easy updating — adding improvements or correcting bugs — without reinstalling the complete system. A modular operating system also lets third-party software developers add features to the system.

For example, Seven Hills and Vitesse have written printer "drivers" (software that facilitates communication between your computer and its peripherals) for non-Apple models, and other companies may soon be releasing drivers for non-Apple CD-ROM drives and tape-backup units.

Is there any leeway here? If you have a IIe or IIc, you must use ProDOS 8. If you have a GS, you may use either ProDOS 8 or GS/OS. In addition to formatting drives before shipment (as discussed in last month's feature, "Off the Beaten Track," p. 88), many vendors, including Chinook and CMS Peripherals, will also install the proper operating system on request.

If the vendor is willing to do the work of installing the operating system for you, that'll save you a considerable amount of time. Quality Computers takes another tack: Its Q-Drive automatically installs ProDOS 8 on Apple IIes and GS/OS on GSes when you boot it the first time.

PLUGGING IT IN

Installing ProDOS 8 on your Apple IIe or IIc's hard drive is easy. All you need is

"Every Apple II and Mac computer requires system software to save your data or load a program."

a reliable copy program, such as the **Apple II System Utilities** that came with your machine or a third-party product like **Copy II Plus**, **Easy Drive**, or the CatDoctor module from **ProSel**.

Simply follow the prompts and menus to copy the file named *ProDOS* from your ProDOS system disk that came with your computer (or any application disk that contains the ProDOS file) to your hard drive.

Although it isn't strictly necessary for the operating system, it's generally a good idea to copy BASIC.SYSTEM to the hard drive as well. The BASIC .SYSTEM file acts as a go-between for BASIC programs and ProDOS. You'll need it if any of your programs are written in BASIC; your machine-language and assembly-language programs will use ProDOS directly, however.

Note also that if you've partitioned your drive into two volumes, make sure you copy these files only to the first volume — system software is necessary only on the boot volume or drive. Putting it on both wastes space and may incur other problems.

If you update the system on one volume and not the other, for instance, your machine may boot the older version, the one you don't want.

Now when you reboot, the operating system will be active. You can tell the current version of ProDOS by watching the screen as your system boots: The version number will flash on screen for a moment.

If you have a GS, you'll probably want to install the GS/OS operating system, because of its many advantages over ProDOS 8. (Of course, you can still use your ProDOS 8 programs from GS/OS.)

Things are a little trickier if you have a SCSI hard drive connected to an Apple High-Speed SCSI card (*small computer systems interface* — a type of standard electronics protocol — see part 2, "The SCSI Side of Life," February 1991, p. 47, for more information).

You're facing a problem with the system disk even before you try to install the operating-system software on your hard drive: You need to install a SCSI driver in your system file before you can access a SCSI drive via an Apple card.

If you boot the GS/OS system disk as is, you'll get an error message and won't be able to access the hard drive once you reach the Finder. (If you have a third-party SCSI card such as the CMS model

Mac Notes

On the Macintosh, the operating system is generally referred to by its version number (System 6.0.7, for instance, or the soon-to-be-released System 7.0), and is similar in many ways to GS/OS.

Installing Macintosh system software is easy:

1. First, find your System Tools disk.

2. If your computer is off, turn it on. If your computer is on, select Restart under the Special option on the Finder screen's pull-down menu.

3. Now, insert the System Tools disk into the disk drive so that you boot from the floppy. If the computer ejects your floppy, reinsert it, but not forcefully. (You won't be able to install the system software if you boot from your hard drive.)

4. When you see the desktop, double-click on Installer. The software will determine which machine you have and the name of your hard drive. If you agree, indicate that you want to continue with the installation of the system software.

5. When the system software finishes copying to your hard drive, restart your computer. Simple!

or CV Technologies' RamFast, GS/OS will recognize it as a floppy drive, oddly enough, not as a SCSI hard drive: The firmware on these cards gets around GS/OS' problem of SCSI nonrecognition by using a standard GS/OS floppy-disk driver to access the SCSI drive.)

So the first step — before you install GS/OS on your hard disk — is to add SCSI drivers to the original operating system. (Note that if your hard drive is non-SCSI, the procedure's simpler — skip steps 3, 4, 5, and 6 outlined below.) You'll be deleting the tutorial file and certain other nonessential modules to do that, but there's no way around it. Here's a rundown:

1. Don't use your original disks — make copies. Use the Finder, ProSel 16, or some other program capable of copying GS/OS files to duplicate your system disk and the System Tools disk that came with your computer. Store your originals in a safe place.

2. Boot from your copy of the system disk. Press Open apple/Control/Escape, select *Control Panel* from the menu, and press Return. Now select *Slots* and press Return. Highlight *Startup Slot* and use the left- or right-arrow key to cycle through the slots until you come to one in which your 3.5-inch drive is installed (usually 5). Exit the Control Panel, insert your copy of the system disk into the 3.5-inch drive, and press Control/Open apple/Reset to boot your computer.

3. Ignore the error message. When you see "SCSI device requires a driver. Please install SCSI driver on boot disk and reboot system," press Return.

4. Run the Installer program. Insert your copy of the System Tools disk and double-click on *Installer*. Move through the list of drivers and installation options to the left of your screen until you find *SCSI Hard Disk*, and highlight it.

5. Install the SCSI hard-disk driver from the System Tools disk onto the system disk. If you have two drives, insert your copy of the system disk into the other drive and click on the *Drive* button to select it. If you have only one 3.5-inch drive, click on the *Drive* button until *System.Tools* shows at the top of the window. Press the eject button on the disk drive; then insert your copy of the system disk and select *Install*. This process will copy the SCSI drivers from the System Tools disk to your copy of the operating system.

"Installing the operating sytem on your hard drive lets you boot your computer fast without inserting any disks."

Note that if you have a UniDisk, there's one precaution you must take when switching disks. When you highlight *System.Tools* and eject the disk, don't insert your system disk right away. Click on the *Drive* button first so that you cycle through your drives one time without a disk in the drive. (The light will flicker for a second.) Otherwise you'll get an error message when you select *Install*. GS/OS has trouble telling when a disk has been ejected from a UniDisk if the correct driver isn't installed. After you add the SCSI drivers to your system software, follow the same procedure to install the UniDisk driver.

Now you're ready to copy your system software, complete with SCSI drivers, to your hard disk. Follow these steps:

6. Reboot your computer with the your copy of the system disk in the drive. This time, you shouldn't get the message about installing the SCSI device driver. Once you're in the Finder, you should see icons of all your drives, including your SCSI hard drive. If you don't see its name and icon, make sure it's turned on before you boot and check to see that the connections are tight.

7. Run the Installer program. Insert the System Tools disk and click on *Installer*. From the list to the left of the screen select either *Latest System Files (No Finder)* or *Latest System Files*. Select *Latest System Files (No Finder)* only if you've already installed a program launcher such as EasyDrive or ProSel. Most likely, you'll want to select *Latest System Files* so that you have access to the Finder. Make sure the name of the first volume of your hard drive appears near the top of the window beside *Disk to Update*. If not, click on the *Disk* button until you select the correct volume. (As with ProDOS, you need to install GS/OS on only one volume. Note also that when you copy an application program to your hard drive in the future, don't copy the operating-system files or BASIC.SYSTEM from it — they're already on your drive.)

8. Install the operating system on your hard drive. Click on the *Install* button and wait while your system software is copied automatically to your hard drive, along with drivers for the Apple 3.5-inch disk drive and the ImageWriter printer.

9. Check the list of optional drivers. If you have an Epson printer, a 5.25-inch drive, or other peripherals, you may want to highlight and install their drivers at this time. (You can do it directly from System Tools right now; if you wait, you'll ➪

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$40 (8), $89.95 (16)

have to install them on your system disk, starting from step 1, first.)

10. Tell your system to use your SCSI hard disk as the boot drive. Access the Control Panel and change the *Startup Slot* to *Scan*. You can now boot your computer from your SCSI hard drive.

AN ONGOING PROCESS

Apple Computer has maintained a strong tradition of offering continual improvements in its system software for both the Apple II and Macintosh lines.

If you need a new revision of the system software, you can obtain free copies from most local Apple Computer dealers. You supply only the disks: ProDOS 8 version 1.9 requires one 5.25-inch disk, GS/OS version 5.0.4 requires two 3.5-inch disks, and Macintosh system software such as 6.0.7 requires four 3.5-inch disks.

"Modularity allows for easy updating — adding improvements, correcting bugs — without reinstalling the whole system."

You can also download the most current system software from electronic services such as CompuServe, GEnie, and America Online. If you want the accompanying documentation, you'll have to purchase the manuals and system disks from your dealer.

Updates may come from Apple Computer as often as once a year. Check with your local dealer or favorite on-line service periodically to make sure you have the most recent version of the operating system, so that you can access all the features of the latest hardware and software on the market. ❑

GARY R. MORRISON IS AN ASSOCIATE PROFESSOR IN THE DEPARTMENT OF CURRICULUM AND INSTRUCTION AT MEMPHIS STATE UNIVERSITY, WHERE HE TEACHES COURSES IN INSTRUCTIONAL DESIGN AND TECHNOLOGY. HE'S THE AUTHOR OF THE PROGRAM REPAIRWORKS, PUBLISHED BY QUALITY COMPUTERS, AS WELL AS *THE APPLE II HARD-DISK PRIMER*, PUBLISHED BY NAUG, THE NATIONAL APPLEWORKS USERS GROUP. WALKER ARCHER IS MANAGER OF SOFTWARE DEVELOPMENT AT QUALITY COMPUTERS, AND HAS BEEN WORKING WITH APPLES SINCE 1980. HE'S THE DEVELOPER OF THE PROGRAMS EASYDRIVE AND RAMUP. GARY MORRISON AND WALKER ARCHER ARE ALSO THE AUTHORS OF AN ON-LINE COURSE IN C PROGRAMMING FOR THE GS. WRITE TO THEM C/O *INCIDER/A+*, 80 ELM STREET, PETERBOROUGH, NH 03458. ENCLOSE A SELF-ADDRESSED, STAMPED ENVELOPE IF YOU'D LIKE A PERSONAL REPLY.

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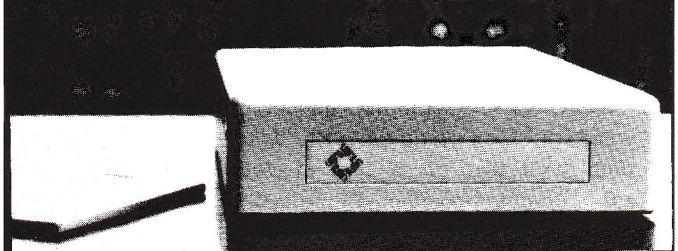

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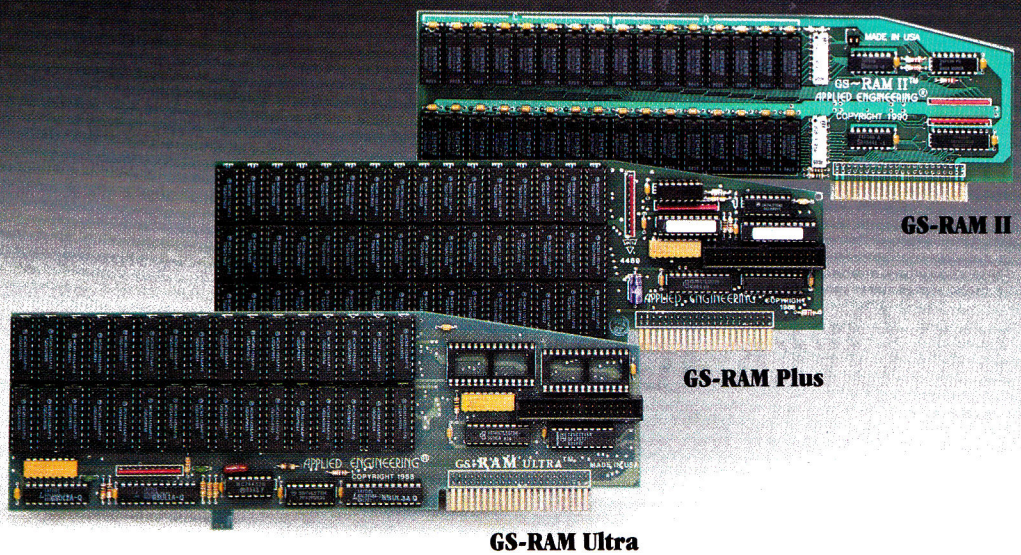

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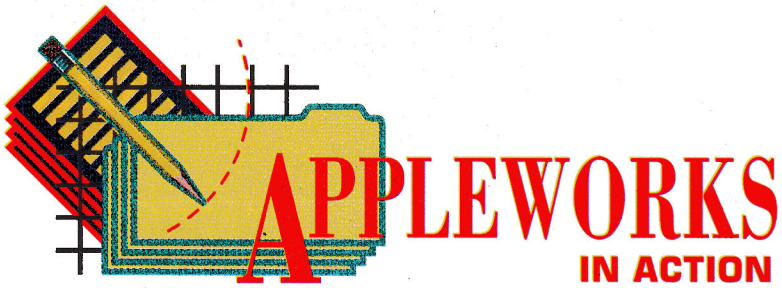

A Roof Over Your Head

Before you go to the bank for a mortgage, do your "homework" — analyze your finances with this efficient AppleWorks spreadsheet.

By RUTH K. WITKIN

. . . AND THE HANDSOME PRINCE carried the beautiful princess into the castle, where they lived happily ever after. At least that's the way it happens in fairy tales — but chances are the castle wasn't mortgaged and the prince and princess lived there scot-free.

If you're thinking about buying your own castle, you need to give serious thought to the impact of the purchase on your lifestyle and resources. Many people get in over their heads simply because they don't take the time to figure out what they can realistically afford. They see a house they love and ignore the fact that it's beyond their means. While mortgage lenders can put a rein on overboard buying, many home buyers squeak through the approval process on a shoestring, leaving them with monthly payments stretching their finances to the very limit, and beyond.

Before you make any commitments, any applications, or any mistakes, settle in with this month's spreadsheet. It will let you examine the factors that affect home-purchase affordability, including the type of loan (fixed- or adjustable-rate), length of loan, down payment, interest rate, and debts you've already incurred. Spending time now can help you live happily ever after in a castle that's just right for you.

All readers — even those not contemplating a home purchase — should be sure to check the "Hot Tip" at the end of this column. It's a goodie!

Create a new AppleWorks spreadsheet file and name it **MORTGAGE**. You should now see the spreadsheet *Review/Add/Change* screen with the cursor in cell A1. Use the following summary to start the spreadsheet:

Long lines. Enter a double line across row 2 in columns A and B: Place the cursor on A2 and type quotation marks. Hold down the equal-sign key until the sign reaches the right edge of B2 (halfway between columns B and C), and hit Return.

Leave the cursor on A2 and copy the row to the clipboard: Press Open apple-C (OA-C) to start the *Copy* command. Type **T** to select *To clipboard*, hit Return to confirm *Rows*, and hit Return again.

Now copy the row containing the line from the clipboard to rows 16 and 37: Place the cursor on A16. Press OA-C and type **F** to select *From clipboard*. Now place the cursor on A37. Press OA-C and type **F**.

Column width. Each column is now nine characters wide. To increase column A by 54 characters (to 63 characters), leave the cursor in column A, then use the *Layout* command (OA-L), select *Columns*, press Return to confirm *column A*, and select *Column width*.

Then press OA and the right-arrow key 54 times (counting all the while) and press Return again. With the cursor in column B, increase column B by 2 characters (to 11 characters) using the same procedure.

Labels. Referring to **Figure 1**, enter all labels. To center the spreadsheet title, type quotation marks and press the spacebar 23 times before typing the title. Indent the labels in A9, A10, A25 through A28, and A31 through A34 with two spaces. Indent the labels in A35 and A36 with one space. Whenever you begin a label with a space you must type quotation marks first, to let AppleWorks know the entry is a label.

Don't bother to press Return after typing an entry. Moving the cursor to another cell will automatically enter what you typed. In other words, moving the cursor is the same as pressing Return then moving the cursor — and it saves a keystroke every time. After the last entry, hit Return.

Formats. Use the *Value* command (OA-V) to set a standard *Value format* of *Commas* with no decimal places. Now move to B7 and use OA-L, then *Block* to replace the standard format in B7 through B10 with *Commas* with *2* decimal places. In B14 and B15 replace the standard format with *Percent* with *no* decimal places. Finally, in B22, B27, B28, B33, and B34 use OA-L and either *Entry* or *Block* (whichever is appropriate) to replace the standard format with *Percent* with *one* decimal place. Press OA-S to store your work on disk.

Next, refer to **Figure 2** for sample entries. Here's the reason for certain numbers: Many lenders say a family can spend 28 to 33 percent of its monthly gross income on a mortgage, so I've put that information in the label and entered *28%* in B14. Some financial institutions insist on no installment debts before they grant a mortgage loan, while others accept a

small percentage, so I've put *0%–15%* in the label and *10%* in B15.

Now enter the numbers. As you do, AppleWorks will insert the commas, decimal places, and percentage signs where they belong, as in **Figure 1**. Again, press OA-S to store all your work on disk.

Later, when you make your own entries on this spreadsheet, make it a rule to overtype the old entries instead of blanking them out. Blanking out entries in a nonstandard format will also blank out their format; then you'll have to spend time reformatting them.

Next, enter the formulas that perform the calculations; you can see their locations in the unshaded areas of **Figure 1**. First, read how the formula works. Then place the cursor on the cell receiving the formula. Move the cursor to the cell locations shown in the formula, and type everything else.

When the formula is complete, compare each character on your screen with the way it appears here. If everything agrees, press the return key. If something's amiss, press Escape and start again.

FORMULA 1: Mortgage Amount. Here, Formula 1 subtracts the down payment in B4 from the price of the home in B3 to produce the mortgage amount in B17.

Cell location: B17
Formula: +B3–B4

FORMULA 2: Monthly Loan Payment Acceptable to Lenders. Formula 2 multiplies the monthly gross income in B13 by the acceptable mortgage level in B14 to produce in B18 the monthly loan payment assumed to be acceptable to lenders.

Cell location: B18
Formula: +B13*B14

FORMULA 3: Monthly Debt Payment Acceptable to Lenders. Formula 3 multiplies the monthly gross income in B13 by the acceptable debt level in B15 to produce in B19 the monthly debt payment assumed to be acceptable to lenders.

Cell location: B19
Formula: +B13*B15

FORMULA 4: Gross Income in First Year. Formula 4 multiplies the monthly gross income in B13 by 12 to produce the first year's gross income in B20.

Cell location: B20
Formula: +B13*12

FORMULA 5: Debt Payments in First Year. Formula 5 multiplies the monthly debt payments in B12 by 12 to produce the first year's debt payments in B21.

Cell location: B21
Formula: +B12*12

FORMULA 6: Debt Payments as Percentage of Gross Income. Formula 6 divides the first year's debt payments in B21 by the gross income in B20 to produce the debt payments as a percentage of gross income in B22.

Cell location: B22
Formula: +B21/B20

FORMULA 7: Monthly Mortgage Payment, Fixed Rate. Formula 7 is the first of several formulas to use the *PMT* function (available in AppleWorks 3.0) to calculate equal monthly installments, including principal and interest, for a fixed-rate mortgage. The PMT syntax is *@PMT (RATE,TERM,–PV)*, where *PV* is the present value, or mortgage amount. The minus sign produces a positive result.

To get the monthly interest rate, each PMT formula divides the annual rate in B7 by 12 multiplied by 100 — that is, B7/1200. To convert to months, the formula multiplies the term by 12, which appears as B5*12.

Cell location: B25
Formula: @PMT(B7/1200,B5*12,–B17)

FORMULA 8: Debt and Mortgage Payments, Fixed Rate. Formula 8 adds the first year's debt payments in B21 and monthly payments in B25, annualized, to produce the debt and mortgage payments for a fixed-rate mortgage in B26.

Cell location: B26
Formula: +B21+(B25*12)

FORMULA 9: Mortgage Payments as Percentage of Gross Income, Fixed Rate. Formula 9 divides the monthly payments in B25, annualized, by the first year's gross income in B20 to produce in B27 the mortgage payments as a percent of gross income for a fixed-rate mortgage.

Cell location: B27
Formula: +B25*12/B20

FORMULA 10: Debt and Mortgage Payments as Percentage of Gross Income, Fixed Rate. Formula 10 divides total debt and mortgage payments in B26 by the first year's gross income in B20 to produce in B28 the debt and mortgage payments as a percentage of gross income for a fixed-rate mortgage.

Cell location: B28
Formula: +B26/B20

FORMULA 11: Monthly Mortgage Payment, Adjustable Rate. Formula 11 calculates equal monthly installments for an adjustable-rate mortgage (ARM) in the first year and enters this amount in B31.

Cell location: B31
Formula: @PMT(B8/1200,B5*12,–B17)

FORMULA 12: Debt and Mortgage Payments, Adjustable Rate. Formula 12 adds the first year's debt payments in B21 to the monthly payments in B31, annualized, to produce the debt and mortgage payments for an ARM.

Cell location: B32
Formula: +B21+(B31*12)

FORMULA 13: Mortgage Payments as Percentage of Gross Income, Adjustable Rate. Formula 13 divides the monthly payments in B31, annualized, by the first year's gross income in B20 to calculate the monthly mortgage payments for an ARM as a percentage of gross income.

Cell location: B33
Formula: +B31*12/B20

FORMULA 14: Debt and Mortgage Payments as Percentage of Gross Income, Adjustable Rate. Formula 14 divides the total debt and mortgage payments in B32 by the first year's gross income in B20 to produce the debt and mortgage payments for an ARM as a percentage of gross income.

Cell location: B34
Formula: +B32/B20

FORMULA 15: Highest Second-Year Monthly Payment, Adjustable Rate. Formula 15 adds the interest rates in B8 and B9 to project the highest rate increase permitted in the second year with an ARM, and enters the result in B35.

Cell location: B35
Formula: @PMT(B8+B9/1200,
B5*12,–B17)

FORMULA 16: Highest Monthly Payment Over Life of Loan, Adjustable Rate. Formula 16 adds the interest rates in B8 and B10 to project in B36 the highest possible monthly payment over the life of the loan with an ARM.

Cell location: B36
Formula: @PMT(B8+B10/1200,
B5*12,–B17)

With your formulas in perfect working condition, it's a good idea to protect them from inadvertent change, so leave the cursor on B36 and press OA-L. Type **B** ⇨

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```
=====================================A=====================================B=====
  1|                        AFFORDABLE MORTGAGE ANALYSIS
  2|==========================================================================
  3|Price of home                                                  175,000
  4|Down payment (in dollars)                                     20,000
  5|Life of loan (in years)                                           30
  6|
  7|If fixed-rate mortgage, annual interest rate (%)                11.75
  8|If adjustable-rate mortgage, interest rate first year (%)       9.50
  9|  Highest rate increase permitted in any one year (%)           2.00
 10|  Highest rate increase permitted over life of loan (%)         7.00
 11|
 12|Monthly payment on all current debts (car, college, etc.)         865
 13|Monthly gross income (before tax and other deductions)          6,250
 14|Acceptable mortgage level as percent of income (28%-33%)          28%
 15|Acceptable debt level as percent of income (0%-15%)               10%
 16|==========================================================================
 17|Mortgage amount                                  155,000    1
 18|Monthly mortgage payment acceptable to most lenders  1,750    2
 19|Monthly debt payment acceptable to most lenders       625    3
 20|Gross income in first year                         75,000    4
 21|Debt payments in first year                       10,380    5
 22|Debt payments as a percent of gross income          13.8%    6
 23|
 24|Fixed-rate mortgage (first year):
 25|  Monthly payment                                   1,565    7
 26|  Total debt and mortgage payments                 29,155    8
 27|  Mortgage payments as a percent of gross income     25.0%    9
 28|  Debt and mortgage payments as percent of gross income      38.9%   10
 29|
 30|Adjustable-rate mortgage (first year):
 31|  Monthly payment                                   1,303   11
 32|  Total debt and mortgage payments                 26,020   12
 33|  Mortgage payments as percent of gross income       20.9%   13
 34|  Debt and mortgage payments as percent of gross income      34.7%   14
 35| Highest possible second year monthly payment       1,535   15
 36| Highest possible monthly payment over life of loan 2,147   16
 37|==========================================================================
```

Figure 1. Mortgage-analysis spreadsheet with formula locations.

```
=====================================A=====================================B=====
  1|                        AFFORDABLE MORTGAGE ANALYSIS
  2|==========================================================================
  3|Price of home                                                  175000
  4|Down payment (in dollars)                                     20000
  5|Life of loan (in years)                                           30
  6|
  7|If fixed-rate mortgage, annual interest rate (%)                11.75
  8|If adjustable-rate mortgage, interest rate first year (%)        9.5
  9|  Highest rate increase permitted in any one year (%)            2
 10|  Highest rate increase permitted over life of loan (%)          7
 11|
 12|Monthly payment on all current debts (car, college, etc.)         865
 13|Monthly gross income (before tax and other deductions)          6250
 14|Acceptable mortgage level as percent of income (28%-33%)         .28
 15|Acceptable debt level as percent of income (0%-15%)              .1
 16|==========================================================================
```

Figure 2. Sample entries.

(for *Block*), press OA-5 to reach B19, then press the up-arrow key twice to get to B17, and hit Return. Type **PN** (for *Protection Nothing*). It doesn't matter that empty cells B23, B24, B29, and B30 are included in the group.

Now it's time to print this spreadsheet, which is 73 characters wide and prints at 12 characters to the inch. Leave the cursor where it is and press OA-O to bring up the *Printer Options* screen.

To balance the printed spreadsheet horizontally, change the left and right margins: Type **LM** and press Return, then type **.9** and press Return again. Now type **RM**, hit Return, type **.9**, and hit Return.

Next, change the top margin: Type **TM** and hit Return, then type **.8** and hit Return. Finally, set the character size: Type **CI**, hit Return, type **12**, and hit Return once more. Return to the spreadsheet by pressing the escape key.

Now turn on your printer. Press OA-P to start the *Print* command and hit Return to confirm *All*. Press Return to select the printer (or type a printer number, then Return), type today's date (or the at sign — @ — to have AppleWorks enter the date for you, if your computer has a clock). Finally, hit Return to confirm *one* copy, and hit Return again. The printer will click away and produce your sample spreadsheet. Press OA-S to store your finished spreadsheet on disk.

If you're seriously pursuing a home mortgage, loan officers are a good source of information. Ask them about their acceptable mortgage level (B14) and debt level (B15) as a percentage of gross income. Some financial institutions accept a combination percentage, while others insist on no installment debts before they grant a mortgage loan.

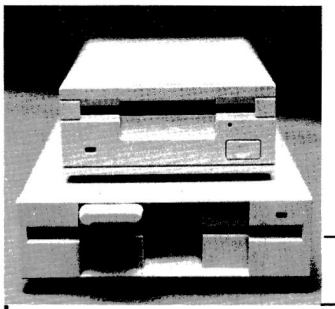
HOT TIP

Sometimes your perfect formulas may not work as perfectly as you expect, so you'll need to edit them. Editing is a matter of placing the cursor on the formula and pressing OA-U. This puts the formula on the edit line, where you can use the left- and right-arrow keys to move to the offending area and make corrections. You then press Return to have AppleWorks accept your changes.

But what if your corrections aren't correct? When you hit Return, AppleWorks restores the unedited formula and beeps. It's frustrating, especially if you've edited a long formula extensively.

Here's how to get around the problem: Do your editing, but press OA in combination with the minus sign before you press Return. If AppleWorks doesn't accept the edited formula and restores the original, press the solid apple-zero (SA-0) key combination on the IIe, Option-zero on the GS. This puts the edited formula on the edit line before the unedited version. Edit until you get it right, then delete the extraneous formula. I found this spreadsheet tip on Beagle Bros' TimeOut MacroEase disk. If the discoverer gets in touch with me, I'll be glad to publish proper credit in a future column. ❑

WRITE TO CONTRIBUTING EDITOR RUTH K. WITKIN AT 5 PATRICIA STREET, PLAINVIEW, NY 11803. ENCLOSE AN SASE IF YOU'D LIKE A REPLY.



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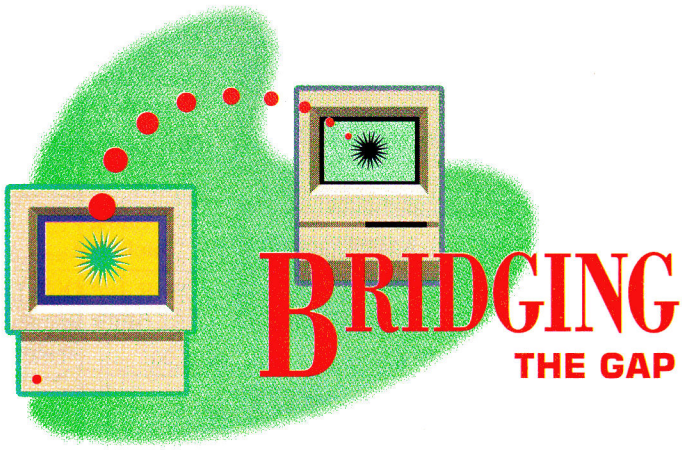

TELEPHONE TAG

Boot up your communications program and go on line. With a little help from the phone company, Apple IIs and Macs can form long-distance relationships.

By GREGG KEIZER

CUT MY TELEPHONE LINE AND you've just cut my lifeline. Without the telephone, I can't do business. I can't talk to contacts and clients, I can't chat with remote friends, I can't find out what's hot and what's not for the Apple II and the Mac.

Even worse, my computers are suddenly isolated. Chop the phone line and my machines are like inmates shoved into solitary confinement — they can't communicate with the outside world, bring entire libraries of information and software to me, or talk easily to each other.

Still, many Apple II and Macintosh users make do without a *modem*, the device that transforms a computer's digital information into something an analog phone system can understand and transmit. Maybe it's because telecommunications carries a reputation for being expensive and often difficult. Technology has changed over the last year or so, though; on-line services have dropped prices, and some communications programs have simplified the task of connecting to and navigating on huge electronic databases.

Phone lines not only span the gap between files and data, but they also link Apple IIs and Macs. If you're mixing Apple IIs and Macintoshes, it helps if the two computers run software that acts alike, maybe even looks alike. Act-alike software on the Apple II and the Macintosh not only lets you swap information long distance, but also cuts down on the time spent learning the ins and outs of computer-linked communications. Thanks to Claris' *XTND* technology (see "Swap 'til You Drop," March 1991, p. 100), you can make even AppleWorks 3.0 Mac compatible. (More on this below.) Let's look first at the services and technology, then we'll show you how to put telecommunications into practice in your classroom, home, or business.

ON LINE IN AMERICA

On-line choices abound. You can sign on with giant services such as **CompuServe**, miniscule electronic communities such as **The WELL**, or focused information providers such as **Dow Jones**. But there's only one consumer on-line service that specializes in the Macintosh and the Apple II, and supports both systems with an easy-to-use interface.

America Online is a full-featured electronic communications service with traditional offerings. You can read late-breaking news, explore the intricacies of airline schedules, chat with other computer owners, and download hundreds of programs. But two capabilities pull America Online out of the on-line service pack for Apple and Macintosh users: Apple II and Macintosh topics dominate (America Online only recently added an MS-DOS section), and you connect with software that puts nearly identical faces on the Mac, the Apple IIe/c, and the IIGS.

On all three systems, America Online displays an interface dependent on pull-down menus and mouse support (although you can take keyboard control if you like). The sign-on displays and department screens vary somewhat from machine to machine, but all put button-like icons under your mouse pointer or cursor. As you'd expect, the Macintosh and Apple IIGS interfaces look most alike, even down to the buttons' graphics.

Click on the department screen's *Travel & Shopping* button, for example, and you move immediately to the section in which you shop electronically and root out cheap airline fares. Other buttons lead you to areas such as *Entertainment*, *News & Finance*, and *Computing & Software*. Once you've accessed a department, a window lists areas to explore, and additional icons appear to lead you even deeper into this service. Click on a folder icon and you'll see files to read or download; click on a file icon and you can download it to your Apple II or Macintosh.

You navigate America Online with mouse clicks and a keystroke press here and there. Although other services — **CompuServe** and **GEnie** in particular — have more members, a wider variety of on-line conversations, and larger software libraries, they're harder to use. You have to memorize page numbers or keywords to navigate these services, and even remember a command to sign off. On America Online, all you do is pull down a menu and choose *Sign Off*.

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Online from either an Apple II or a Mac. Although the images you see on screen differ from Apple II to Mac, your options are the same. Sending mail, for instance, is almost identical on both computers (although the Mac has some valuable extras, such as an address book and the capability to send mail at a later time). If you use an Apple IIGS, but you're thinking about buying a Macintosh, for example, you can cruise through the Macintosh forums, asking questions of long-time Mac owners. (See the accompanying **Figure**.) You can even download Macintosh text files.

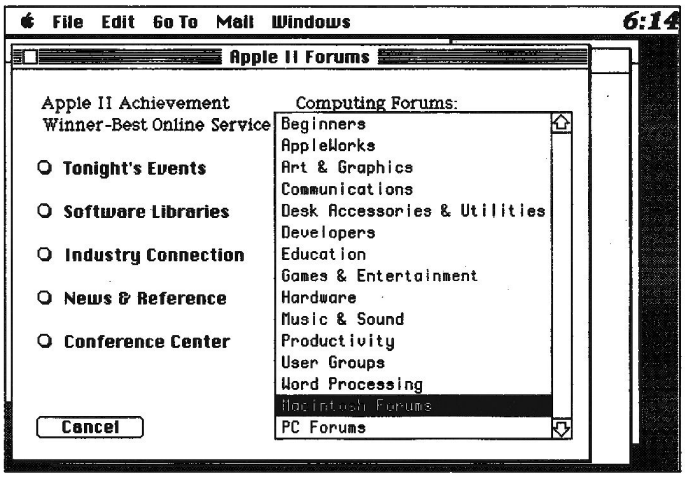

Figure. Department screen: Selecting America Online's Mac forums.

Overall, the Macintosh software is easier to use. Navigation icons are everywhere; once you're connected, you can conduct literally an entire on-line session without touching the keyboard. The Apple II interface is rougher, with small buttons to click on instead of icons, and pathnames to remember when you're downloading files. Even so, once you're familiar with accessing and using America Online's services, switching from Apple IIGS to Mac and back is a snap — especially because you don't have to learn another communications program.

STRATEGIES TO CONNECT

On-line services make linking different computers possible. While many other information-swapping strategies exist for machines that share the same desktop, room, or even building, they simply can't handle the information flow when thousands of miles separate these computers.

You can use a service such as America Online to send messages, formatted documents, text files, and even graphics images from an Apple IIe to a Mac Classic or from a Macintosh LC to an Apple IIGS. Of course, other services let you do this, too — except for **Prodigy**, all on-line services have provisions for file transfer — but America Online simplifies the process so that even the most ardent technophobe can manage nicely.

All on-line services let you send messages, or small amounts of text, from one subscriber to another. America Online is no different. All you need is the screen name of the person you want to contact. Think of this name as an on-line nickname. (Mine, for example, is GAKeizer.) You can find someone's screen name by searching the member directory — all you need is the person's real last name.

Armed with the correct screen name, just type away. Forget formatting the message: You can't highlight with boldface, underline, or italic text. Click on the appropriate button or icon and the message zips to the recipient. Practice these steps on yourself a time or two before sending a message to someone else. Stick your own screen name in the *To* box and almost as soon as you've sent it, you'll see either the mail notice at the bottom right of the Apple IIe/c or IIGS screen, or the blinking mailbox at the upper left of the Macintosh screen. (You'll first hear the words "You've got mail" from your Mac, though.)

As valuable as these electronic messages may be, you're restricted to sending and receiving relatively short spurts of information. Similar to most other services, America Online also lets you send entire files over the phone lines. In fact, with America Online's point-and-click interface, it's almost as easy to send files as messages. The problem, however, is what you do with a file once you have it on the other machine.

FILES HIT THE ROAD

Let's say you want to send an **AppleWorks 3.0** word-processing document across the country to someone who uses a Macintosh. If possible, you want the file's format — centered titles, boldface words, adjusted margins — retained so that the person on the other end won't have to spend time touching it up.

Create an AppleWorks document and save it as usual. Connect to America Online, pull down the *Post Office* menu, and select *Send Other*. (This is the way you send files via America Online from an Apple IIe/c or IIGS.) Now, type the screen name of the person to whom you're sending the file, enter a brief notation about the subject, insert the AppleWorks file's pathname, and add a short message, perhaps to tell the recipient the reason you're sending it. Now click on *Send* or press Open apple-2 (OA-2) to send the file on its way.

In a moment, the Mac owner will find the file and message in the America Online mailbox. He or she simply needs to sign on and click on the envelope icon to see a list of new messages — those accompanied by a file are marked with an icon. Click on the message, read it, then select *Download* to draw the file from America Online's computers to the Macintosh.

Here's where it gets sticky. The file you just downloaded is an AppleWorks word-processing file. But as far as the Macintosh is concerned, it's a foreign file type. Even a program such as **MacWrite II**, which is equipped with XTND file translators, can't handle it in its current condition. You must transform the file into a format the Macintosh recognizes by altering the file's *Type* and *Creator* (two Macintosh file attributes). I use **DiskTools**, an all-in-one file-maintenance program that's part of **File Director**, a Fifth Generation package, but other capable programs include **SUM II** from Symantec and **DiskTop** from CE Software. Change *Type* to *1A* and *Creator* to *pdos* so that MacWrite II will understand the file. Now you can open it as an AppleWorks file within MacWrite II (or within any application that uses XTND translators, such as **SmartWorks**). The file's

formatting remains intact. Of course, after additional editing you can save it as a standard MacWrite II file on the Mac.

If you don't want to go to all this trouble, you can send a simple ASCII (text) file from an Apple II to a Mac via almost any on-line service, America Online included. The text file doesn't retain the original document's formatting, but the raw words remain intact. The Macintosh user on the other end of the phone link downloads the text file (which may have started out as an AppleWorks word-processing document or an AppleWorks database), then opens it with any word processor or a database manager such as **FileMaker Pro** or the one in **Microsoft Works**.

Rushing files in the opposite direction isn't nearly as easy. If you work with a Macintosh and want to share information and files with a remote Apple II, you're really limited to sending text files. Although Apple II and IIGS programs exist that can change file types (**FileTools 1.1** for the IIGS is an excellent shareware example), the problem lies in the absence of any technology similar to Claris' XTND code and tools for the Apple II line. Even if you change the newly downloaded file's type and auxiliary type, AppleWorks balks at putting it on the desktop. Shift to opening it as a text file, though, and you can read it, but the first and last sections consist of a jumble of strange characters. (These portions of a file normally provide formatting instructions to the Macintosh program that created the file.)

WORTH THE TROUBLE

Telecommunications, even on a service such as America Online that features a point-and-click interface and an easy file-transfer procedure, often overwhelms the beginner. But with telecommunications and an on-line service you can extend your computer's reach dramatically. Even on a text-file level, the amount of information you can share between far-apart Apples and Macs is staggering.

If you're an educator, for instance, you can use these bridging techniques to keep in touch with schools across your state or classrooms across the country. A service such as America Online lets you zap files — no matter if you've created them on a Macintosh IIsi or an Apple IIe — to kids in a different city, kids with a different perspective. Imagine the lessons your students could learn about geography, culture, history, and more if they could communicate instantly with kids who live that geography, culture, and history every day. If you teach in the Northeast imagine the views your history class could get on the Civil War, for instance, by talking with a class of South Carolinians. Or think of what an upper-middle-class suburban high-school English class could learn from trading experiences with a class deep in the inner city in Los Angeles, New York, or Chicago.

If you're in business for yourself or working for someone else, you can use the same on-line service and file-sharing methods to replace a fax machine. Although you're limited to sending files to and receiving them from people who subscribe to that particular service, several memberships on America Online are still much less expensive than purchasing a fax machine for each location.

And if your family owns more than one type of machine, an Apple IIGS and a Macintosh Classic perhaps, you can use these long-range bridges to span the gap at home. Although America Online doesn't advertise it, you can sign on to your account from either a Mac or an Apple II, as long as you have the service's special software: You don't need to maintain two separate accounts. I've used America Online to send files — both ASCII and formatted — between the Macintosh LC in my garage-based home office and the Apple IIGS in the den in the house. It beats setting up an AppleTalk network, it's more convenient than running disks up and down two flights of stairs, and it lets me use an office laser printer connected to the Macintosh to print documents created originally on the Apple IIGS.

Cut the phone line and you have one less way of making the Apple II and the Macintosh work together. Use the phone and you can extend the reach of both machines to span the gap — and the continent. ❑

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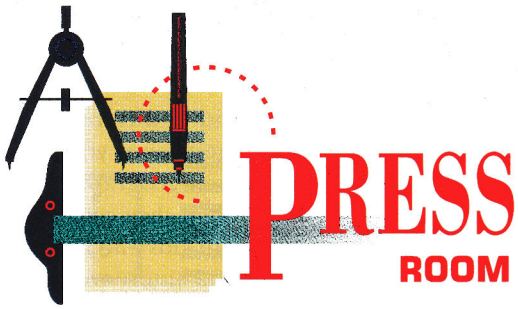

PARTY TIME!

With desktop-publishing programs to help you get ready, organizing a party can be part of the fun.

By CYNTHIA E. FIELD, Ph.D.

ENJOYING THE NEXT CELEBRATION you prepare will be a lot easier if you enlist your Apple II desktop-publishing (DTP) program as your party-planning assistant. We're launching a surprise retirement party for an English teacher at a local community college this month, and without Publish It! 3 and AppleWorks GS, the task would be a chore. Instead, thanks in part to these DTP programs, organizing the affair is a piece of cake!

FESTIVE TO-DO LIST

Organizing any kind of party involves at least four steps: determining the party's "specs" (date, time, location, and so forth), inviting guests, tabulating responses, and presiding over the festivities. In our case, a committee of three fellow teachers has decided to hold our friend's retirement party in the evening at a nearby restaurant. Partygoers will have a choice of entrée: boneless breast of chicken or broiled scrod. The campus mailroom has offered to distribute the invitations, so there's no envelope addressing here.

Committee members opted for a full-page invitation (**Figure 1**) that includes an easy-to-cut-off response coupon at the bottom. Creating the invitation was a task perfectly suited to **Publish It! 3**. And an invitation in this format was a lot easier to create than traditional ones that look like greeting cards. If you prefer the greeting-card format, though, there's probably no better program than **The Print Shop**. (And don't forget to use The Print Shop or another Broderbund program, **Banner-mania**, to help design party decorations.)

THE INVITATION

For our invitation we incorporated just four Publish It! 3 objects, defined in the accompanying **Table**. Three text frames accommodated the heading, the body of the invitation, and the coupon, and a cutting line separated the body from the coupon.

We chose various sizes of the *Wilmette* font for all parts of the invitation. We put the lead-ins in boldface type: **When?**, **Where?**, **What?**, and **How Much?**. We centered some parts of the invitation and formatted other sections with tabs.

The coupon deserves special mention. Because committee members know virtually every potential partygoer, we didn't need address lines; a telephone number was sufficient. We created *Name* and *Telephone Number* lines using Shift-_ (the underline key) in the same manner as on a typewriter.

Very often partygoers bring a spouse or guests. For that reason, we typed the word *Number* (in *9-point Wilmette*) above the entrée check-off boxes. This setup helps the committee keep track of the number of people who will attend the party as well as the quantity of each entrée.

The coupon's cutting line, created with Publish It!'s line tool, was placed so the response would fit in a standard-sized

Invitation (Publish It! 3) Object	Left Start	Top Start	Width	Height
Title Text Frame	0.333	0.443	7.036	1.963
Body Text Frame	0.665	3.073	6.408	5.406
Cutting Line	0.036	8.662	7.906	n/a
Response Text Frame	0.740	8.887	6.333	1.926

Name Tents (AppleWorks GS) Object	Left Start	Top Start
Vertical Guides	0.5	*
	3.0	*
	5.5	*
	8.0	*
Horizontal Guides	*	0.5
	*	2.5
	*	4.5
	*	6.5
	*	8.5
	*	10.5

Table. Specifications for invitation and name tents (inches).

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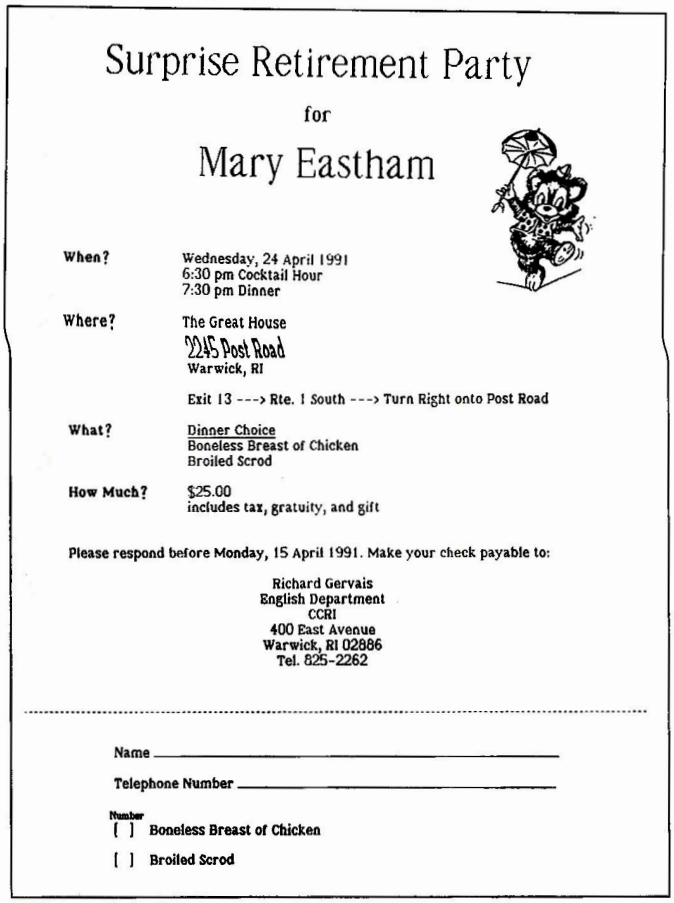

Surprise Retirement Party

for

Mary Eastham

When? Wednesday, 24 April 1991
6:30 pm Cocktail Hour
7:30 pm Dinner

Where? The Great House
2245 Post Road
Warwick, RI

Exit 13 ---> Rte. 1 South ---> Turn Right onto Post Road

What? Dinner Choice
Boneless Breast of Chicken
Broiled Scrod

How Much? $25.00
includes tax, gratuity, and gift

Please respond before Monday, 15 April 1991. Make your check payable to:

Richard Gervais
English Department
CCRI
400 East Avenue
Warwick, RI 02886
Tel. 825-2262

Name _____

Telephone Number _____

Number
[ ] Boneless Breast of Chicken

[ ] Broiled Scrod

Figure 1. Invitation.

envelope. We selected the thinnest line weight and the first pen pattern in the second row of the *Set Pen Pattern* dialog box. The pattern swatch is composed of thick vertical stripes; slicing off a thin section creates a dashed line. Use options in the *Objects* menu to select your own line weight and pattern.

Our retired teacher friend is a big fan of teddy bears, but despite hordes of disks containing thousands of computer graphics, we couldn't find a teddy bear. We discovered the cute dancing-bear illustration in the **Gimmicks** printed clip-art portfolio published by Art-Pak International. If you prefer to use computer clip art, just create a frame with the graphics tool and then import the desired picture (*File* menu).

NAME TENTS

As the responses come in, our second DTP project is preparing the name tents that will be placed on tables at the restaurant. They serve a triple purpose. First, they'll be given to people as they sign the guest register at the welcome desk, thus letting us keep track of who hasn't arrived yet. Second, the names promote camaraderie among tablemates who don't know each other. Third, each tent includes the guest's entrée choice and serves as a reminder. Moreover, the tents are printed on color-coded paper (yellow for chicken, beige for fish) to make the staff's job easier. Waiters can simply glance at the name tent to determine the entrée to serve.

Creating name tents was a cinch with the **AppleWorks GS** page-layout module, although we could have used Publish It! 3 or

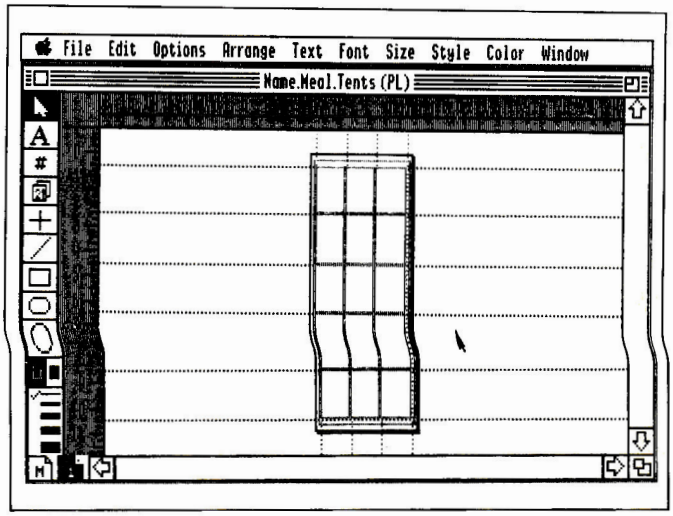

Figure 2. Screen dump, name-tents layout.

another DTP program just as easily. We wanted our name tents to be functional yet diminutive, so we used custom guides to divide the page into 15 name-tent areas, each 2.5 inches wide and 2 inches high. We left a half-inch margin around the page. Our vertical and horizontal guide specifications are included in the **Table**. **Figure 2** shows the AppleWorks GS page-layout screen with its 15 name tents. By invoking choices in the *Options* menu, we locked the guides and made them "magnetic."

To create some sample name tents of your own, draw a text object in the first name area and place the I-beam in it. Then, from the respective menus, choose a font, size, and style. We selected the public-domain font called *New Century Schoolbook*, in *12-point* size. Before typing anything, press the return key five or six times to move the I-beam to the bottom half of the name tent's text object. Then type your name and press Return once more. Switch to a smaller font (we used *9-point New Century Schoolbook*) and type **chicken** within square brackets.

Select both lines of type and use the *Text* menu to center them. Use Open apple-C (OA-C) to copy the text object, then paste it into the next name-tent area with OA-V. Continue this way until each area contains a text object. Predefined font and format choices will be duplicated automatically. At the outer edges of each corner name tent and at the intersections of outer name tents, draw short, thin lines to use later as cutting guides. They'll also ensure that all tents are the same size.

At this point in the design process, all 15 name tents sport the same name and entrée. Save this page layout as a template, using a name such as **Name.Tent.Chick** to suggest its contents. Print a copy to be sure that names and entrées are formatted as desired. Then clip out these sample tents to be sure the cutting guides are in appropriate places and that the finished tents are uniform. Finally, fold each tent in half horizontally, and, if you make changes to the template, resave it.

Next, place the I-beam in each name tent, and use the mouse to drag it across the word *chicken* to select the entrée. Then type the word **scrod**. When you've finished this template, save it with a name such as **Name.Tent.Fish**.

When you want to create some tents with real names, open the ⇨

Figure 3. Sample name-tents printout.

Name.Tent.Chick template and click the I-beam into a text object. Then select your name, replace it by typing an actual guest's name, move the I-beam to the next text object, and type the next name.

When the first page of 15 tents is done, save it with a name such as **Chick.A.F** (where *Chick* represents the entree and *A.F* indicates surnames beginning with the letters A–F), then print a draft copy in *Better Color* mode. When you're ready to print finished name tents, insert a sheet of colored paper into the printer and use *Better Text* mode. **Figure 3** shows some completed name tents.

Create name tents for all the chicken lovers you expect at the party. Also make a few blanks, for unexpected guests, by selecting your name and deleting it (OA-X). Next, open the *Name.Tent.Fish* template, type the names of fish eaters, and save each page with a meaningful name. Then print color-coded name tents for these guests. Don't forget to make a few blank fish tents, too. Separate all name tents, using a paper cutter if you have one. Fold each in half horizontally, and mix "chicken" and "fish" tents alphabetically.

Figure 4. Guest list.

Other members of our party-planning committee are collecting and tallying responses, making arrangements with the restaurant, and handling the money. Something we've done to help out is set up a mini-database of partygoers' names, so we can generate an alphabetized guest list quickly and easily.

Using the AppleWorks GS database, we created two fields: *Last Name* and *First Name*. Then we entered each person's name in *Show List* mode and invoked the *Sort* feature (*Organize* menu) to list the surnames alphabetically. Finally, we used options in the *Report* menu to generate our guest list (**Figure 4**).

If you plan to create name tents with AppleWorks GS, consider incorporating an *Entrée* field into the database, too. Enter a code such as *c* or *f* into each record, and use *Match Records* (*Organize* menu) to display a list of those who ordered chicken or fish. Then copy and paste each name from the AppleWorks GS database window into its respective text object in the *Name.Tent.Chick* or *Name.Tent.Fish* page-layout template. Why type the same name twice?

Whatever the recipe for your next celebration, enlist the aid of your Apple II. Mix healthy quantities of desktop publishing with a dash of database design for a party that's sure to please everyone — including yourself! ❑

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SMASHING THE HI-RES BARRIER

Strapped for memory? When you learn the right techniques you can shoehorn in those lengthy graphics programs.

By DAN BISHOP

HI-RES GRAPHICS IMAGES ON YOUR Apple II can be as much fun to program as they are to watch — as long as you make them short. After all, the longer you make your programs, the more chance you have of running into serious problems.

But what do you do if you can't make your ideas come to life in just a few programming lines? This month, we'll show you a few techniques that'll free your imagination from the constraints of your system's memory limitations.

You'll recall from my previous columns that the first command in your program must be HIMEM:8192. (See "Command Performance," November, p. 70.) This command protects the RAM blocks that Applesoft uses for hi-res graphics pages 1 and 2.

Because program storage begins at memory address 2048, you have only 6144 bytes of RAM for both your program code and the space used by Applesoft to store variables. This amount of storage doesn't leave much room for you to create a complex program.

In this column, we'll show you some ways to avoid or bridge this barrier, so that you can use thousands of RAM bytes above the hi-res memory buffer block. Also, with some of the same techniques, we'll show you how to take advantage of the mixed text-and-graphics mode in hi-res page 2.

THE SIMPLE APPROACH

If you need only a few additional bytes and can settle for one hi-res window, use HIMEM:16384 at the start of your program and do all your graphics in page 2. This method more than doubles the program storage space, making available an additional 8192 bytes. The HGR2 command invokes the hi-res page 2 graphics screen in "graphics only" mode. POKE -16301,0 sets this page to "mixed mode" (text and graphics), reserving the bottom four lines for text. Although you can't use simple print commands to place text in the page 2 window, we'll show you a method at the end of the article that works just as well.

But what if your program code and variable storage requirements exceed 14336 bytes? Or what if your application requires you to use both pages of high-resolution graphics? Having the hi-res pages located in the middle of RAM becomes a real problem. What good is 48K of RAM if you can't access the last 24,000 bytes?

The easiest way to deal with this problem is to accept the program's size limitation. If you can break down your application into several small programs, you may not need to worry about the "memory barrier," because ProDOS' chain command links one mini-program to another. After you load the second program, the variables defined by the first program remain unchanged in memory. The disadvantage to CHAINing is that it slows down the application. Every time you link to another module, program execution stops until your system loads the new module into memory.

BRIDGING THE BARRIER

You can also program around the hi-res memory blocks, although doing so requires some fancy footwork. Consider this technique only if you can't compress your modules enough to squeeze them in ahead of the graphics memory, or if you need to avoid the program delays caused by loading modules constantly from the disk drive.

We'll create a block of dummy REMark statements in the middle of your program, beginning exactly where it butts up against the memory reserved for HGR page 1. The trick is to get this block into the correct place in your program, because its memory location must correspond exactly to the addresses used by Applesoft for high-resolution graphics.

To do this, your program must contain the subroutine shown in lines 30–43 of **Listing 1**. This subroutine creates 128 blank REMark lines starting at line number 9800 by POKEing the code values directly into RAM. Each REMark contains one blank space (ASCII 32) and 121 zeroes (ASCII 48). The subroutine POKEs these 128 lines into exactly the same locations required for the hi-res graphics pages.

The other values it POKEs into RAM include the null character (ASCII 0), which must appear as the first byte of code ➪

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for each line, the two-byte code for the next line's address, and the Applesoft code for REM (ASCII 178). For example, the first line has the following code values POKEd into RAM starting at address 8185: 0, 122, 32, 72, 38, 178, 32, 48, 48, 48, 48, and so on.

The 122, 32 sequence tells Applesoft that the next line of code begins at address (122 + 32*256), or 8314. The 72, 38 sequence is the BASIC line number for this line (72 + 38*256), or 9800. The REM code, the blank space, and the 121 zeroes follow. These 128 bytes cover three rows of hi-res pixels. Because there are 192 pixel rows on each of the two screens, the subroutine must create (192*2)/3=128 identical REMark statements.

This subroutine creates lines 9800 through 9927, but it doesn't link them into your program. If you write a short program that includes this subroutine, RUN the program and the subroutine, then LIST your program. You'll see no change in the listing, because there's still a large amount of unused RAM between your program and the REMark lines. You must fill up this blank area with additional program instructions before the REMark lines can be included. Furthermore, your program lines must contain exactly 6137 bytes of code, no more, no less, and end at byte address 8184.

MAKE IT EASIER

Writing code and keeping track of the exact number of bytes you've written could be a daunting task, but you can let your Apple II do the job for you. Lines 20–29 in **Listing 1** include a short utility program that simplifies this task. Start your code with **Listing 1** and copy every byte exactly as shown. Be sure line 15 reads GOTO 00020 (include all five digits). As you add your own program code starting at line 100, stop now and then to enter RUN. Only the utility program will run, and it'll report the number of bytes in your program so far, as well as the amount you have remaining. Use the area of RAM that precedes the hi-res block primarily for subroutines, because this will speed up your program's execution.

When you get as close as you can to 6137 bytes, use the REM statement in line 95 to adjust the byte count to the exact value. Each character you add or remove from the REMark statement adds or deletes 1 from the overall byte count. When you think you have it, run the utility program again to be sure the byte count stands at 6137.

Save your program, change line 15 to GOTO 00092, and enter RUN. The program goes to the REMark-creating subroutine immediately, creates lines 9800 to 9927 in RAM, and links them to your program. The process takes about 3.5 minutes. Because you entered the subroutine with a GOTO (instead of a GOSUB), the program will terminate with an error message as soon as the subroutine is finished. Now LIST your program and you'll see that the REMark lines have been added. Change line 15 to read GOTO 00100 (assuming that's where your main program begins) and save the result.

You can now continue adding code to your program, but you must not make any changes before line 9927. You must number all new lines of code after the block of REMark statements. The only additional features you must include are a GOSUB 96 command as the first command executed when the program ⇨

Listing 1. Utility programs and subroutines that let you program around the hi-res RAM blocks and use hi-res page 2 in mixed (text and graphics) mode.

```
1  REM  HIRES P.2 UTILITIES  [4029]
2  REM  BY DAN BISHOP  [2746]
3  REM  A+ INCIDER, JAN.'91  [4158]
4  REM  ****************  [3046]
5  REM   [188]
10  LOMEM: 38000  [969]
15  GOTO 00020  [955]
20 A = 2047  [867]
21  FOR I = 1 TO 38000  [1810]
22  IF  PEEK (A + I) <  > 0 THEN 28  [1723]
23  IF  PEEK (A + I) +  PEEK (A + I + 1) +  PEEK (A + I + 2) <  > 0
    THEN 28  [4013]
24  PRINT I - 1" BYTES IN PROGRAM"  [1525]
25  PRINT "LAST PROGRAM BYTE IS AT ADDRESS: "A + I - 1  [7700]
26  PRINT "ADD "8185 - A - I" BYTES TO GET TO HIRES BLOCK." [8414]
27 I = 38000  [1060]
28  NEXT I: END  [747]
30 A = 8185:B = 122:C = 32:D = 72:E = 38:F = 24575:G = 24442 [4749]
31  FOR I = 1 TO 64  [1150]
32  FOR J = 1 TO 2  [949]
33  POKE A,0: POKE A + 1,B: POKE A + 2,C:A = A + 3  [3952]
34  IF J = 2 THEN B = 122:C = C + 1: GOTO 36  [2679]
35 B = 250  [756]
36  POKE A,D: POKE A + 1,E: POKE A + 2,178:A = A + 3  [4603]
37 D = D + 1: POKE A,32:A = A + 1  [2577]
38  FOR K = 1 TO 121  [1432]
39  POKE A,48:A = A + 1  [2008]
40  NEXT K,J,I  [1172]
41  REM "                                                    "55
    BLANKS  [11402]
42  FOR I = 1 TO 6: POKE F - I,48: NEXT I  [2508]
43  POKE G,0: POKE G + 1,96: RETURN  [2608]
44  REM "
    "70 BLANKS  [14362]
45  POKE 175,3: POKE 176,96: POKE F,0: POKE F + 1,0  [3494]
46  POKE F + 2,0: POKE F + 3,1: RETURN  [1300]
49  REM "
    "70 BLANKS  [12325]
50  FOR I = 0 TO 39  [1207]
51  POKE (2640 + (L - 1) * 128 + I),32  [2981]
52  NEXT I: RETURN  [802]
53  REM "                                                    "55
    BLANKS  [10178]
55  FOR L = 1 TO 4: GOSUB 50  [1502]
59  NEXT L: RETURN  [822]
60 J =  LEN (Z$)  [654]
61  FOR I = 1 TO J  [923]
62  IF I > 64 THEN I = J: GOTO 68  [1474]
63 X$ =  MID$ (Z$,I,1):K = 0  [1577]
65  IF  ASC (X$) > 63 AND Z <  > 0 THEN K = 64  [2276]
66  POKE (2639 + (L - 1) * 128 + I), ASC (X$) + 128 - 64 * Z - K
    [5129]
68  NEXT I: RETURN  [594]
69  REM  ************************  [6153]
70  REM  UTILITY PROGRAM (20-29) TELLS HOW MANY BYTES ARE
    CURRENTLY IN YOUR PROGRAM AS YOU WRITE IT AND WHERE THE
    LAST BYTE IS LOCATED.  ENTER "RUN" ANY TIME TO GET THIS
    REPORT.  [32823]
71  REM  ************************  [6155]
72  REM   WHEN YOUR LAST PROGRAM BYTE IS AT 8184, CHANGE LINE 15
    TO GOTO 00092. THEN "RUN" THE PROGRAM. SUBROUTINE AT LINE 30
    ADDS 128 REMARK STATEMENTS TO BLANKET HI-RES PAGES 1 AND 2
    MEMORY BLOCKS.  [36445]
73  REM  WHEN PROGRAM TERMINATES (WITH AN ERROR), CHANGE
    LINE 15 TO GOTO THE FIRST LINE OF YOUR PROGRAM
    (EG. GOTO 00100).  [21495]
74  REM  THOUGH YOU ARE DONE WITH THE UTILITY PROGRAM, IT MUST BE
    LEFT IN PLACE. ELSE YOUR MEMORY BLOCK POSITIONS WILL GET MESSED
```

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Macintosh	☐ 2	☐ 5
IBM/MS-DOS	☐ 3	☐ 6

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Apple IIe/c/c Plus	☐ b	☐ j
Mac SE/Mac Plus	☐ c	☐ k
Mac Classic	☐ d	☐ l
Mac LC	☐ e	☐ m
Mac SE/30	☐ f	☐ n
Mac II series	☐ g	☐ o
Other computer	☐ h	☐ p

II Are you an educator? Yes ☐ q

1	26	51	76	101	126	151	176	201	226	251	276	301	326	351
2	27	52	77	102	127	152	177	202	227	252	277	302	327	352
3	28	53	78	103	128	153	178	203	228	253	278	303	328	353
4	29	54	79	104	129	154	179	204	229	254	279	304	329	354
5	30	55	80	105	130	155	180	205	230	255	280	305	330	355
6	31	56	81	106	131	156	181	206	231	256	281	306	331	356
7	32	57	82	107	132	157	182	207	232	257	282	307	332	357
8	33	58	83	108	133	158	183	208	233	258	283	308	333	358
9	34	59	84	109	134	159	184	209	234	259	284	309	334	359
10	35	60	85	110	135	160	185	210	235	260	285	310	335	360
11	36	61	86	111	136	161	186	211	236	261	286	311	336	361
12	37	62	87	112	137	162	187	212	237	262	287	312	337	362
13	38	63	88	113	138	163	188	213	238	263	288	313	338	363
14	39	64	89	114	139	164	189	214	239	264	289	314	339	364
15	40	65	90	115	140	165	190	215	240	265	290	315	340	365
16	41	66	91	116	141	166	191	216	241	266	291	316	341	366
17	42	67	92	117	142	167	192	217	242	267	292	317	342	367
18	43	68	93	118	143	168	193	218	243	268	293	318	343	368
19	44	69	94	119	144	169	194	219	244	269	294	319	344	369
20	45	70	95	120	145	170	195	220	245	270	295	320	345	370
21	46	71	96	121	146	171	196	221	246	271	296	321	346	371
22	47	72	97	122	147	172	197	222	247	272	297	322	347	372
23	48	73	98	123	148	173	198	223	248	273	298	323	348	373
24	49	74	99	124	149	174	199	224	249	274	299	324	349	374
25	50	75	100	125	150	175	200	225	250	275	300	325	350	375

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Macintosh	☐ 2	☐ 5
IBM/MS-DOS	☐ 3	☐ 6

Which model?

Apple IIgs	☐ a	☐ i
Apple IIe/c/c Plus	☐ b	☐ j
Mac SE/Mac Plus	☐ c	☐ k
Mac Classic	☐ d	☐ l
Mac LC	☐ e	☐ m
Mac SE/30	☐ f	☐ n
Mac II series	☐ g	☐ o
Other computer	☐ h	☐ p

II Are you an educator? Yes ☐ q

1	26	51	76	101	126	151	176	201	226	251	276	301	326	351
2	27	52	77	102	127	152	177	202	227	252	277	302	327	352
3	28	53	78	103	128	153	178	203	228	253	278	303	328	353
4	29	54	79	104	129	154	179	204	229	254	279	304	329	354
5	30	55	80	105	130	155	180	205	230	255	280	305	330	355
6	31	56	81	106	131	156	181	206	231	256	281	306	331	356
7	32	57	82	107	132	157	182	207	232	257	282	307	332	357
8	33	58	83	108	133	158	183	208	233	258	283	308	333	358
9	34	59	84	109	134	159	184	209	234	259	284	309	334	359
10	35	60	85	110	135	160	185	210	235	260	285	310	335	360
11	36	61	86	111	136	161	186	211	236	261	286	311	336	361
12	37	62	87	112	137	162	187	212	237	262	287	312	337	362
13	38	63	88	113	138	163	188	213	238	263	288	313	338	363
14	39	64	89	114	139	164	189	214	239	264	289	314	339	364
15	40	65	90	115	140	165	190	215	240	265	290	315	340	365
16	41	66	91	116	141	166	191	216	241	266	291	316	341	366
17	42	67	92	117	142	167	192	217	242	267	292	317	342	367
18	43	68	93	118	143	168	193	218	243	268	293	318	343	368
19	44	69	94	119	144	169	194	219	244	269	294	319	344	369
20	45	70	95	120	145	170	195	220	245	270	295	320	345	370
21	46	71	96	121	146	171	196	221	246	271	296	321	346	371
22	47	72	97	122	147	172	197	222	247	272	297	322	347	372
23	48	73	98	123	148	173	198	223	248	273	298	323	348	373
24	49	74	99	124	149	174	199	224	249	274	299	324	349	374
25	50	75	100	125	150	175	200	225	250	275	300	325	350	375

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Listing 1. Continued

```
    UP.  [24472]
 75 REM  ************************  [6055]
 76 REM   LINES 41,
    44, 49 AND 53 ARE BUFFERS TO HOLD HI-RES PAGE 2 TEXT LINES 1
    THROUGH 4.  EVEN 1 BYTE ALTERATION IN THE CODE BEFORE LINE 68
    COULD CAUSE PROBLEMS, SO COPY THE PROGRAM THRU LINE 68
    EXACTLY.  [37788]
 77 REM  THE FIRST BYTE FOR EACH LINE BEGINS AT ADDRESSES 2640,
    2768, 2896, AND 3024.  YOU CAN USE THE UTILITY PROGRAM TO COR
    RECTLY PLACE THESE FOUR LINES IN A DIFFERENT PROGRAM.  [33047]
 78 REM  AS YOU WRITE CODE, RUN THE UTILITY PROGRAM WITH ####
    REM" AS THE LAST LINE IN YOUR CODE.  AS LONG AS THE LAST BYTE
    IS LESS THAN 2640 (FOR LINE 1), YOU CAN ADD AS MANY BLANKS AS
    NEEDED TO COVER THE 2640 TO 2679 BUFFER AREA.  [42076]
 79 REM  ************************  [5948]
 80 REM  SUBROUTINE 50 CLEARS 1 LINE OF TEXT (SPECIFIED BY L=1 TO
    4) FROM THE HI-RES PAGE 2 TEXT WINDOW.  [19432]
 81 REM   SUBROUTINE 55 CLEARS ALL 4 LINES OF TEXT FROM THE HI
    RES PAGE 2 TEXT WINDOW.  [15472]
 82 REM  ************************  [5418]
 83 REM  SUBROUTINE 60 POKES TEXT (DEFINED AS Z$ BEFORE THE GOSUB
    STATEMENT) INTO LINE L (1 THROUGH 4) OF THE HI-RES PAGE 2 TEXT
    WINDOW. Z$ IS LEFT JUSTIFIED IN THE WINDOW.  YOU MAY DEFINE Z
   (0,1,OR 2)FOR NORMAL, FLASHING, OR INVERSE TEXT.  [44946]
 84 REM  USE SUBROUTINES 50 OR 55 TO CLEAR A LINE OF TEXT OR ALL 4
    LINES.  [12751]
 85 REM  **********************  [4881]
 90 FOR I = 1 TO T: NEXT I: RETURN   [1582]
 92 GOSUB 30: GOSUB 45: RETURN   [1618]
 95 REM  USE THIS LINE TO ADJUST BYTE COUNT TO ACHEIVE DESIRED
    GOAL  [11405]
 96 POKE 8186,0: POKE 8187,96: RETURN   [2947]
 97 TEXT : HOME   [608]
 98 PRINT "RESTORING PROGRAM CODE...": PRINT "THIS PROCESS TAKES
    3.5 MINUTES."  [8277]
 99 GOSUB 30: GOSUB 55: END   [1587]
```

Listing 2. This sample hi-res graphics program in combination with Listing 1 demonstrates Listing 1's subroutines.

```
10000  GOSUB 96  [516]
10005  HGR : HCOLOR= 3  [443]
10010  HTAB 0: VTAB 21  [1060]
10015  PRINT "USE HTAB, VTAB, AND PRINT COMMANDS TO"  [7742]
10020  PRINT "PLACE TEXT IN HI-RES PAGE 1 TEXT WINDOW"  [8312]
10025 X = 20: GOSUB 11000  [1509]
10030 T = 3000: GOSUB 90  [1665]
10035  HGR2 : POKE  - 16301,0: HCOLOR= 7  [2062]
10040 L = 1:Z = 0:Z$ = "POKE -16301,0 SETS HI-RES PAGE 2 INTO":
      GOSUB 60  [9285]
10045 L = 2:Z = 2:Z$ = "MIXED TEXT+GRAPHICS. DEFINE TEXT STRING":
      GOSUB 60  [9648]
10050 L = 3:Z = 0:Z$ = "AS Z$, SPECIFY LINE (L) & MODE (Z) AND":
      GOSUB 60  [9225]
10055 L = 4:Z = 1:Z$ = "GOSUB 60 TO DISPLAY LINE.": GOSUB 60
      [7362]
10060 X = 50: GOSUB 11000  [1618]
10065 X = 55: GOSUB 11000  [1620]
10070 X = 60: GOSUB 11000  [1627]
10075 T = 3000: GOSUB 90  [988]
10080  POKE  - 16300,0  [1977]
10085 T = 2000: GOSUB 90  [998]
10090  POKE  - 16299,0  [1957]
10095  GOSUB 55  [245]
10100  GOTO 97  [274]
11000  HPLOT X,X TO X + 20,X TO X + 20,X + 20 TO X,X + 20 TO X,X
       [5520]
11005  RETURN  [445]
```

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jumps to a code above line 9927, and a GOTO 97 command to end the program.

The subroutines in these lines are the keys to the technique. Line 96 is the "bridge builder," while line 97 takes out the bridge and rebuilds your program. Normally, the next-line address pointer in line 9800 points at line 9801, but line 96 aims the pointer at the first line after line 9927, causing Applesoft to bridge the section of memory that will be obliterated when you start your graphics (lines 9801–9927). After you've finished, line 97 rebuilds your dummy REMark statements and returns the pointers to their normal settings, so that you can LIST your program.

Caution: Applesoft understands this "bridge" only during program execution. If you try to LIST the program with the bridge in place, you'll get garbage. The subroutine at line 97 restores the REMark lines that were obliterated by the HGR and HGR2 commands. This makes the program LISTable, and lets you add and edit the lines that come after 9927. If your program crashes or is interrupted after using HGR or HGR2, your listing will display garbage and most of your program will be lost. You must save your program every time before running it.

HI-RES PAGE 2 TEXT

You can use the same trick (POKEing directly into RAM) to take advantage of the bottom four text lines when you're using hi-res page 2 graphics in mixed mode. Remember that HGR2 switches the screen to full-screen hi-res graphics. From there, POKE -16301,0 will give you mixed mode, reducing the graphics screen from 192 to 160 pixel rows and opening a four-line text window at the bottom of the screen.

Unfortunately, these four rows open into text page 2 (an area of RAM that begins at address 2048), smack in the middle of your program code. If you execute POKE -16301,0 without making any other changes to your program, you'll see the four rows at the bottom of the screen fill with code characters from your program.

If you know the exact RAM addresses these four lines of text use, you can precede them with a REMark or PRINT statement containing enough blank characters to cover this area. Then whenever you want to display text in the window you can POKE the code values of the characters into RAM and the program will display them. Of course, when you look at the listing after running the program, you'll find these characters showing up as clutter in the REMark statements.

The accompanying **Table** lists the RAM addresses for these four text lines. We've strategically placed the four REMark lines in **Listing 1** (lines 41, 44, 49, and 53) to fill the text-window addresses with blanks. As long as you make no changes to this listing prior to line 54, you can use **Listing 1** as is for the start of your own programs and take advantage of this feature.

If you'd rather go it alone, use the utility program (15 GOTO 00020) as you're entering code. Because it reports the last byte in your program as you write it, using the addresses in the **Table** you can determine where to put the REMark lines in your program. You should also check the actual code when you've finished to be sure that the appropriate RAM addresses have been "blanked out" with spaces (ASCII 32). Enter FOR I=2048 TO 3200:PRINT I,PEEK(I):NEXT from the keyboard to inspect the RAM. Use Control-S to stop and start the scrolling display and soon you'll be able to recognize the code used to begin each line. (See the example above.) For this example, you're checking addresses 2640–2679, and so on, to be sure they all contain 32.

Listing 1's lines 60–68 contain the subroutine that POKEs text into these REMark buffers. Z$ contains the line of text (up to 40 characters) that is to be displayed (Z$="HI MOM", for example), and L specifies in which of the four lines the string will appear (1–4). You may set Z equal to 0, and 1 or 2 to normal, flashing, or inverse text. You must set all these variables before you GOSUB 60.

Line 50 erases line L on screen, and line 55 erases all four lines. The code 32 erases the lines by making them appear white. If you want them to erase to black, change the 32 in line 51 to 160. Because 160 is the Applesoft code for COLOR=, when you list your program after running it, you'll see the REMark statements filled with COLOR= commands. This won't hurt your program, but it can be surprising if you're not expecting it.

Address Block	Usage
00000 – 01023	System Buffers
01024 – 02047	Text Page 1 & LO-RES Page 1
02048 – 03071	Text Page 2 & Start of BASIC Program Storage
2640 – 2679	Mixed Mode Page 2 Text Line ONE
2768 – 2807	Mixed Mode Page 2 Text Line TWO
2896 – 2935	Mixed Mode Page 2 Text Line THREE
3024 – 3063	Mixed Mode Page 2 Text Line FOUR
03072 – 08191	BASIC Program Storage
08192 – 16383	HI-RES Page 1 & BASIC Program Storage
16384 – 24575	HI-RES Page 2 & BASIC Program Storage
2456 – 49151	BASIC Program Storage

Table. Memory address blocks used for hi-res graphics images and page 2 text lines. The trick is bridging the 8192 to 24575 blocks with program code so RAM above 24575 can also be used for program storage.

USING THE EXAMPLES

Listing 2 is a hi-res graphics program that illustrates the concepts we've discussed. To use these listings, enter **Listing 1** exactly as shown, then fill your RAM with additional statements until your program uses exactly 6137 bytes. If you don't have a specific program on which to try the technique, use dummy PRINT commands such as 200 PRINT "AAAAAAAAAAAAAAAAAAAA". You can include more than 200 characters between the quotes for each PRINT command. Of course, when you're writing your own program, this area of RAM will be filled with important code.

After you fill this area of RAM, enter RUN to run the utility program and check your progress. When you get close to the 6137 byte mark, add or delete characters from the REMark statement in line 95 to get exactly 6137 bytes. Remember to save your program. Now change line 15 to read 15 GOTO 00092 and RUN the program. Sit back and wait a few minutes while your Apple II does the work for you. When it's finished, your program will have 128 new REMark lines added to it, each with 121 zeroes. Your Apple just saved you more than 150,000 keystrokes!

One final word of warning: Don't make any changes to your

program before line 9927, because you could alter the byte count. We suggest you place tested subroutines in the block of RAM preceding the REMark block, then run the routine to create the REMark block, and start your main program at line 10000. Carefully change line 15 to 15 GOTO 10000 and make line 10000 read 10000 GOSUB 96.

The subroutine at line 96 links the first REMark statement before the graphics block (line 9800) with the first line after the graphics block (line 10000). When HGR or HGR2 obliterates the code between these two lines (all those REMark statements), your Apple II won't know the difference.

Save your program before going any further. Test it to make sure everything is linked properly by entering 10005 GOTO 97 and RUNning the program. The program should run and end smoothly. When it ends, LIST the program code, paying particular attention to line numbers, then LIST 10000 and 10005. Add another line of code and LIST the program again. You should observe no unusual behavior. If you do, your byte count may have been off before you ran the subroutine at line 92 to create the REMark statements.

If all is still well, enter **Listing 2**, starting at line 10000. Save the full program and RUN it. Although the program is simple, it lets you control hi-res page 2 mixed mode and demonstrates the RAM your Apple II offers your BASIC programs.

The LOMEM:38000 command at line 5 instructs Applesoft not to use RAM below this address for variable storage. Similiar to the HIMEM command, you must place this command at the beginning of your program. If you find you need to change its value during program testing, you must turn off the computer, turn it on, and run the revised program before your Apple will actually change the LOMEM value.

UNTIL NEXT TIME

The Apple II's mixed text and graphics mode remains a limited approach to presenting text along with graphics images. Most graphics applications include text within the graphics window, but your Apple doesn't let you do this with normal PRINT or POKE commands. If you create your own text characters as graphics objects and display them in a full-screen graphics window, however, you'll solve this dilemma.

Next time we'll demonstrate this technique and give examples of code for English and Russian character sets. You'll be able to create your own character sets, symbols, and other simple graphics objects. Until then, there's no better tool than practice. ❑

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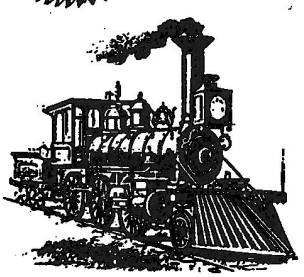

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beginning programmer will have to go elsewhere to get a background on IIGS desktop programming.

Remembering that both Genesys and Design Master will help you with only part of your programming job is important. The beginning and intermediate IIGS programmer still has lots of other material and techniques to master. Using resource forks is perhaps the most important technique to learn — it's the future of programming the IIGS.

Unfortunately there isn't one good book that uses resource forks to introduce you to GS programming. You'll have to ferret out much of the information on your own from a variety of sources.

With that caveat, I encourage any *inCider/A+* reader to take up the challenge: Both Design Master and Genesys make meeting that challenge easier.

Ron Berntson
Saskatoon, Saskatchewan
Canada

NEXUS

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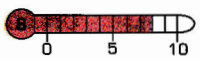
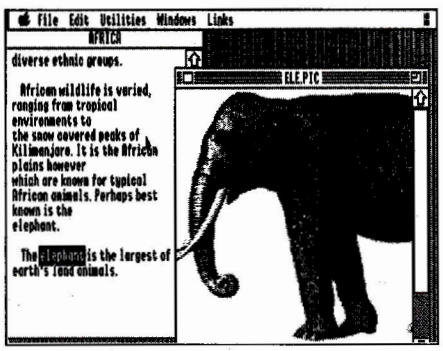
P.O. BOX 6698, WESTLAKE VILLAGE, CA 91360, (805) 499-7785

Hypertext program; requires 1.25-megabyte Apple IIGS; GS/OS 5.0.2. or higher; no copy protection; $79.95; read-only demo version available as freeware



If intelligence means making connections, then Nexus can help make you more intelligent. Nexus is a pure form of "hypermedia," a term that's tiring of its heavy use to describe everything from annotated recordings of music to desktop television commercials. But if hypertext still means what its discoverers thought it would mean — nonlinear words and ideas — then Nexus is pure hypertext.

Nexus breathes life into any Apple IIGS text (type TXT) or graphics file (any GS graphics filetype except AppleWorks GS). Each file becomes more than it seems, more than a picture or a simple collection of words. When you double-click on a linked word or picture, the file to which it's linked appears on the desktop. (The Apple may also play a sound, or a videodisc player a video clip.) With Nexus you can give any word or part of a picture new depth. Files that had been static become dynamic.



Nexus: Hypermedia for your IIGs.

The basic Nexus tool is a *link*. You can link any word or any part of a picture to another file. You create a link by clicking on a single word, or drawing a square around an area of a picture while you're in the *Add Links* mode. Nexus then offers you a *File* dialog box and you choose the file you want to link to. You can have multiple links between files, and each *set*, as they are called, can contain up to 1000 files. The program doesn't requires a hard disk, but it doesn't make much sense to use the program without one.

SIMPLE BUT SWEET

It's unfortunate that the work Nexus does is so much like footnoting or annotating because that similarity makes us imagine familiarity, and familiarity breeds contempt. "So what?" isn't an uncommon response to seeing what Nexus can do — and not only because it lacks the visual flash of a HyperStudio and the "programmability" of a HyperCard IIGS. What Nexus can do looks suspiciously simple.

Like HyperStudio and HyperCard, Nexus is only as good as the sets created for it. But an impressive file-finding routine built into Nexus can keep track of linked files even if you've moved and renamed them. It's too bad the sample sets that come on the Nexus disk aren't more detailed. One, for example, shows a picture of a "ray gun," as if in a catalog, on some

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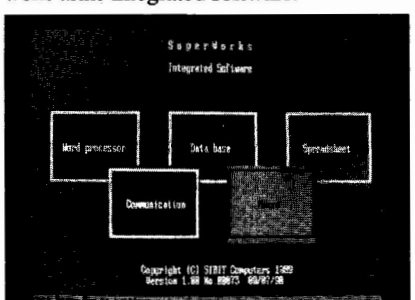

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parts of which you can click and read a description. I'd have been much more impressed if I could've clicked on any part.

According to its author, Tracy Valleau, a Mac version of Nexus is in the works and he hopes it will be able to read both Mac and GS text files. This product would be a great idea, because, as is always the case with hypertext, the more information available, the better. It's tempting to imagine a network server, for instance, or a CD-ROM, full of linked files, available to Macs and IIGSes. It's possible to link to files on a CD-ROM, because Nexus does its work on the file where the link begins. Nexus doesn't change text files in any way that makes them unworkable with your current word processor, either.

Nexus can read Apple IIGS text, graphics, and sound files. That is, a mouse click on a selected word or part of a picture can bring up another text file or picture, or even play a sound.

Nexus can also control a Pioneer LaserVision 2200, 4200, or 8000 videodisc player. I hope that Nexus stops growing: Piling new features onto an elegantly simple program isn't progress.

My only complaint with Nexus is with its documentation. The bound version is sketchy, lacks an index, and really should begin with *Chapter 15: Running Nexus for the first time*. The disk-based documentation is simply crying to be written in a form that lets the reader immediately see definitions of obscure phrases, follow his or her own path through the material, look at only pages of interest . . . hey, how about a Nexus set about Nexus?

If the idea of hypertext either intrigues you or makes no sense to you, trying Nexus would be worth your while. (The freeware "Nexus.Read" program is an easy introduction to the idea of Nexus, and also illustrates how a Nexus user can create sets that people who don't own Nexus can use.)

Nexus is an intelligent, elegant program that deserves a fair hearing. It's a shame that it's struggling to make a noise above the din of HyperCard, HyperCard IIGS, and HyperStudio. Its two big advantages over the better-known programs — it uses existing text files and it's simple — are quiet, but considerable.

Paul Statt
inCider staff

COLOR + 1.2

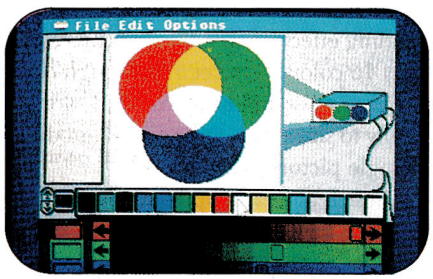
EL KASSIR SOFTWARE
232 THORNE ST., SUITE C, LOS ANGELES, CA 90042, (213) 257-6882

Graphics and animation program; 768K Apple IIGS; one disk drive, two recommended; no copy protection; $39.95

El Kassir Software's Color + is a difficult program to rate. Some users will be delighted with its features. Color + is startlingly innovative, offering features found in no other paint program. It lets you paint with 256 colors at once and mix 320 and 640 modes on the same screen. Best of all, it introduces one of the most sophisticated animation packages in the business. Unfortunately, though, many other users are more likely to be completely frustrated with this maverick package.

Color + is also hard to use and extraordinarily buggy. The annoying little beep that indicates yet another system crash will became all too familiar. Although the manual devotes a page to crash recovery, the remedies often don't work, leaving you with nothing to do but reboot — dozens of times.

On other occasions during our tests, the



Color +: Great pictures, lots of bugs.

mouse would mysteriously fail to reach all parts of the screen, causing yet another reboot. Features often functioned erratically or failed altogether. All in all, the program gives the impression of being rushed to market without adequate beta testing.

When it works, Color + is impressive. For one thing, the program is fast (except ➪

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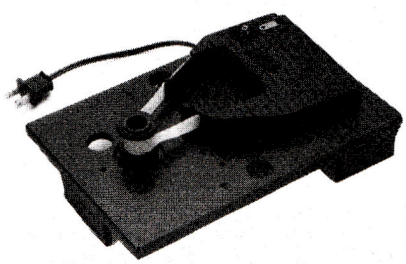

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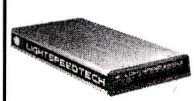

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for the save and load screens) — amazing when you consider that it runs under ProDOS 8 and is written almost entirely in Applesoft BASIC.

Another plus is that the program's use of up to 256 colors in a picture allows subtle shading effects impossible to achieve with only 16 colors on screen. Although other programs also offer 256 colors, Color +'s ability to show both 320 and 640 modes in a single picture is unique.

These features, coupled with the ability to use multiple palettes, make special effects possible. You could, for example, use a high-resolution font in 640 mode at the bottom of a graphics image while using dozens of colors in 320 mode in the accompanying picture.

But all this isn't easy, because the program defaults to a split 320/640 mode screen. Although you can try to change this default, the change doesn't always take, and when it does, it may not stick. When this happens, you'll find your 320 palette fading out to a pale dithered 640 mode at the bottom of your picture. For unfathomable reasons, the *Clear Screen* command usually clears only the 320-mode section of the graphics image, and you're left with 20 or so lines of 620 mode picture still in place.

Because Color + offers no cut function, you must use an eraser tool that seems to erase only in white, forcing you to use the fill function to restore the background color.

In addition to the missing cut function, Color + has several other foibles. Although its copy function can rotate 90, 180, and –90 degrees and show a mirror image, the program defaults unfortunately to a 90-degree rotation. You must click on the mouse five times to get an upright copy.

Moreover, each time your system loads a new picture you're back to the 90-degree rotation again. Because the copy option has a dual shape-table function it can only duplicate segments of limited size. Anything too large appears with its bottom section chopped off.

The fill function defaults to a pattern, rather than a solid color, and leads to surprising results. (If your portrait has skin tones that would seriously interest a dermatologist, now you know why.)

Color +'s cycle option is limited. With no intermediate speeds, it's either on or off — and only on when the mouse button is held down. You can automate the cycle from animation mode, though.

The program uses a mixed bag of standard and nonstandard Apple IIGS interfaces that can be downright confusing. The save screen, for example, is colorful and different. When you get the prompt to enter the filename, simply typing the name won't work. First you must click on the appropriate bar. No problem, right? — except that the cursor is invisible. And don't expect error trapping to bail you out. If you do something wrong here, the program may crash.

Color +'s exciting animation module enhances the program's worth and attempts to counter its flaws. There's nothing like it on the market.

Other paint programs, for instance, use cycling to create pseudo-animation effects, but cycling is only one trick in El Kassir's bag. Note that you can copy any section of a picture and store it in a shape table for later editing. Then you can put the

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resulting shapes through some truly amazing paces.

The real power of the animation module lies with its *Record* mode; this mode can record 22 different functions and play them back automatically. In effect, *Record* acts as a powerful and selective macro utility that can create smooth and versatile animation on the fly.

When you turn on *Record* mode and select *Begin New Animation*, you can draw on screen directly, using all the functions available in the *Tool* menu, then watch your drawing re-create itself at playback. During the recording phase, all pull-down menu items are available, but your menu manipulation doesn't appear when you save the animation. You can change colors, and alter the palette RGB and luminosity commands to create interesting rainbow effects. Change the graphics mode from 320 to 640 and back again during recording, and resize the objects.

The *Scan* command is also in effect, allowing regional palette changes during animation. During *Record* mode, you can use the program's four resident fonts, or choose to clear the screen. Color +'s *shape-table* function makes for real on-screen animation without time-consuming redrawing. The program's demo disk shows several interesting shape-table animations, including bouncing balls and a bicyclist pedalling across the screen.

Store up to 48 shapes in a single shape table and plot them during *Record* mode using seven different modes:

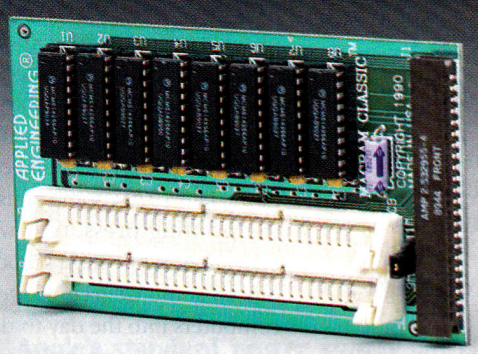
- *Mode 6* opens the shape.
- *Mode 5* closes it and restores the background.
- *Mode 4*, the essential mode for animation, saves the background in a buffer area, restoring it when you redraw the shape at a different location.
- *Mode 3* draws the shape in the current selected color with color 0 transparent to the background.
- *Mode 2* draws the shape in a color opposite in inverse.
- *Mode 1* plots with color 0 transparent to the background.
- *Mode 0*, the block mode, plots the shape as is, with all the shape's pixels replacing the background pixels.

Color + is a mixed bag. Some of its features, especially the ones concerned with animation, are innovative and unique. Unfortunately, the program's continual crashing makes it unreliable at best and impossibly frustrating at worst. Moreover, El Kassir Software announced several new versions while we were reviewing Color +, presumably in response to complaints by people who had purchased the program. This use of paying customers as beta testers is a disheartening practice. With the Apple II market hanging on by its fingernails, though, creative programming efforts need to be recognized. We're not condemning the program, but it's not yet ready for the market.

With debugging and error trapping, Color + would've been a better product. As it is, most users will find the program too undependable for regular use, but to programmers who want to add 256-color pictures and smooth animation to their work, this product may be worth a look.

Sharon Webb
Blairsville, GA

What a difference a MEG makes.



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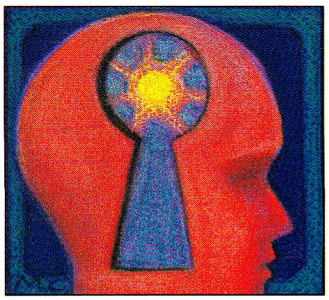

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By DAVID D. THORNBURG, Ph.D.

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ONLY A FEW TIMES IN HISTORY HAS A technological development changed the face of education. Before the invention of movable type and the mass production of books, teachers read hand-copied books to their students, who wrote them down verbatim to create their own libraries. Once inexpensive printed books became available, teachers were freed from this reading task and were able to discuss a subject from their own or their students' perspective.

When low-cost personal computers appeared in the late 1970s, some of us predicted that, like the printing press, they would revolutionize education. While most schools have the technology to some degree, however, integration of computers into the day-to-day activities of classrooms is about as rare as whale sightings in Lake Michigan.

There have been few exciting announcements in the domain of educational computing since 1984, when the Macintosh redefined the concept of the user interface. Since then, hardware developments have centered on price reduction and incremental improvement in speed, memory capacity, and the like. Except for these features, most classroom computers look the same today as they did six or seven years ago. The educational-software story is similar. Except for a few blockbuster titles (such as Broderbund's Carmen Sandiego series), recent educational software has extended previous capabilities only incrementally.

Now, however, a technology has appeared that offers as much potential to affect education as the personal computer — and it's relatively inexpensive. I'm talking about CD-ROM — compact-disc read-only memory.

THE LASER REVOLUTION

If you're unfamiliar with CDs, let's look first at the outstanding success of the compact audio disc, the fastest-growing consumer technology of the past few years. Each 5-inch plastic CD can hold up to 70 minutes of exceptionally high-quality audio programming. Its surface is read by a laser beam, which involves no physical contact, so the disc is playable forever. It's even moderately insensitive to fingerprints and other accidental damage. Audio is stored on CDs in digital form; the CD player then reconstructs this information into audio signals.

Because the recording format is digital, CDs can also hold computer programs and data, and the amount you can store on a single disc staggers the imagination. One CD in my collection contains 640 million bytes of Macintosh software. To grasp how much that is, consider that each standard Mac disk holds about 800,000 bytes. Eight hundred such disks (a stack more than 8 feet tall) would be required to store the data that can fit on one 5-inch CD-ROM (which can be manufactured for about a dollar).

Unlike most magnetic computer disks, CD-ROMs are "read-only"; you can't add information to them (yet). As software-distribution vehicles, they're unsurpassed, but you still need magnetic disks to hold your own data and programs.

The reason I'm excited about this technology for education is twofold. First, when you have 640 megabytes at your fingertips, personal computing undergoes a qualitative change — it doesn't feel the same anymore. One disc can hold the complete works of Shakespeare plus the King James Bible and still be mostly empty. Just looking at the directory inspires awe. Second, a CD can simultaneously store computer-readable information, high-quality audio, TV-quality video, and a host of other signals. In other words, there's potential for this one medium to deliver a complete multimedia presentation.

What kind of application could possibly utilize 640 megabytes of memory? One that comes to mind is a CD-ROM version of the desk encyclopedia. Compton's has placed its entire encyclopedia on this medium, with a twist: In addition to text, the disc contains picture and sound files. Calling up Mozart, for example, brings text and a color picture to the screen, accompanied by the opening ➪

strains of *Eine Kleine Nachtmusik*. Other types of reference books and massive databases are obvious choices for this medium, but they're by no means the only suitable applications.

DYLAN'S DISC

Because the CD-ROM drive (which uses your computer's SCSI port and costs only $500) can play audio discs as well as communicate with the computer, users of HyperCard and other software that can communicate with these devices can create applications based on audio CDs.

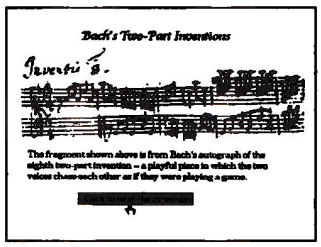

Figure. See and hear Bach's Two-Part Inventions.

A friend of mine in British Columbia, Gerri Sinclair, showed me a project that illustrates this capability. She took a CD recording of Dylan Thomas reading "Fern Hill," one of his most beautiful poems, and painstakingly indexed each word by its location on the disc. Because the CD-ROM drive can select any time location on the disc to an accuracy of one 75th of a second, she had total control over the recording.

Next, Ms. Sinclair created an application that presents a written version of the poem on the computer screen. While reading the poem, a student can click the mouse to see definitions of obscure words, or learn more about Thomas or the significance of this particular work. By selecting an area of text ranging from a single word to the entire poem, you can also hear Dylan Thomas reading the work. The addition of this audio capability multiplies the power of the application.

MAKING YOUR OWN

Voyager has created a HyperCard authoring aid called **CD Audio Stack** for Mac owners who want to make their own indexed audio applications. Students can master this product quickly, then easily create their own program to explore any music disc they have. Apple IIGS owners can do the same with HyperStudio using volume 1 of Roger Wagner's **XCommands** program.

To illustrate, I took a CD of Bach's *Two- and Three-Part Inventions* and used CD Audio Stack to create buttons that play these pieces; the buttons are pasted on HyperCard cards describing the music. (See the accompanying **Figure**.) The ease with which I could bring CD-quality audio into an application amazed me. I was hard put to stop working on the project and get to other tasks!

Next month, we'll continue to explore CD-ROMs with a tour of some excellent commercial educational applications and a discussion of the technology's potential to transform the use of computers in education. ❑

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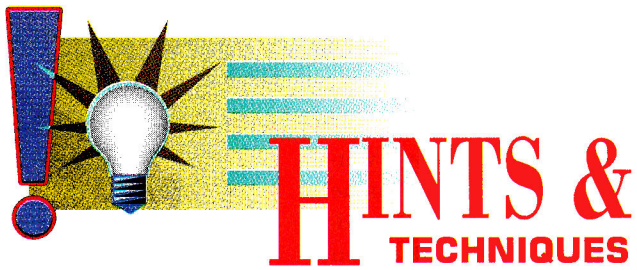

SEARCH ME!

Apple users know there's always an easier way to get the job done. A shortcut here, an elegant twist there — that's what Hints & Techniques is all about. It's an information swap for readers who want to share their programming pointers, hardware secrets, AppleWorks applications, and all kinds of other insights.

STRING FINDER

By Vincent D. O'Connor

LONG PROGRAMS ARE OFTEN written and debugged a section at a time — new routines are tested, added, replaced, and added again. In the process, the programs become longer and more complex, often making specific variables or sections of code difficult to locate.

String Finder is a short utility you add to the end of an Applesoft program that lets you search for a phrase up to 12 characters long. The accompanying **Program listing** creates a text file called STRING.FINDER. To use it, LOAD the program you want to search, EXEC STRING.FINDER, then RUN 63950 and type the string you want the utility to find. Every time the routine finds a line with the proper string in it, it'll print the line number at which the string was found. When the routine has checked the last line, STRING.FINDER ends.

Note that STRING.FINDER searches your program, but doesn't do a search on itself. It also won't locate Applesoft commands because they're stored as tokens, and it doesn't consider the line number as part of the line. If you're searching for *10*, the routine will ignore line 10 unless there's a *10* elsewhere in the line. STRING.FINDER also lists a line if the string you're searching for is part of a larger string. If you're searching for *AS*, for example, the routine will list lines that include *HAS* or *PAST*. If you don't want to list these other words, type *AS*, then hit the spacebar. ❑

Write to Vincent D. O'Connor at 29 Beech Court, Babbitt, MN 55706.

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Program listing. Search for phrases in your Applesoft programs.

```
10 D$=CHR$(4): PRINT D$;"OPEN STRING.FINDER": PRINT D$;
   "WRITE STRING.FINDER"
15 LIST 63950-63973: PRINT D$;"CLOSE STRING FINDER": END
63950  TEXT : HOME : INPUT "STRING TO FIND: ";A$: IF  LEN (A$) = 0
       THEN  HOME : END
63951  IF  LEN (A$) > 12 THEN  HOME : PRINT "STRING TO BE SEARCHED
       FOR CANNOT BE": PRINT "LONGER THAN 12 CHARACTERS.": END
63952  HOME : HTAB 15: PRINT "SEARCHING":LO =  PEEK (103)
       + 256 *  PEEK (104):X = LO
63953 W =  PEEK (X) +  PEEK (X + 1) * 256
63954  IF W = 0 THEN  PRINT : PRINT "SEARCH ENDED": END
63955 LN =  PEEK (X + 2) +  PEEK (X + 3) * 256
63956  IF LN > 63499 THEN  PRINT : PRINT "SEARCH ENDED": END
63957  FOR I = X + 4 TO X + (W - X)
63958  IF  CHR$ ( PEEK (I)) =  LEFT$ (A$,1) THEN  ON 13 - LEN (A$)
       GOSUB  63962,63963,63964,63965,63966,63967,63968,
       63969,63970,63971, 63972,63973
63959  NEXT
63960 X = W
63961  GOTO 63953
63962  IF  CHR$ ( PEEK (I + 11)) < > MID$ (A$,12,1) THEN RETURN
63963  IF  CHR$ ( PEEK (I + 10)) < > MID$ (A$,11,1) THEN RETURN
63964  IF  CHR$ ( PEEK (I + 9)) < > MID$ (A$,10,1) THEN RETURN
63965  IF  CHR$ ( PEEK (I + 8)) < > MID$ (A$,9,1) THEN RETURN
63966  IF  CHR$ ( PEEK (I + 7)) < > MID$ (A$,8,1) THEN RETURN
63967  IF  CHR$ ( PEEK (I + 6)) < > MID$ (A$,7,1) THEN RETURN
63968  IF  CHR$ ( PEEK (I + 5)) < > MID$ (A$,6,1) THEN RETURN
63969  IF  CHR$ ( PEEK (I + 4)) < > MID$ (A$,5,1) THEN RETURN
63970  IF  CHR$ ( PEEK (I + 3)) < > MID$ (A$,4,1) THEN RETURN
63971  IF  CHR$ ( PEEK (I + 2)) < > MID$ (A$,3,1) THEN RETURN
63972  IF  CHR$ ( PEEK (I + 1)) < > MID$ (A$,2,1) THEN RETURN
63973  PRINT "STRING FOUND AT LINE ";LN: RETURN
```

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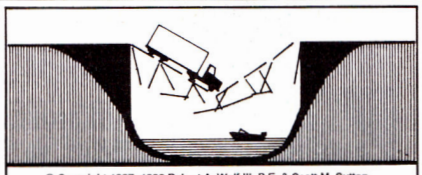

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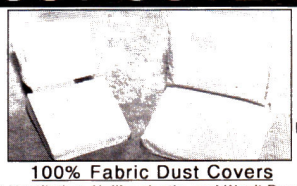

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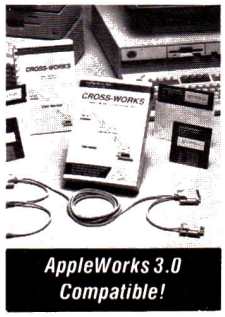

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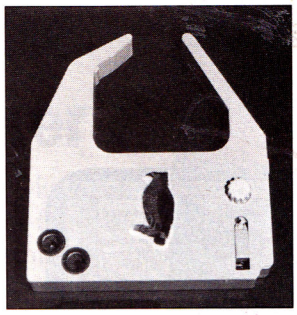

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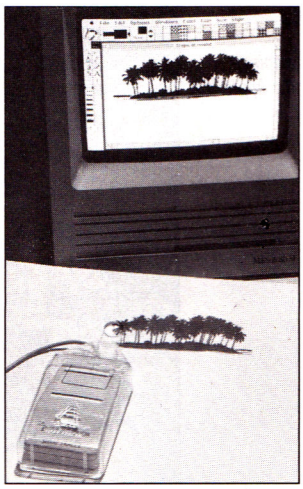

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Global Challenge

WE AMERICANS, CONVENTIONAL WISDOM SAYS, HAVE NO IDEA WHERE WE ARE. YOU'VE seen the reports: Most American college students think London is a province of Paris, or something equally ludicrous. It would be too much to expect anybody to know where Abidjan and Yaren are.

But **GeoQuiz**, from PC Globe for the Apple IIGS, expects you to know where those two capitals are, and more. It's a wonderful piece of educational software — complete enough for high-school geography classes, but easy enough for grade-school social studies. GeoQuiz consists of three games: *Name It*, *Recognize It*, and *Locate It*. "It" is one of 170 countries, from Afghanistan to Zimbabwe, and the goal is to recognize its name after seeing its position on a map, or to locate it on the map given its name.

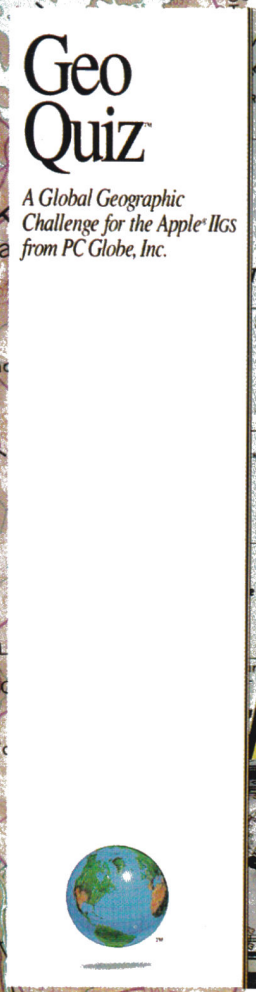
But the rules can change for each of the three games. For instance, you can choose to pick the correct answer from among multiple choices, or type in the answer instead. You can choose the number of clues each player gets, and what kind of map he or she will see.You can choose to "flash" on a map the color of the country you're looking for, display the part of the world it's in, or, for a real challenge, show no map at all. The multiple choices are never "tricky" — that is, you never have to choose among four countries in the same region. The multiple-choice games are suited for grade school; older students will need the challenge of typing in answers themselves. If students manage to learn the names of all 170 countries in GeoQuiz, they can go to work on 170 capital cities. (By the way, Yaren is the capital of Narau, in the Pacific Ocean; Abidjan is the capital of Cote d'Ivoire, the Ivory Coast, in West Africa.)

In addition to the games themselves, GeoQuiz includes an *Atlas* menu, which acts both as a reference work when you're playing the game and as a gazetteer of information about each country's history and economy. In the more difficult games, you can use this information to interpret clues.

As a teacher's aid, GeoQuiz lacks only the ability to create quizzes — you must use random or previously saved games. While the program is admirable here in treating even the tiniest nations as equals of the largest, teachers will miss that feature. One bonus, though, is GeoQuiz's ability to save screens as super-hi-res images, which you can then import into most GS paint programs. The screens themselves are in 320-by-200 screen resolution, but they look fine in 640-by-200, too.

The company made its name originally selling PC Globe, a graphics-based database of geographical information; many businesses are replacing bound atlases with this product. We're hoping that GeoQuiz is only the first of PC Globe's many efforts to put its disk atlases into schools on Apple computers. The atlas, more than the dictionary or the encyclopedia, is an obvious candidate for computerization.

GeoQuiz works on an Apple IIGS with 512 of RAM, and is priced at $49.95. At press time, PC Globe was working on a Macintosh version of GeoQuiz, as well. For more information, contact PC Globe at 4700 South McClintock, Tempe, AZ 85282, (602) 730-9000. ❑



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"Weigh all the evidence. You'll choose Tax Preparer®."

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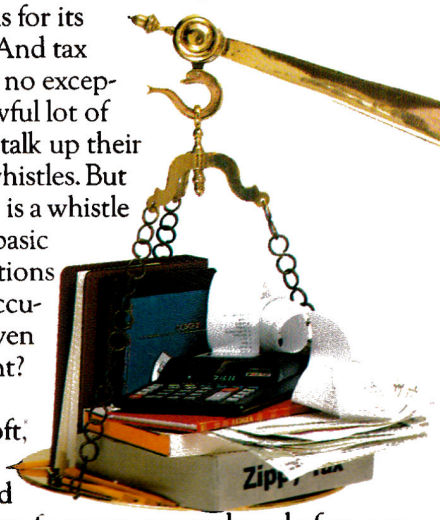
The software industry is as renowned for its hype as for its successes. And tax software is no exception. An awful lot of publishers talk up their bells and whistles. But what good is a whistle when the basic tax calculations can be inaccurate...or even nonexistent?



At HowardSoft, they don't fool around with obscure forms you never heard of, or use up time and memory with pop-up this and pull-down that. Instead they put their energy into making sure every calculation incorporates the very latest tax laws. Automatically. And accurately. They make input easy. They think things through. And you end up with a tax return free of embarrassing holes in logic or completeness. Holes that others leave you scrambling to patch.

Accuracy, not show biz.

Take IRAs, for example. If you know the new tax laws, you know how easy it now is to contribute more to an IRA than the IRS allows. So Tax Preparer automatically creates Form 5329 whenever it's needed, and lets you know if you've exceeded your allowance. Keeping you from being taken off-guard, and paying penalties because of inaccurate results.

And, as with its other built-in forms, there's none of this half-baked "diagnostics" stuff, where the program tells *you* to prepare another form. Tax Preparer simply takes care of it for you. All by itself.

Or how about HowardSoft's execution of the Passive Activity Rules? You don't have to complete a single worksheet. Tax Preparer knows when and where they apply, and handles the whole thing for you. And consider the fact that, no matter how many investments you need to report, Tax Preparer's *unlimited* capacity allows for them.

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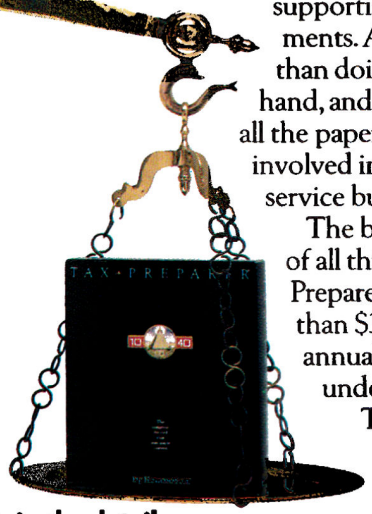
The best part of all this is Tax Preparer costs less than $300, with annual updates under $100. That's affordable, even for individuals.



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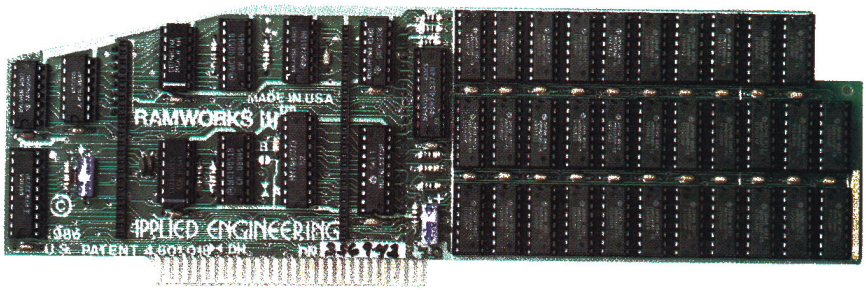

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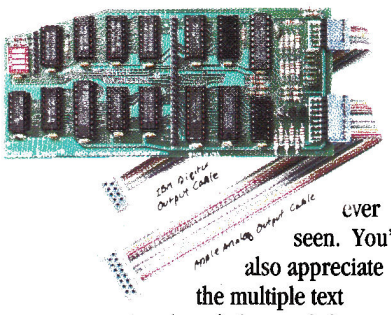
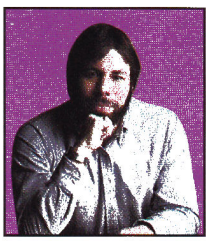


ever seen. You'll also appreciate the multiple text colors (others only have green) that come standard. But the RamWorks RGB option is more than just the ultimate in color output because unlike others, it's fully compatible with all the Apple standards for RGB output control, making it more compatible with off-the-shelf software. With its FCC certified design, you can use almost any RGB monitor because only the RamWorks RGB option provides both the new Apple standard analog and the IBM standard digital RGB outputs (cables included). The RGB option plugs into the back of RamWorks with no slot 1 interference. And remember you can order the RGB option with your RamWorks or add it on at a later date.



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