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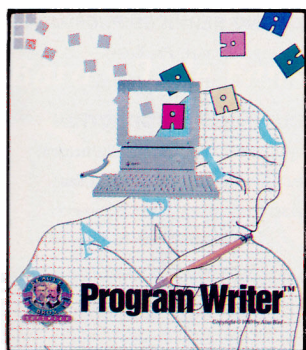
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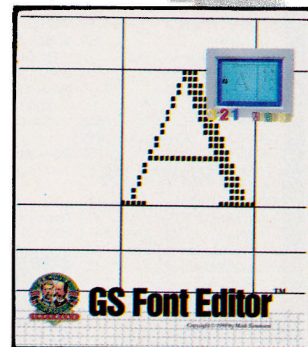
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Bard's Tale Fans, Rejoice!

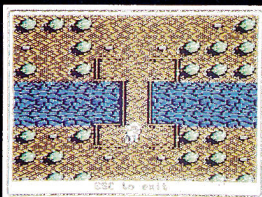
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**INCIDER'S
VIEW**

What has made digitization suddenly attractive to pragmatists like you and me is desktop publishing.

THE ART OF TECHNOLOGY

By **DAN MUSE** + EDITOR IN CHIEF

DID YOU LOOK AT THIS MONTH'S COVER and say, "Digitizers and scanners are interesting technologies, but what can you really do with them?"

That's not an unreasonable question. The practicality of products such as Color ComputerEyes, ThunderScan, and the Apple II Video Overlay Card isn't obvious to the typical Apple II user. I know, because for a long time it wasn't obvious to me.

What has made digitizers suddenly attractive to pragmatists like you and me is *desktop publishing*. Before programs like Publish It!, Springboard Publisher, and Personal Newsletter emerged, there wasn't much you could do with that digitized dog or scanned Siamese. The hardware was fun to play with, but did you really want a digitized picture of your family on the wall in place of a photograph? Sophisticated technological design is good design only if it serves a useful purpose.

Desktop publishing is the perfect vehicle for digitization. Digitized illustrations add a personal touch to your newspapers, newsletters, flyers, brochures, and so on. While clip art is great for some things, it's only what its name implies—pieces of art clipped from a variety of sources. Because it's available to every Apple II user, you always risk the chance that your publication will look unoriginal. You also have no guarantee that you'll find clip art that's appropriate for your subject—your scuba-diving club's newsletter, for instance.

If you rely on clip art, you rely on someone else's definition of good artwork. While most clip art is well done, it simply can't convey that personal slant that makes your work unique.

If I write a newsletter about obedience training for dogs, I want to use my dog or a friend's dog on the front page. Why use a canned generic dog from a clip-art disk, when I can scan a photo of Paul Statt's black-and-white border collie, Ben? Ben's no Lassie, but his coloring makes him an ideal candidate for gray-scale digitization. Or if I send a bulletin to members of my softball team, why use clip art of a bat and a ball when I have

piles of photos of team members that add a personal touch to my publication?

Digitizers and scanners also make you self-sufficient. To alter an adage: Give a man a clip-art disk and he publishes for a day; teach him to digitize and he publishes for a lifetime.

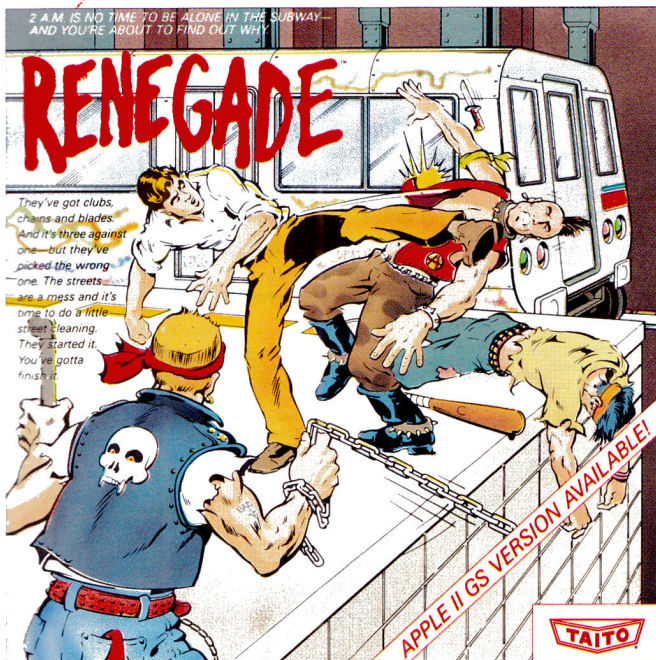
Scanners and digitizers let you add creative flair to your desktop projects; the Apple II Video Overlay Card (also called a *genlock*) lets you spice up home and classroom videos with computer graphics. While painting, drawing, and animation programs have sold well over the years, practical everyday applications aren't their strong suit. Overlaying graphics on video gives you another use for everything from Cartooners to PaintWorks Gold.

You see the results of genlock technology every time you watch the news or a sporting event. A meteorologist's map showing the movement of a storm—genlock; a CBS football telecast with John Madden's "chalkboard" analysis—genlock. You may not be able to produce the same effects you see in a professional broadcast, but if you have a strong video source and a good graphics program you can produce some impressive results.

Rumor has it that Apple Computer has had the Apple II Video Overlay Card ready for about two years and that it decided to announce it now only to quiet criticism about a lack of support for the II line. Whether or not it's by design, the timing seems right. Most homes and classrooms have VCRs; laser discs (a source of high-quality video) are making a comeback in schools; and with the number of painting, drawing, and animation programs available for the II, the software is already on store shelves. Videotape as a presentation medium is growing more popular; many businesses use it in place of the traditional printed promotional material.

Whether you want to produce graphically enhanced videos or customized graphics for desktop-publishing projects, everything's in place for you and your Apple II. You have the hardware to capture your image, the software to manipulate it, and the vehicle (either print or videotape) to deliver your message in a creative and attractive fashion. □

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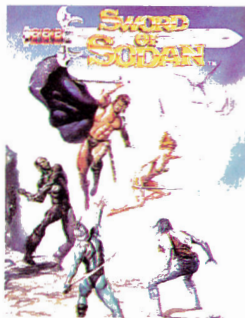
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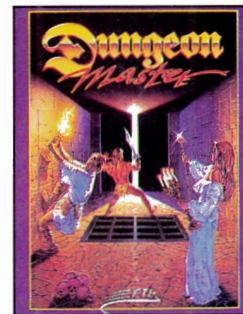
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| Jack Nicklaus Golf (IIGS) | 32. | Hunt For Red October (IIGS) | 35. | MASTERTRONICS | | SIERRA ON-LINE King's Quest I, II, III | ea. 31. |
| Test Drive II (GS) | 32. | Hunt for Red October (Ile/Ilc) | 27. | John Elway's Quarterback (Ile/Ilc) | 27. | Black Cauldron (IIGS) | 27. |
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SPECIAL EFFECTS

THANKS FOR THE ARTICLE ON Apple IIs in special education ("Partners in Special Achievement," April 1989, p. 54). This combination enables children and adults to participate actively in their world, thus improving their quality of life.

On page 60, you mentioned our company, but failed to provide an address. Technology for Language and Learning is a newly formed nonprofit organization dedicated to advancing the use of technology and computers with children and adults with special needs. One of TLL's projects has been to create and collect high-quality public-domain software. We then distribute these programs to parents, educators, and organizations involved with children or adults with language impairments, or learning or physical disabilities.

Programs are \$5 each, plus postage and handling. If you'd like to receive a complete catalogue, please write to TLL.

Joan Tanenhaus, M.A., CCC
Speech/Language Pathologist,
Computer Consultant
Executive Director
Technology for Language and Learning
P.O. Box 327
East Rockaway, NY 11518-0327

TAX CREDIT

CYNTHIA FIELD'S REVIEW OF tax software ("Tax Time: It's Closing In," March 1989, p. 50) overlooked TaxCalc-88, a menu-driven tax-preparation program for the entire Apple II family. This two-year-old program requires 48K and one drive, and comes with tax-theory and IRS worksheets built in. TaxCalc-88 also includes a pop-up calculator. It doesn't print any of the forms, though; you'll need to fill those in by

hand. (We'll send requested IRS forms.)

The program supports Forms 1040, A-E, and SE, and Schedules 2106, 2119, 2441, 3903, and 4562. The tax guide includes advice and tips, flowcharts, and common questions and answers. Telephone support is also available. TaxCalc-88 costs \$29.95 plus \$2 shipping. Annual updates are \$19.95.

Andrew R. Kramer
Perfect Solutions Software
3701 Savoy Lane
West Palm Beach, FL 33417

SOFT PRAISE

I RECENTLY PURCHASED SOFTWARE GS File for my IIGS. When I tried booting the program, it got stuck. Foolishly, I'd purchased the program in a Navy Exchange; returning it would have involved a 125-mile round trip.

That same evening I saw an ad for GS File that listed the company's 800 telephone number. I called and explained my problem to a very pleasant individual. She advised me to return the package, and Brown Wagh would send me a new 768K version free because I'd purchased the program within the last 30 days.

One week later I received the updated version of GS File. This is the first good experience I've had dealing with a software company. We software users should support publishers with this type of policy.

Russell F. McCann
10 Bassett Street
Foxboro, MA 02035

LOWDOWN ON LOGO

I'VE TAUGHT IN AN ELEMENTARY-school computer lab for the last two years and use LogoWriter almost exclu-

sively. It's both powerful and easy to operate. I instruct 650 first- through fifth-graders per week, and they take to the program immediately. They actually become programmers in the Logo language.

I enjoyed Carol Holzberg's review of LogoWriter ("Learning with LogoWriter," April 1989, p. 28), but would like to comment on two small inaccuracies. She states, "LogoWriter starts you off on the procedure slide of a page when you select New Page or load a scrapbook file." LogoWriter actually starts you off on the Turtle side when you make these selections.

Second, to repeat a command you don't need to "direct the cursor to the first letter of the command," and then "press the right-arrow key until the cursor rests at the end of the line." Instead, just place the cursor on the command line (beginning, middle, or end) and press Return.

LogoWriter's simplicity lets even my youngest students experience success in programming. I believe this product is the "showcase" piece of software for our elementary-school computer labs.

Robert Scheinblum
Cutler Ridge Elementary
20210 Coral Sea Road
Miami, FL 33189

PACKED FULL

I WAS SURPRISED AT THE ERRORS, omissions, and overall "flawed but adequate" rating that appeared in your review of Despkak ("In with the New," March 1989, p. 30).

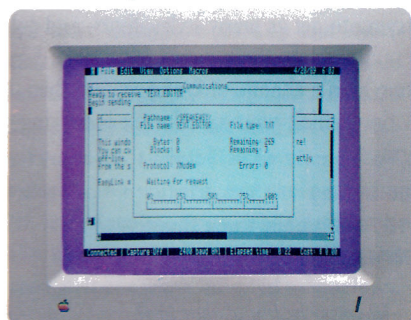
To begin with, the Installation section of the Despkak manual offers clear documentation, as do the Apple manuals that come with the IIGS. While your reviewer referred to the "installation hurdle," this procedure is quite ►



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For starters, yes, EasyLink will work with your IIs, enhanced Ile (128K), IIC or IIC Plus—it's fully Hayes compatible and features 132-column VT100 emulation. EasyLink supports XModem, XModem/CRC, X-Modem/ProDOS and YModem with automatic protocol selection on both sending and receiving. The Mac-like desktop interface can be operated from either mouse or keyboard and automatically configures the hardware setup.



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painless: Copy the desired accessory to a folder on the program disk, and reboot.

Ms. Payne states that with the Appointment Calendar "the check mark isn't removed after clearing out an appointment." We haven't been able to re-create this situation and assume she simply "spaced" over the entry. She also refers to compatibility problems with MultiScribe GS and WordPerfect. We find the accessories work fine with these programs.

Contrary to the review, furthermore, Add DA is not a tool for copying accessories from one disk to another, nor do you need two disk

drives. Also, the C key on the Deshpak Calculator is the clear—it doesn't close the calculator.

The reviewer states that the program requires 512K, and she suggests using 756K. The memory requirement for each accessory ranges from 3K-30K, and it's unlikely you'll want to use every one; install those that best suit your tastes and needs.

The review also failed to mention several features. For example, Super Scrap includes its own painting program with drawing and selecting tools, 16 colors in 320 and 640 mode,

and the ability to create, name, rename, sort, and find scraps. The Mini Database, furthermore, lets you print mailing-list labels.

Finally, readers should note our support program: Registered Deshpak owners can write or call (24 hours a day, seven days a week) with any question about the IIGS, get fixes immediately via modem, and receive new versions free or at cost.

Kevin E. Seidule, President
Simple Software Systems International
4612 North Landing Drive
Marietta, GA 30066

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CLARIS CUSTOMERS

I'D HEARD THAT SINCE CLARIS bought out StyleWare it was providing technical support for all of StyleWare's former products. I've written to Claris twice now—once regarding TopDraw and another time concerning MultiScribe. I've yet to hear from the company. What's going on?

Robert P. McCormick
79 Rye Street
Broad Brook, CT 06016

According to a recent press release, only Claris customers will be eligible for its customer-relations and technical-support services. To become registered Claris customers, owners of Apple-label products must participate in Claris' upgrade program. For more information, check "Claris Clears the Air," *What's New*, May 1989, p. 14.

—eds.

ARTISTIC LICENSE

I ENJOY READING *INCIDER'S* WHAT'S New section each month, but I think the truly new item has to be some desktop-publishing system.

The *inCider* staff must still be in the experimental stages with its new toy. The March and April layouts look as though someone's trying to get as many styles, fonts, and colors crammed into those pages as possible. Everyone likes a change of font now and then, but I don't think your new layout is making the grade.

Ed Danley
1879 Slippery Rock Road
Naperville, IL 60565-6766

Do we make fun of your toys?

—eds.

BAD BOOT

HAS ANYONE HAD TO WARM up his or her IIGs before it'll boot properly? Mine displays an unintelligible screen and halts when I first turn it on. If I leave it that way for a few minutes, then turn it off and on again, the GS boots fine. This began when I had new ROM and VGS chips installed.

Jere T. Murray
P.O. Box 2857
Homer, AK 99603-2857

There might be a bad contact. Return the unit to your dealer to reset the chips. —eds.

CORRECTIONS

In our May 1989 AppleWorks in Action, Formula 11 (p. 72) contains an inaccuracy. It should read:

@IF(A17<=(C8*12),D16-C17,0)

In addition, Figure 2 (p. 70) should contain a "1" in A16.

In "Templates from Heaven" (May 1989) the phone number for the National AppleWorks Users Group is listed incorrectly in the Product Information box (p. 48). The correct number is (313) 454-1115.

CLARIFICATION

Writing Status Report in May 1989 ("Lip Service," p. 20), I mistakenly assumed that Clayton Walnum, executive editor of *ST-Log* and *ANALOG Computing*, was speaking for those magazines when he said in *The Writer* that free-lance reviewers would have better luck selling positive reviews, and that therefore *ST-Log* and *ANALOG Computing* publish only positive reviews. In fact, *ST-Log* and *ANALOG Computing* publish fair and often critical reviews. I apologize to those magazines, their editors, and their readers for my mistake. Good magazines publish both good and bad reviews, and good writers work for good magazines.

—Paul Statt

PRO WIMP

YOUR MARCH EDITORIAL (*INCIDER's* view, "EAST-COAST WIMPS," p. 8) touched on the Mac/Apple II argument. I like Macintosh features—pull-down menus and point-and-click—but I bought the Apple II with its abundance of educational software to benefit my kids. I like AppleWorks, but I don't feel I need to use it exclusively. I'm for blending the two computers and making as much Mac-like software avail-

able for the Apple II as possible. If you want to stay with AppleWorks, that's fine, but I'd hate to see alternatives discouraged.

Steve Cannon
P.O. Box 146
Bluff, UT 84512

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

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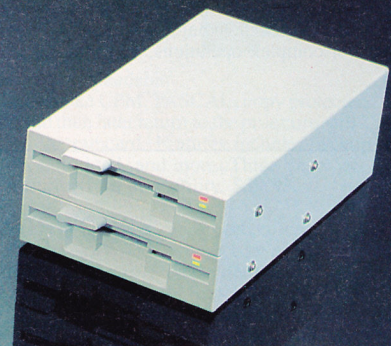
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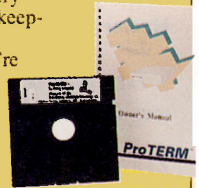
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HARD-DISKS

It's no secret. SCSI is the key. Apple's big plan for the Apple II is based on SCSI technology.



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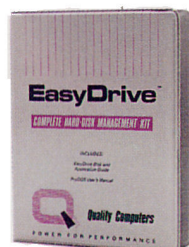
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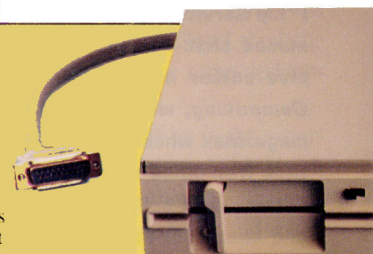
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WHAT'S NEW

By the inCider staff



ACROSS THE ATLANTIC

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B EAGLE BUYS POINT-TO-POINT

Beagle Bros Software has acquired the rights to publish the popular telecommunications program Point-to-Point from its author, Gary Little.

Point-to-Point had been published by Pinpoint Software (Emeryville, CA), which decided earlier this year to no longer support its Apple II line of software and to concentrate on MS-DOS desktop-publishing software.

Beagle Bros has contracted with Little to "substantially revise and expand" the program. Point-to-Point is the telecommunications program that works most like AppleWorks, the best-selling integrated package for the Apple II published by Claris Corporation (Santa Clara, CA).

Beagle Bros is noted for software that enhances AppleWorks, such as its programs UltraMacros and QuickSpell; Point-to-Point is a natural extension of the company's AppleWorks-accessory line. Beagle Bros' TimeOut Communicate, a telecommunications program that works within

AppleWorks, has been in planning for almost a year now; its fate is uncertain.

Beagle Bros announced also that it would allow owners of Pinpoint's KeyPlayer, Spelling Checker, Document Checker, Graphic Edge, and Desktop Accessories (which Beagle Bros didn't buy) to upgrade to analogous Beagle Bros products for prices ranging from \$25 to \$45. Owners of any other spelling checker can purchase TimeOut QuickSpell for \$35. By upgrading, owners ensure continued product support.

Owners of older versions of Point-to-Point can upgrade to the expanded Beagle Bros version for \$30; the program will cost \$99.95. (Prices quoted here don't include \$3.50 for shipping and handling; Beagle Bros products are also available at Apple software dealers.)

Call or write Beagle Bros at 6215 Ferris Square, Suite 100, San Diego, CA 92121, (619) 452-5500, or circle number 360 on the Reader Service card for more information.

—P.S.

MAY WE ASK A FEW QUESTIONS?

The Apple Pi user group in Thousand Oaks, California, is asking some 1100 Apple II clubs across the country to survey their members. Apple Pi hopes to learn how much the Apple II community cares about the machine, and has graciously offered to share the information with John Sculley at the Apple shareholders meeting in January 1990.

If your organization has already received the survey, fill it out and send it back. If your group hasn't heard from the folks at Apple Pi, write them at 2899 Agoura Road, #278, Westlake Village, CA 91361, and ask for a copy.

—P.S.

APPLEFEST GIVES A LITTLE BACK

Every ticket for AppleFest Boston in May put another dollar's worth of Apple computers into Massachusetts schools, as Apple Computer and Cambridge Marketing, the show's sponsor, devised an innovative fund raiser.

At press time, Cambridge Marketing expected to sell 20,000 tickets at the three-day event, which meant \$20,000 for the Massachusetts Department of Education.

Apple created the educational market for personal computers with its original grants of computers to schools; Keith Fox, Apple's manager for eastern Massachusetts, explains, "With education funds in the state under pressure, we felt that AppleFest was an excellent vehicle for this kind of direct aid."

—P.S.

"The customer has always been confused, but now the industry is catching up."

—Mort Rosenthal, CEO of Corporate Software, on the microcomputer industry in 1989.

QUOTES



"We will not be putting the resources toward the Apple II that we will for the Mac."

—Stu Roberson, Mediagenic

"GET ME A2-CENTRAL"

"Where did I read that?"

If you subscribe to Tom Weishaar's monthly newsletter *A2-Central* (formerly *Open-Apple*) and ask yourself that often, you'll appreciate having the full text of *Open-Apple*, from January 1985 through the current month, in text files on disk for only \$39.95.

These 3½-inch disks contain the full text of every issue. The advantages for those with impaired vision are obvious—you can listen to the text files with a speech synthesizer—but everybody can use them to make exploring back issues easier. You could load an issue or two into AppleWorks, for example (each issue is about 60K), and search for topics that interest you, or use a document-retrieval program such as Jim Hammond's amazing **FastData Pro** (available from *A2-Central* for \$49.95) to search through a number of files at the same time.

No Apple II user needs to be convinced of the value of *A2-Central*: For almost five years Weishaar and his staff have been solving real problems for real people, and at least half of each issue is devoted to readers. It's truly an exchange of Apple II discoveries.

If you like the format, you can also subscribe to *A2-Central* on disk. It costs \$84 for 12 monthly issues, but you get the entire text on disk, the entire text on paper, and a lot of other goodies on disk, such as the latest versions of Apple system software, new public-domain and shareware software, and even some good data files.

Send your orders to *Open-Apple*, P.O. Box 11250, Overland Park, KS 66207, or open a subscription to *A2-Central* (only \$28 a year) and receive a free monthly catalogue. Circle number 351 on your Reader Service card for more information.

—P.S.

GRAPHIC PUBLISHING / HIGH-IMPACT PRESENTATION GRAPHICS IS NOW AVAILABLE TO APPLE IIE, IIC, AND IIGs OWNERS WITH TIMEWORKS' CHARTING PROGRAM GRAPH IT!.

Graph It! converts numerical data from your spreadsheets or databases to clear **charts for display**. You can also enter numbers directly into Graph It!'s built-in spreadsheet templates. Graph It! converts files quickly from AppleWorks and DB Master, two of the most popular Apple II databases.

You can print Graph It! charts on your printer (in color if you've got an ImageWriter II) or export graphs to disk for use in Timeworks' Publish It! or any other program that uses the

standard Apple Graphics File format.

Graph It! graphs and charts come in more styles than you'll ever need: column, bar, scatter, 3-D—12 of the most-asked-for formats. With Graph It!'s Apple interface, you simply point and click to add borders, legends, and titles. (A mouse is strongly recommended, but not required.)

Graph It! sells for only \$69.95. Contact Timeworks, 444 Lake Cook Road, Deerfield, IL 60015, (312) 948-9200, or circle number 350 on the Reader Service card for details.



SOFTWARE

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Tom Snyder's latest contribution to classroom software, **All Star Drill**, turns a computer with a large screen or LCD system into a "smart chalkboard."

All Star Drill lets teachers review information with an entire class in an exciting **baseball-game format**. The "smart chalkboard" displays questions to the entire class. Students come "up to bat" and answer the questions, scoring hits and runs for their teams. The software displays compelling graphics and keeps score.

Like all Tom Snyder classroom programs, All Star Drill is built for the teacher. Instructors in science, geography, language arts, math—any subject at all—can put students to work with All Star Drill.

On 5¼- or 3½-inch disks, All Star Drill costs \$69.95, and is suitable for grades K–12. Call or write Tom Snyder Productions, 90 Sherman Street, Cambridge, MA 02140, (617) 876-4433, or circle number 352 on the Reader Service card.

—P.S.



GAMES

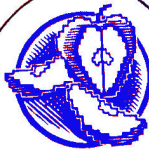
HEAVY ARMOR

The year is 1992. Military technology has reached a new peak, and you control the best helicopters, tanks, and infantry units. **Overrun** throws you into battle for control of the Middle East or Europe.

Based on the same game system developed for two of SSI's other hits, **Panzer Strike!** and **Typhoon of Steel** (created by noted game designer Gary Grigsby), **Overrun** lets you play any of eight included scenarios, or create your own. Three depict actual Arab-Israeli battles of 1973; other scenarios predict future skirmishes with advanced weapons in 1992 between Arab and Israeli forces or NATO and Warsaw Pact nations.

Keep your territory from being overrun. Put yourself in command for \$49.95 from Strategic Simulations, Inc., 1046 North Rengstorff Avenue, Mountain View, CA 94043, (415) 961-6716. Circle number 362 on the Reader Service card for more information.

—L.L.



APPLE BITS

●Jan Davidson's husband, Robert Davidson, has been named chairman and CEO at **Davidson and Associates**. Nepotism? No, Bob has degrees in engineering and law, plus an M.B.A. Jan hopes to devote her time to product development, Bob to marketing and finance.

●Banned Near Boston: A prestigious textbook and software publisher on Route 128 refused to negotiate a possibly profitable deal for some of its games with **Nintendo**, because a Nintendo partnership might compromise its name, noted for quality.

●The big **retail chains** were sending lots of software back to the manufacturers in early summer.

●**CMS** (Tustin, CA) may have had it with its Apple II hard-disk drive—too difficult to support its proprietary interface.

●Peter Doctorow, **Accolade** veep, likes the thrill of the European shows—especially the personal-computer shows in London. "Excitement's what's lacking here," Doctorow noted at Comdex in Chicago last April. Accolade now does all its own distribution in the old countries.

●**Imposters** claiming to represent Apple Computer have been visiting software publishers in Silicon Valley and asking them not to develop any more software for the Apple II. The FBI has been alerted, but has John Sculley?

●Davidson's latest, **Math Blaster Mystery**,

must have been a hurdle for the Davidson stable of programmers: It features animated graphics in addition to impeccable mathematics. Davidson still does all its programming in house.

●Authorized Apple dealers who sign up for affiliation with **MicroAge Computer Stores** (Tempe, AZ) may offer lower prices on Apple equipment, but then again they may not: Some stores may use their savings to improve tech support and customer service.

●**Tetris**, the Soviet game that came to the United States on the Apple II, will soon be available for Nintendo.

●John W. Schurmeier Jr., an alert reader in Cottage Grove, MN, noted that the reference manual for Broderbund's **VCR Companion**, published in 1988, has this prophetic statement on page 21: "Genlock boards allow you to overlay your video script onto an existing image." At that time there was no Apple II genlock; today there's Apple's Video Overlay Card. Did Broderbund know something we didn't?

●Look for an arcade adventure with—naturally—great graphics from **Polarware** soon.

●Look for the hard-disk drives manufactured by **American Micro Research** (Chino, CA) at your favorite mail-order dealer's soon—they're fast, reliable, and cheap.



HARDWARE

REMOVABLE HARD DRIVES

The small-computer-systems interface (SCSI), an industry standard, is

making it easier for Apple II owners to find *removable hard-disk drives*.

American Micro Research (13505A Yorba Avenue, Chino, CA 91710, 714-590-3900) and **Crate Technology** (6850 Vineland Avenue, Building M, North Hollywood, CA 91605, 818-766-4001), both make 45-megabyte drives for the Macintosh that work fine hooked up to Apple IIs with SCSI ports. Circle numbers 353 and 354, respectively, on the Reader Service card for more information.

—P.S.

I THINK I CAN

Exciting opportunities for severely disabled people fill the pages of the **DU-IT Control Systems Group** catalogue. Quadriplegics with high-level spinal-cord injuries are often paralyzed from the shoulders down, but retain precise control of head and face movements, for example, making computer operation possible. For more information on DU-IT's adaptive hardware products, circle number 359 on the Reader Service card.

—P.S.

RESOURCES

THAT'S THE BOOK FOR ME

Thousands of computer bulletin-board systems (BBSes) are lurking out there, awaiting your call. The trouble is knowing which one to call when.

The **BBS Bible** has the answers: It's a comprehensive listing of almost 5000 BBSes in the United States. In addition to all those phone numbers organized by area code (which helps you find a local board), the **BBS Bible** also groups them



by interest (more than 130 areas); the roster includes boards on specific kinds of computers and boards for fans of ham radio, genealogy, music, the arts, and all kinds of other passions.

The idea is that "there's a BBS for everyone." The **BBS Bible** has the details for only \$24.95, from Bubeck Publishing, P.O. Box 104, Collegeville, PA 19426, (215) 287-6356, or circle number 355 on the Reader Service card.

—P.S.

HELP FOR THE MASTERS

If Epyx's **Masters Collection** of games—*The Legend of Blacksilver*, *Sub Battle Simulator*, *Space Station Oblivion*, and *L.A. Crackdown*—have mastered you and you're looking for help, look for the **Masters Collection Hint Book**.

The **Masters Collection Hint Book** costs only \$7.99 and includes such features as complete maps of the 16 towns, 40 levels, and 22-part labyrinth of the *Legend of Blacksilver*.

In addition to the maps and game-play suggestions for all four games, fascinating interviews with the programmers and other background details fill out the **Masters Collection Hint Book**. It's available at retail stores, or from Epyx, 600 Galveston Drive, P.O. Box 8020, Redwood City, CA 94063. For the story of the complete line of Epyx games, circle number 356 on the Reader Service card.



RESOURCES

TELL 'EM WARE TATTLER

Bob Kerr couldn't wait. "I have been frustrated by the lack of information resources for answering questions about technological solutions to the problems of special-needs children and adults," he wrote in the first issue of the *Tell 'Em Ware Tattler*, the newsletter he now publishes for the special-needs community.

Tell 'Em Ware (1714 Olson Way, Marshalltown, IA 50158) also publishes an AppleWorks database of special-needs resources (\$39.95) and two sets of public-domain special-needs software for grade-school and older kids (\$49.95 each). The *Tell 'Em Ware Tattler*, \$7.50 for four quarterly issues, is far more than a catalogue of Tell 'Em Ware products, though; it publishes articles that describe how to use adaptive technology and how to pay for it. The *Tattler* also accepts and answers readers' questions. Circle 358 on the Reader Service card. —P.S.

FREE FARM SOFTWARE

High-tech farmers know the **AG/PAC** name—since 1967 AG/PAC has grown software solutions for dairy, swine, beef, and crop management, plus market charting, real-estate investment, farm accounting, and recordkeeping.

AG/PAC is so certain that one of its

recently redesigned programs is perfect for you that it's willing to send you a free farmer's financial disk just for asking for a catalogue.

Call AG/PAC at 800-US-AGPAC for details or write to 427 Grand Canyon Drive, Madison, WI 53719. Circle number 357 on the Reader Service card for more information.

—P.S.

●Version 2.0 of the **Hard Byte Editor**, a utility program for Sider hard-disk drives, has an all-new search function and an improved 80-column sector editor. Write to Subtle Solutions, 314 South Red Lion Terrace, Bear, DE 19701.



UPDATES

●Apple's (Cupertino, CA) **enhanced ImageWriter LQ** improves print quality, is quieter, and now comes with a quick-setup guide. If you bought

your printer between August 11, 1987, and March 7, 1989, your printer dealer will exchange your old noisy model for a new quiet one.

●**Dollars and Sense**, the popular personal-accounting program from Monogram (Torrance, CA), is now available in a ProDOS version. Registered users can get the upgrade, which now lets you install the program on a hard drive, for \$39.95 (regularly \$119.95). Call (213) 533-5120.

●**Claris Corporation**, publishers of AppleWorks, AppleWorks GS, and software for other computers, has moved to 5201 Patrick Henry Drive, P.O. Box 58168, Santa Clara, CA 95052-8168.

●License any **First Byte** (Long Beach, CA) product—Talking Notebooks or Building Blocks for Learning, for example—for your school for only \$250. Order a site license before October and you'll receive SmoothTalker, First Byte's talking word processor, free.

●**Mindscape's** (Chicago, IL) most popular educational products are now available in Apple II versions for Control Data's **Omninet** network (formerly Corvus).

●Custom Computer Products (Costa Mesa, CA) has taken over the popular database manager **ProFiler** from Pinpoint Software. ProFiler version 4.0 has lots of new features and a completely rewritten user's manual. For details call (714) 548-5429.

BASIC & Assembler NEWS

Ariel Publishing (P.O. Box 266, Unalakleet, AK 99684, 907-624-3161) now publishes two monthly Apple newsletters: **ZNews** and **The Sorcerer's Apprentice**.

ZNews is a cooperative venture with Zedcor, publisher of the programming language **ZBASIC**. It'll feature Gary Morrison (**RepairWorks**) and Jay Jennings (**ProTools**, **MiniBase**), as well as the Garipey brothers, creators of **ZBASIC**. **ZNews** will be the primary platform for **ZBASIC** programming discussion. It costs \$36 per year; a companion disk is \$20.

The Sorcerer's Apprentice, produced in association with Roger Wagner Publishing, is the assembler journal for Merlin programmers. Glen Bredon (**ProSell**), Jerry Kindall (**MicroDot**), Jeff Smith (**Roger Wagner Publishing**), and even Bob Sander-Cederlof (editor of the late **Apple Assembly Lines**) will contribute regularly. Cost is only \$28 for 12 monthly issues (companion disk, \$20).

Serious programmers can get more information by circling number 361 on the Reader Service card. —P.S.



STATUS REPORT

IN WORTH AND CHOICE

By PAUL STATT • SENIOR EDITOR

The best teachers don't beg the best tools; the best teachers know what they want to teach and why.

I QUIT TEACHING NOT BECAUSE MY STUDENTS weren't learning any algebra, but because I couldn't convince myself they ought to know it.

Every teacher still in the business has somehow survived that moment of doubt. Standing alone before 30 children, who may or may not care what you have to say, you must make up your mind about what you're going to try to cram into theirs.

Much "educational technology"—books, magazines, movies, filmstrips, worksheets, cassette tapes, overhead transparencies, and, yes, *computer software*—relieves the teacher of the burden of choice: "What should I teach?"

"What should children learn?" is a question many parents prefer not to answer: Put the kids on the bus and let the school decide. But many teachers beg the question as well, looking for answers—such as standard curricula and textbooks—from the department head, the principal, the school district, the state board of education, or even the Secretary of Education in Washington.

The best teachers don't beg the best tools; the best teachers know what they want to teach and why. Tools are no substitute for commitment.

If you're an insatiable reader, for example, your literature, writing, reading, English, and language-arts classes will show it; you won't require any software. (And you're the only kind of teacher fit to use educational technology intelligently.)

If, on the other hand, you never grasped long division, and never believed you needed to, "Quest for Quotients"—the newest arithmetic software—won't help. Commitment comes first. If you're committed to a topic you love to teach, picking the software is easy—ask yourself, "Do I like it?"

But what do the experts advise? "Your goal is to obtain an easy-to-use, instructionally sound program that takes full advantage of the unique capabilities of the computer—interaction, branching, graphics, and sound—and is free from errors or 'bugs,'" says the author of *Evaluating Educational Software: A Guide for Teachers* (Prentice-Hall, Englewood Cliffs, 1989).

The "unique capabilities of the computer" are reduced to something resembling a stereo television set with remote control. All media are interactive, or they're not *mediating*. Arkanoid is highly interactive, branches, looks like MTV, and sounds like *Star Trek*. But I'm an addict, and even I can't maintain with a straight face that it's educational.

David Dokterman, author of *Teaching in the One-Computer Classroom* (Tom Snyder Productions, Cambridge, 1989), has studied the history of "educational technology" from the chalkboard through movies, radio, and television to the computer. He's not easily impressed. His view isn't clouded by a rosy image that after the "computer revolution" he can stop asking himself the hard questions: "What do you do and what do you want to do in the classroom? . . . 'Why do I teach this?' and 'Why do my students need to know that?'" (Your students certainly don't hesitate to ask these questions, whether you hear them or not.) The question is simple. What do you want to teach?

Children are supposed to "learn to read" by watching *Sesame Street*. What they actually learn is to watch TV. I doubt whether children learn to estimate how much sales tax they'll pay on a \$20 album by playing arithmetic games. They learn to play arithmetic games. What do you want to teach?

Good educational software forces kids to do what you want them to learn to do. Students can't help but program computers, for instance, if they use the language Logo. They can't play Broderbund's Carmen Sandiego games without researching facts in *The World Almanac*. They must think if they want to simulate an exploration of the United States, as in Tom Snyder's *National Inspirer*.

But don't bother trying to light a fire under your kids unless you're burning yourself. Children learn by watching adults. If you enjoy playing *National Inspirer*, the kids will know it. Teaching what you love and believe in is automatic.

In English, "evaluation of educational technology" means, "Buy software that teaches what's worth learning." What's worth learning? I still don't know, and I still wish I did. But you're still teaching. □



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C LINIC ADMISSIONS

inCider's Apple Clinic is now *the* leading resource for answering your technical questions about Apple IIs and related hardware and software.

By **WILLIAM P. KENNEDY, Ph.D.**

NEW CLINIC POLICY

YOU'VE HEARD THE NEWS: *A+* and *inCider* have merged. *inCider*, with *A+* incorporated, is now *the* leading Apple II magazine. Consequently, *inCider's* Apple Clinic becomes *the* leading resource (I think it always has been) for answering technical questions about Apple IIs and related hardware and software.

Since becoming *inCider's* technical editor, I've tried to answer all Clinic inquiries, even those phoned in. I've selected questions for publication that addressed generally interesting issues, while answering the rest via letter or postcard.

With the recent merger, however, the number of Clinic questions has increased significantly. We want to continue providing the best service to our readers, but the consequent workload has become overwhelming. So, it should come as no surprise that we're forced to rethink our personal-reply policy and ask for your support by following a few simple guidelines when writing:

- Address your letters to Apple Clinic, c/o *inCider*, 80 Elm Street, Peterborough, NH 03458, to receive serious consideration for a published answer.

- Enclose a self-addressed, stamped envelope (SASE) to receive a personal reply.

- State your problem simply and include only the relevant details, such as which Apple you're using with related software and hardware accessories.

- If you have a question about a program that isn't generally available (a game you wrote yourself, for example), send along a printout of the program *and/or* a disk.

- Approach the manufacturer of the product you're considering purchasing or with which you're having trouble.

- Or consult your local dealer or user group. They can often answer your questions in a more timely and comprehensive way than I can via postcard.

Thanks. And don't forget to send along your Clinic Quickie tips.

Bill Kennedy
Apple Clinic Editor

MAGIC GRAPHICS

I PURCHASED ACTIVISION'S (now Mediagenic's) *Aliens* game recently for my Apple IIc. I was surprised to find that the program can display many more colors—such as gray, yellow, and red—than I usually get using BASIC. How does Mediagenic do that, and how can I reproduce it in my programs?

Suzanne Werner
North Brunswick, NJ

It's magic, pure and simple. That's how.

No, really, *Aliens* and a lot of other games and graphics-intensive programs designed for the Apple IIe and IIc use what is termed double-high-resolution (double-hi-res) graphics video mode to produce the colors you mentioned and at least 13 others.

Double-hi-res video is something of an artifact of the 80-column-text hardware introduced originally with the IIe.

Some tinkerer discovered, to the surprise of many Apple II engineers, that a minor modification in the original IIe motherboard (Revision A alone can't produce the effect), along with an "extended" 80-column text card (adds 80-column text and 64K of RAM) whose Molex connector pins are "jumped," plus the right combination of video hardware "soft switch" settings (see the accompanying Table), ►

SOFT SWITCH	MACHINE LANGUAGE	APPLESOFT BASIC
GRAPHICS	STA \$C050	POKE 49232,0
HIRES	STA \$C057	POKE 49239,0
B0COL	STA \$C00D	POKE 49165,0
AN3 (off)	STA \$C05E	POKE 49246,0
MIX (text window)	STA \$C053	POKE 49235,0
NOMIX	STA \$C052	POKE 49234,0
B0STORE	STA \$C001	POKE 49153,0
PAGE1	STA \$C054	POKE 49236,0
PAGE1X	STA \$C055	POKE 49237,0

Table. Enabling double-hi-res video-display mode.

DISK ACCELERATOR

THE MULTI-KACHE CARD



If you're using an Apple computer, saving time is more than a priority...it's a necessity. Speed is critical, and nothing irritates you more than waiting for your disk drives to play catch-up.

OKS has come up with a solution. The Multi-Kache Card. An intelligent multi-disk controller so fast...so powerful...so efficient...it will unleash performance you didn't even know you owned.

Let the facts speak for themselves:

1. The Multi-Kache Card is the fastest disk controller available for Apple computers!
2. The Multi-Kache Card is twice as fast as a ramdisk — and safer!
3. The Multi-Kache Card is up to 40 times faster than other controller cards!
4. With our 30-day trial period you can experience the Multi-Kache Card for yourself with no risks!

The OKS Multi-Kache Card is a multi-disk controller with real hardware cache. With the combined features of a disk controller and real cache memory, the Multi-Kache Card boosts throughput of your data to and from your computer.

The Multi-Kache Card performs without taking up any system memory.

Applications which access your disk drives frequently, such as a large data base will demonstrate dramatic speed improvements. And the Multi-Kache Card's real cache memory can extend the life of your drives.

The Multi-Kache Card controls both 3.5 and 5.25 drives and runs at 8MHz.

Check these features:

- The Multi-Kache Card can read an entire 3.5 disk from cache in 3.5 seconds
- can run the ProDOS 16 Launcher from cache in under 15 seconds
- will control up to 8 assorted disk drives
- can daisy-chain disk drives
- can reduce or eliminate slot congestion
- is compatible with all accelerators currently on the market
- is a SMARTPORT device that is 100% compatible with ProDOS 8/16, and GS/OS
- is compatible with Apple II+, IIe, and IIGS

The OKS Multi-Kache Card comes standard with 256K of cache memory and can be upgraded to a full 1 meg.

The Multi-Kache Card can control any combination of the following types of disk drives:

- The Apple Unidisk 3.5 Disk Drive
- The Apple GS 3.5 Disk Drive
- The Apple 5.25 Duodisk
- The older 5.25 Disk II Disk Drive
- The Apple 20SC SCSI Hard Disk Drive
- The Apple 5.25 Drive

For more information call us toll free at

1-800-338-0050



Ohio Kache Systems Corp.
4162 Little York Road, Suite E
Dayton, Ohio 45414-2566
513-890-3913

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Program listing. Demo, double-hi-res graphics mode.

```

10 REM Double Hires Graphics Demo [5288]
20 REM by William Kennedy [3553]
30 REM Copyright 1989, inCider [4733]
40 REM Enable double hires [3839]
50 PRINT CHR$(4);"PR#3": HOME : POKE 49235,0 [2387]
60 POKE 49239,0: REM hires [1834]
70 POKE 49232,0: REM graphics [2652]
80 POKE 49165,0: REM 80-columns [2851]
90 POKE 49246,0: REM AN3 off [2695]
100 VTAB 22: PRINT "Screen should have lots of garba
    ge above and this message in the text window." [6150]
110 GOSUB 1000 [1256]
120 HOME : VTAB 22: PRINT "Now clearing a portion of
    graphics pages 1 and 1X to black..." [13035]
130 POKE 49153,0: REM Turn on 80Store [3314]
140 POKE 49236,0: REM access Page 1 first [4219]
150 C1 = 0: C2 = 0: GOSUB 1500 [1536]
160 POKE 49237,0: REM Now enable Page 1X [4110]
170 GOSUB 1500: REM and clear it. [3071]
180 PRINT : GOSUB 1000 [1006]
200 REM Draw color stripes [1520]
210 HOME : VTAB 22: PRINT "Color bars now will appea
    r on page 1 and turn solid when placed on page 1X
    ..." [6685]
220 PRINT : PRINT TAB(8)"Press space bar to pause,
    esc key to quit..."; [3518]
230 RESTORE : FOR C = 0 TO 15: REM 16 colors [2206]
240 S = 1: READ C1,C2: POKE 49236,0: REM Page 1 [4438]
250 GOSUB 1500: IF PEEK(49152) > 127 THEN 300 [2388]
260 S = 2: READ C1,C2: POKE 49237,0: REM Page 1X [2862]
270 GOSUB 1500: IF PEEK(49152) > 127 THEN 300 [3876]
280 NEXT C: GOTO 230 [1010]
300 GET A$: IF A$ = " " THEN GET A$: GOTO 320 [3135]
310 IF A$ = CHR$(27) THEN TEXT : HOME : PRINT "By
    e...": END [4362]
320 ON S GOTO 260,280 [756]
1000 VTAB 24: PRINT TAB(12);"Press the space bar t
    o continue -->"; [3086]
1010 GET A$: PRINT A$: RETURN [1317]
1500 REM Put color bytes onto graphics page [2365]
1510 FOR I = 0 TO 19: FOR J = 0 TO 7 [1878]
1520 POKE I * 2 + 8960 + J * 1024,C1 [2034]
1530 POKE I * 2 + 8961 + J * 1024,C2 [2040]
1540 POKE I * 2 + 9088 + J * 1024,C1 [3035]
1550 POKE I * 2 + 9089 + J * 1024,C2 [3153]
1560 NEXT J: NEXT I [785]
1570 RETURN [193]
2000 DATA 17,68,8,34,8,34,68,17,25,102,76,51 [3578]
2020 DATA 68,17,34,8,85,85,42,42,76,51,102,25 [3702]
2030 DATA 93,119,110,59,34,8,17,68,51,76,25,102 [3829]
2040 DATA 42,42,85,85,59,110,93,119,102,25,51,76 [4000]
2050 DATA 119,93,59,110,110,59,119,93 [4519]
2060 DATA 127,127,127,127,0,0,0,0 [3884]

```

enables double-hi-res video—that is, a 16-color, 160-horizontal-by-192-vertical-pixels graphics mode. You also need a minimum 12-megahertz color monitor. Later IIe motherboards incorporate the modification, and double-hi-res video is built into the Apple IIc, IIc Plus, and IIGS.

Enabling double-hi-res video is simple. Drawing on it, however, is complicated. Similar to standard hi-res, the RAM addressing ("bit map") for each of the graphics elements in double-hi-res doesn't cor-

respond directly to a pixel's position or color on screen. But Applesoft BASIC doesn't include support commands for double-hi-res as it does for hi-res; lots of PEEKs and POKEs must suffice.

A complete discourse is beyond the scope of this column, but you can read more about the intricacies of double-hi-res video in any of Addison-Wesley's (6 Jacob Way, Reading, MA 01867) IIc, IIe, or IIGS technical manuals, which you'll find in most popular bookstores.

In the meantime, I've prepared a demo that uses Applesoft BASIC (see the accompanying **Program listing**) to exercise double-hi-res video. You'll notice that the program consists basically of three parts: Enable double-hi-res (lines 60-90); demonstrate main (page 1 in the first, or lower, 64K of RAM) and auxiliary (page 1X in the second, or upper, 64K of RAM) graphics bit-map memory access (lines 120-180); and display the 16 available colors (lines 200-280).

The subroutine in lines 1500-1570 calculates the RAM addresses for a portion of the bit map near the center of the graphics screen and POKEs the alternating color bytes into it.

The DATA in lines 2000-2060 contain the repeating 4-byte bit patterns that produce the 16 basic colors of double-hi-res video. While examining those DATA values, keep these facts about the double-hi-res screen in mind. The last 4 bits, or nibble (bits 4-7), in the corresponding byte of the page 1X graphics bit map specifies the pixel in the leftmost column on screen. The next pixel to the right is the remaining nibble (bits 0-3). The next two pixels correspond similarly to page 1 graphics RAM, and so on, alternating between pages 1 and 1X.

Also, the bit patterns for color alternate in 4-byte sequences—2 each for pages 1 and 1X. That's why line 260 READs two byte values and lines 1520-1550 POKE them into adjacent bytes of graphics RAM, alternating between pages 1 and 1X.

Thoroughly confused? I told you it's complicated. But, once you get the hang of it, you'll probably want to write several subroutines that translate some rational coordinate system for the screen ($x = 0-159$ and $y = 0-191$, for example) into a specific pixel's address and color automatically. When you do, please share it with all of us.

QUICKIES

AppleWorks 2.1 patches to skip the spacebar and date entry: POKE 14118,44: POKE 14436,208: POKE 14437,19.

—Patrick Cox
Bennettsville, SC

APPLE CLINIC IS A FORUM FOR ANSWERING YOUR QUESTIONS ABOUT APPLE II HARDWARE AND SOFTWARE. ADDRESS YOUR CORRESPONDENCE TO APPLE CLINIC, INCIDER, 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.



APPLIED ENGINEERING

A DIVISION OF AE RESEARCH CORPORATION

Dear Apple lover,

I guess it's obvious from our product names that I'm a space buff. One of the most fulfilling moments of my life was being at Cape Canaveral to witness the space shuttle Atlantis lift off carrying the Magellan space probe on the first leg of its journey to Venus.

How wonderful to live in the United States, where we place so high a value on discovery and exploration. This July 4th, it's been 20 years, nearly to the day, since that spine-tingling radio transmission from the moon announced: "Houston, Tranquility Base here. The Eagle has landed." The 4th of July is a good day to stop and consider that this American need to learn, discover, explore and invent is rarely inspired by profit. Something much more instinctive is going on.

When Americans design an electric light, or an airplane, or a spacecraft or a cold fusion reactor, the motivation usually comes from the challenge of confronting a problem and the satisfaction of solving it.

I've always been fascinated with technology. I've gone from tinkertoys to 1/6 scale radio-controlled jet aircraft. But one of my hobbies hasn't changed. My first love is computers and my passion is the Apple II. I'm very lucky—my work *is* my hobby.

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Together, we have a vision for the Apple II and over 100 products are making that vision come true, but we're not finished yet. This year, we're expanding our R & D department by more than 20% so we can continue to develop new products and improve existing ones. We were in search of excellence before it was fashionable. Excellence in engineering, in manufacturing, in technical support and in service. We know we're not perfect, but we are committed to constantly improving.

H.G. Wells once wrote, "Rest enough for the individual. Too much and too soon and we call it death, but for man, no rest and no ending. He must go on, conquest beyond conquest. First this little planet and then all the laws of mind and matter that restrain him. Then the planets about him, and at last out across the immensity to the stars, and when he has conquered all the deeps of space and all the mysteries of time, still he will be beginning. For if we are no more than animals we must snatch each little scrap of happiness and live and suffer and die. Mattering no more than all the other animals. It is this, or that. All the universe or nothing. Which shall it be? Which shall it be?"

Have a safe and happy 4th of July.
Sincerely,

Danny W. Pote
Founder & Chairman, Applied Engineering

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REVIEWS

INCIDER'S RATINGS

Excellent—remarkable ♦ ♦ ♦ ♦ ♦ Very good—impressive ♦ ♦ ♦ ♦
Good—average ♦ ♦ ♦ ♦ Fair—flawed ♦ ♦ ♦ Poor—unacceptable ♦

ART & FILM DIRECTOR



EPVX,
800 Galveston Drive, Redwood City, CA
94063, (415) 366-0606

Paint and animation program;
768K Apple IIGS, 3½-inch disk drive; \$79.95

Rating: ♦ ♦ ♦ ♦

Epyx, a leader in the entertainment business and producer of several effective graphics products, now steps into the limelight with a new, sophisticated paint and animation package—Art & Film Director.

As the name implies, Art & Film Director is actually two programs in one—each of which could easily stand alone as a separate product. While both modules boast easy-to-use interfaces, making the program suitable for novices

and amateurs, a perusal of the package's advanced features makes it clear that this program is intended for the serious computer artist.

GETTING CREATIVE

The Art Director program contains every conceivable feature the would-be designer could want—a drawing pencil with 40 different points; shape tools to create perfect geometric forms; 4096 colors from which to build

your palette; special effects that let you stretch, bend, rotate, and outline your drawing; and so on.

Anyone who's the least bit familiar with paint programs is aware of the plethora of features most of them offer. Art & Film Director, however, holds its own not only in number of options, but also in ease of use.

DETAILS, DETAILS

For example, in the upper left-hand corner of the Art Director screen is a rectangular window called the Zoom Box, which you can toggle on and off for detail work. The Zoom Box magnifies the canvas area where your cursor is positioned; the magnified area changes each time your cursor moves, constantly monitoring and mirroring the cursor's position.

Furthermore, the Zoom Box is "active," letting you use it for detailed drawing or fine editing. You can set eight levels of magnification, allowing for total control of your creation.

Certainly any good paint program contains some sort of magnification. Getting to it is often a several-step procedure, though. You may lose the rest of the picture while working on a specific segment in magnification mode, and levels may be limited. Art & Film Director, by treating the zoom as a separate and continuously active window, enhances this essential feature.

THE BRUSHOFF

Ease of implementation seems to be a rule of thumb in Art & Film Director. Almost every aspect of the program contains numerous options and all of them can be selected with the mouse or keyboard. The program is strongly geared toward the mouse interface and responds with admirable control and sensitivity when you draw or select options from the numerous pull-down menus and windows. ►



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Photo by Tad Moyer

Circle 54 on Reader Service Card.

Another standard feature found in good paint programs is the ability to define your brush. Art Director lets you "cut out" a block of color, an image, or even a piece of text with the scissors icon and turn it into a paintbrush. Whatever you've defined as your brush will duplicate its image wherever you move the brush on screen. You can take a single word, for example, turn it into a brush, and "stamp" it all over the screen.

Other advanced features include the Mirror command, which divides the screen into two sections (horizontal or vertical) and makes anything drawn in one section appear automatically in the other.

The Perspective command adds depth to your creation (making railroad tracks realistically narrow as they head into the distance, for example). The Bend command wraps a section of your painting around an imaginary cylinder. This feature lets you wrap a poster around a telephone pole or create cylindrical columns in front of a Southern mansion.

These commands take some time to master. You'll need to experiment with the many special effects and tools to find out how to use them most effectively. You'll need a little patience when experimenting with some of the more powerful commands, such as Bend and Perspective—depending on the size of the object with which you're working and the difficulty level of what you're trying to do, the program can take several minutes to compute and redraw.

ADVANCED GRAPHICS

The Tools menu in Art Director includes the more sophisticated options designed to produce more complex effects, such as scrape, melt, shade, and color merge. You can also use these features to create special effects when working with multiple canvases.

The local/global command works in conjunction with the Tools menu, letting the selected tool work on the entire canvas or on only a selected portion.

After you've created a portfolio of graphics masterpieces, you can display your work in a slide-show presentation. The Art.Show option is simple to use: Copy the Art.Show file from your desktop to any disk containing picture files; insert the picture disk into a drive; click on Art.Show from the directory line; and watch as your pictures appear on screen. Use the spacebar to pause and resume the show.

All in all, Art Director is capable of doing

just about anything you'd want to do in a graphics painting. From a simple line drawing to a computerized version of *The Last Supper*, the tools are available.

Just keep in mind a general rule of thumb—the more sophisticated your creation, the more time, energy, and effort you'll need to complete it.

LIGHTS, CAMERA, ACTION

Film Director is the second half of Art & Film Director, but it certainly doesn't play second fiddle to the paint program in terms of power or array of options.

Film Director uses traditional animation techniques to create cartoons. It accepts drawings created in Art Director (or imported pictures from DeluxePaint, PaintWorks Plus, or PaintWorks Gold) and makes them come alive through animation.

TECHNIQUE IS EVERYTHING

Cell animation is becoming a standard technique among programs of this type because it demands that each frame be made up of its own separate graphics elements, such as background, characters, and props. If one element needs revision, you can change it without redrawing the entire frame.

Another standard device found in Film Director is an animation shortcut called *tweening*, which takes much of the tedium out of creating animated sequences.

Start by creating frame 1—a basketball hoop on a pole and a boy standing below it, holding a basketball at chest level, for instance. Next create frame 10, showing the boy with his arms above his head and the ball exiting the basket. The tweening option in Film Director will automatically create the rest of the frames in between to illustrate the boy shooting the ball.

Much of the power of Film Director is evident in its ability to work with either a single frame or a sequence at one time. This feature lets you make rapid editing changes with minimum difficulty.

For example, suppose you want to add some element to the background you've used in 30 sequential frames. Just call up the sequence command and edit the background in frame 1, then add it automatically to the rest of the frames in the sequence.

ILLUSIONS

Film Director's overlay feature also adds to both its ease of use and its level of sophisti-

cation. *Overlay* lets you duplicate images in different locations within a frame. A single tree blowing in the wind can turn into a forest being pounded by a gale, for instance; then, by copying the entire sequence, you can make the wind lash at the trees for as long as you like.

Layering is yet another option; it places elements over or under others. This technique lets objects pass in front of, behind, or through others to give the illusion of a third dimension.

TRAILERS

While some features are of significant help in the actual design of the film, others such as *trace on/trace off* contribute to the editing process. Toggling the trace-on tool leaves a trail of images on screen as an "actor" moves across it.

For example, if you have a boy dribbling a ball across the screen, each frame will appear and remain as the sequence develops. Then you can analyze the animation and determine which frames, if any, are out of sync.

One last note: No matter what type of film you produce—an epic motion picture or a shot of a bird flying across the screen—you can enhance the visuals with music. The program includes 27 sounds you can copy into your film in several simple steps.

THAT'S ENTERTAINMENT

As with Art Director, you get out of Film Director what you put into it. If you're willing to spend the time it takes to piece together dozens of frames, you can create an impressive film. If you just want to amuse yourself with simple animation, Film Director can entertain you admirably.

Art & Film Director comes on three 3½-inch disks, none of which is copy-protected. The 125-page manual is well written and designed and includes two quick-start tutorials, one for each of the main sections of the program. The table of contents is helpful, but the index could be more complete: Some tools and functions found on submenus aren't listed.

Art & Film Director is an excellent package. To go into all the features contained in this duo is well beyond the scope of a review; suffice it to say that considering the depth of the software and its reasonable price tag, Epyx's contribution to the field of paint and animation is a winning combination.

James V. Trunzo
Leechburg, PA

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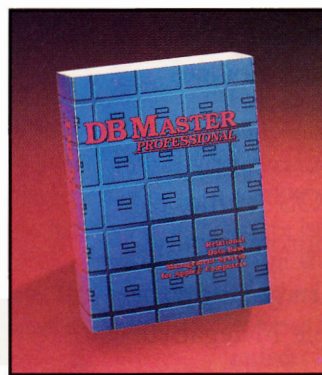
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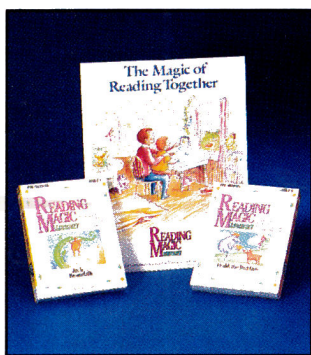
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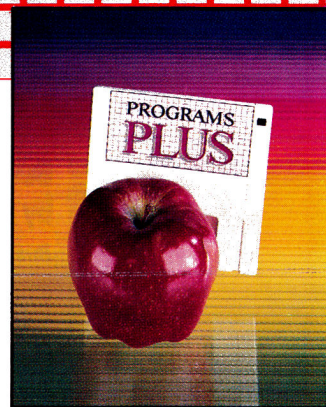
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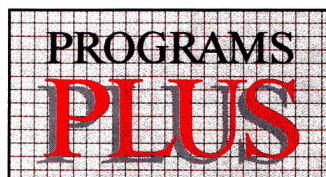
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Hayes Hayes 1200 Baud Smartmodem	299.	U.S. Robotics Courier 2400	335.
Hayes 2400 Baud Smartmodem	449.	U.S. Robotics Courier 2400E	379.
MDideas CommLink 2400	189.	U.S. Robotics Courier HST 9600	689.



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Canada: 1/800/344-7753
75 RESEARCH DRIVE
STRATFORD, CT 06497
1/800/832-3201

AT A GLANCE

Music Shapes 1.0 (June 1989, p. 40, by Sharon Webb), Music Systems for Learning, 311 East 38th St., Suite 20C, New York, NY 10016, (212) 661-6096, \$175

Rating: ♦

According to some educators, a child's first introduction to music should be ear training, not note reading. This is the direction Music Shapes takes. Unfortunately, students may have trouble with Music Shapes' primitive, user-hostile interface.

The program offers no music sample, and the familiar Apple IIgs interface is nowhere in sight. Instead, you see a black-and-white screen with eight cryptic labels—Pitch, Time, Sound, Save, Lifts, Flips, Shelves, and Quit.

You manipulate the notes—represented by purple squares—up and down the column to change the pitch. This is a by-guess-and-by-gosh affair, because the column isn't calibrated in any way.

Music Writer 1.3 (June 1989, p. 40, by Sharon Webb), Pygraphics, P.O. Box 639, Grapevine, TX 76051, (800) 222-7536; Level I \$119, Level II \$295, Level III \$595

Rating: ♦ ♦ ♦ ♦

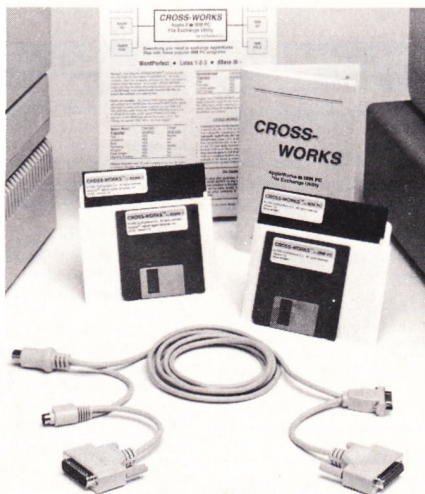
Imagine a word processor that not only lets you enter a document from the keyboard, but also dictate your letter and hear it read back in a pleasant voice. That, in effect, is what Music Writer 1.3 does for music.

Level I lets students enter up to three staves of music. While it won't do away with the need for a teacher, it will go a long way toward helping the would-be musician understand music notation. For the professional composer, Level III offers 32 staves for complete orchestral scoring. Level II fits right in the middle and allows six staves—ideal for school groups, small ensembles, or church choirs. All three levels provide full-featured music-writing commands.

You can enter music from the computer keyboard with a mouse, from a

Continued

CROSS-WORKS 1.3



SOFTSPOKEN,
P.O. Box 97623, Raleigh, NC 27624,
(919) 878-7725

File-conversion utility; 128K Apple IIe with Super Serial Card, IIc, IIgs, or Laser 128, and IBM-PC, XT, AT, PS/2, or true compatible with serial interface; external or internal Hayes-compatible 1200-baud modems optional; \$79.95

Rating: ♦ ♦ ♦ ♦

If you're searching for a way to share word-processor documents, spreadsheets, databases, and other files between your Apple II and IBM PC or PC clone, look no further. SoftSpoken's Cross-Works carries the biggest stick in the file-translation/transportation business.

Cross-Works is a comprehensive package—including communications hardware and support software to link your Apple II directly or via modem to just about any MS-DOS-compatible microcomputer. It also provides the widest selection of translators available for no-fuss conversion of data files.

Sharing data files between an Apple II and an MS-DOS computer encounters at least two barriers. First, the way data are actually arranged and stored on disk by various programs differs widely. That's true even for applications that operate on the same computer.

The simplest translations convert a file to some format considered standard by the industry, a format most major applications can read—such as a text (ASCII) or DIF (data-interchange format) data file. Many details get lost during translation into a generic format.

The second barrier to shared files has to do with the computers themselves. Without special hardware and software, files saved on disk

with an MS-DOS computer can't be used on an Apple II or, for that matter, any other incompatible machine. You must establish a communications channel first.

Modems and direct serial cabling with support software are the most common ways to transmit information. However, you have to invest considerable time and money to purchase the equipment, set it up, and learn how to establish communications and transport files between two computers with modems. You could also spend countless hours inhaling rosin smoke as you try to make the right solder connections for a serial cable between two machines. Who needs the hassle? Are translating and transporting files worth the cost and inconvenience?

The Cross-Works package contains excellent documentation, software, and cabling for one-step translation and transportation of files between Apple II and IBM PC or compatible (here called PC) computers. The cable provides for direct connection between the machines. On one end, it has three plugs for direct connection to any Apple II via the built-in modem or serial port (port 2) on an Apple IIc, IIc Plus, or IIgs, or an Apple Super Serial card (or equivalent) installed in slot 2 of an Apple IIe.

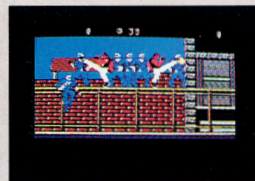
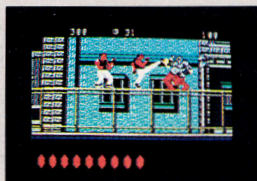
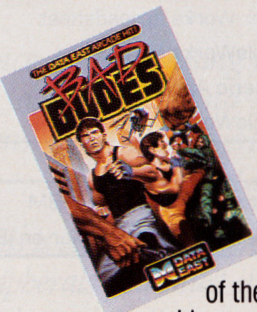
One 9-pin and one 25-pin receptacle at the other end of the 6-foot cable connect to the standard serial port configured as COM1: (the preferred port for transporting files) or COM2: in the PC. Because the serial communications conform to RS-232 standards, the cable can be extended up to 50 feet.

If you need longer connections—from your office to home, for example—Cross-Works can operate with a variety of Hayes-compatible 300–2400-baud (1200-baud default) modems. The cabled connection operates at the much faster speed of 19,200 baud and doesn't cost you phone tolls.

Two 5¼- and two 3½-inch disks contain the Apple and PC versions of the Cross-Works programs, respectively. You can use the Apple disk to start up the machine. You'll need a copy of MS-DOS or PC-DOS, version 2.0 or later, to start up the PC.

Cross-Works software works like Apple-Works—using overlay menus, arrow keys to highlight, and the return key to select options. The main-menu selections for both machines include send and receive files, select target drive, communications activities, file maintenance (delete, rename, and so on), and quit. ►

THEY'VE GOT THE PRESIDENT. YOU'VE GOT... BAD DUDES.



Striker and Blade. The Bad Dudes. Facing some of the nastiest ninjas in the known world—accompanied by a gang of fire-spitting thugs and their cohorts, mad dogs who are intent on serious crime. This crowd of malcontents has somehow gotten its ugly mitts on the president of the United States. And what they plan to do with him isn't pretty.

What Striker and Blade have to do isn't any picnic either. But someone's got to do it, right? What better time for you to start dishing out the **BAD DUDES'** own version of the criminal justice system? The action is top-notch. The graphics, phenomenal.

BAD DUDES from Data East. Mr. President, help is on the way.

**DATA
EAST**

Data East USA Inc., 470 Needles Drive, San Jose, CA 95112 (408) 286-7074

Screens shown are from the IBM version. Other computer versions may vary.

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Circle 268 on Reader Service Card.

AT A GLANCE

Continued

synthesizer keyboard through a MIDI (musical-instrument digital interface) device one note at a time, or from a synthesizer played in real time.

Cartooners (June 1989, p. 106, by James Trunzo), Electronic Arts, 1820 Gateway Drive, San Mateo, CA 94404, (415) 571-7171, \$59.95

Rating: ♦ ♦ ♦ ♦

Cartooners lets children produce their own animation so easily that the creative process isn't stunted by the mechanics of the program. Using mouse commands, seven pull-down menus, and a nine-function command line, Cartooners sets new standards for simplicity and ease of use.

In as little as five steps, your child can compose animated tales to rival the Saturday-morning funnies. Select a scene, choose your characters, assign them an action, create dialogue balloons, add music and sound effects—and your little director is ready to premier his or her first cartooning effort.

MasterTracks Jr. (June 1989, p. 110, by Jerry Stoddard), Passport Designs, 625 Miramontes Street, Suite 103, Half Moon Bay, CA 94019, (415) 726-0280, \$149.95

Rating: ♦ ♦ ♦

Passport's MasterTracks Jr. is the first professional-level music-sequencer package designed for the Apple IIgs. Work screens resemble the controls of a multitrack tape recorder, with record, play, fast-forward, rewind, and pause buttons you activate with the mouse. The manual is well-written and easy to understand. Following the Quickstart Tutorial, you'll be able to begin sequencing within half an hour.

The software provides 64 tracks for recording data.

It's been a long wait for a truly useful music sequencer for the GS. MasterTracks Jr. covers all the essentials. It's easy to learn and fun to use.

In addition, because you perform all file translations on the PC side, its main menu has options for alternative formats.

In a typical session, you'll boot Cross-Works on each machine. If you're using the direct cable connection, communication is established automatically. If you're using modems, you must decide beforehand which machine is the caller and which the answerer. Then set up the appropriate modem protocol from the communications-activities option on the main menu and establish the phone connection.

Sending and translating files are automatic and involve merely tagging the source files from a listed catalog, then sending them. The received and translated files are labeled automatically with the correct file types and suffixes.

The accompanying **Table**, taken from the Cross-Works *User Manual*, lists current translation formats. Cross-Works software is designed for the most popular applications for both machines—such as translation of AppleWorks documents to and from Lotus 1-2-3, dBase III Plus, and WordPerfect. Although translations are rarely perfect, Cross-Works comes as close as you're going to get.

formats (such as ASCII files) and can assign a specified file type to the transported file or maintain the original file's format.

The latter option is most useful because translation takes time and is normally performed before (if PC to Apple) or just after (Apple to PC) transportation. If your connection is via modem, that extra time used for translation can be costly. So it's best to first translate the files on the PC into an Apple format and save them for later transportation. Or, on the Apple side, transport the original files and later translate them into a PC-compatible format.

You can also use Cross-Works' translation utilities with other Apple-to-PC hardware, such as PC Transporter.

Cross-Works performed quite well in our hands using both direct- and modem-mediated transportation. The only difficult and frustrating experience involved establishing the serial port on an IBM PC—perhaps a result of our inexperience with IBM equipment, not any problem with Cross-Works. In fact, SoftSpoken provided extraordinary technical assistance.

DEFAULT CONVERSIONS			
AppleWorks word processor	to	WordPerfect on IBM	
AppleWorks spreadsheet	to	Lotus 1-2-3 on IBM	
AppleWorks database	to	dBase III, IV on IBM	
generic Apple text	to	DOS ASCII text on IBM	
WordPerfect on IBM	to	AppleWorks word processor	
Lotus 1-2-3 on IBM	to	AppleWorks spreadsheet	
dBase III, IV on IBM	to	AppleWorks database	
DOS ASCII text file on IBM	to	generic Apple text file	
delimited ASCII file on IBM	to	AppleWorks database	
ALTERNATE CONVERSIONS			
AppleWorks database	to	delimited ASCII file on IBM	
AppleWorks word processor	to	generic word processor on IBM	

Table. Cross-Works translation formats.

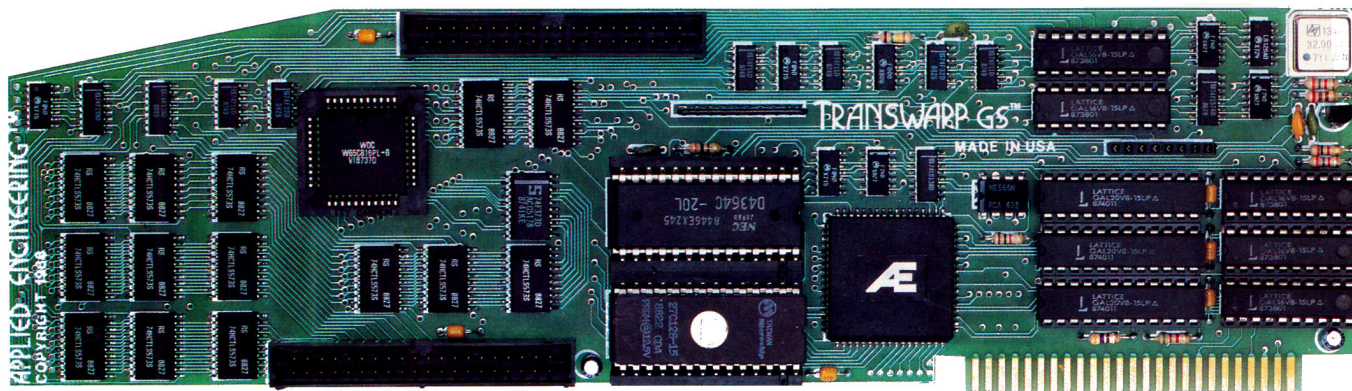
For example, you'll lose formulas and column widths in a spreadsheet if you use a DIF file, but Cross-Works retains them.

The material in the **Table** is by no means the entire roster of possible translations and transportations using Cross-Works. The manual names more than 50 applications for which the listed translation formats are compatible. That's because most of the formats can be used by other applications. Moreover, Cross-Works allows for the transportation of alternative file

The only drawback we encountered is that Cross-Works reverts to the "default" translation and communication settings each time you start it. Saving personal preferences for communications and translations would be a significant enhancement. Any other disappointments with Cross-Works really involve our wish list—such as wishing it would translate graphics or entire programs.

William P. Kennedy, Ph.D.

inCider staff



Fan mail GS

"TransWarp GS has performed flawlessly ... I've become addicted to computing at warp speed ... once you get a taste, you'll wonder how you ever got anything accomplished with your IIGS lumbering along at an unaccelerated pace ... it's an improvement you're going to appreciate every time you place your fingers on the keyboard."

— Owen Linzmayer, Technical Editor, A+

"I'm stunned ... bordering on speechless. I used to dread waiting and waiting to run GS/OS. I don't anymore. TransWarp GS breathes new life into my computer. Thanks AE, you guys are in a class by yourselves."

— Joe Kohn, The Source

"Once I started using the original TransWarp in my old IIE, I found I couldn't do without it, TransWarp GS promises to be equally indispensable."

— Lafe Low, Review Editor, Incider

"This is the card you want. Sell whatever secondary peripherals you must in order to get a TransWarp GS plugged in."

— Joe Abernathy, Houston, TX

"Together with my RamKeeper, you have given me a color Mac at one-third the price. Thanks."

— Richard Artz, Ft. Collins, CO

"I have conducted some recent tests which indicate that the 'little' IIGS (with TransWarp GS) outperforms the MacSE. Your engineering department should take a bow."

— George Dombrowski, Jr., Chicago, IL

"TransWarp GS will be the best \$400 you ever spent."

— Dan Muse, Editor in Chief, Incider

"WOW WOW WOW! I am completely blown away with how fast it goes. Unbelievable."

— Dean Esmay, A2-Central

"TransWarp GS is by far the best money I've spent on my GS since purchasing my DataLink. Hats off to everyone at AE for another great product!"

— Greg Dacosta, GENie

TransWarp GS is rapidly changing the way people use the Apple IIGS. Join the thousands of TransWarp GS owners who've discovered computing at Warp Speed. For more than nine years, Applied Engineering has led the way with proven, reliable products for the Apple II line. We plan to keep it that way. Thanks for the vote of confidence, folks.

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Reel-World

By Lou Wallace

LIKE MOST APPLE USERS, you've progressed far from the days when text and a few simple graphics were enough for your letters, manuscripts, reports, and other documents. Today you want to bring more of the "real world" into your work. One obvious source of realism and variety is computer-graphics video. From TVs and videocassette recorders (VCRs) to the personal camcorder, the modern home is full of hi-tech gadgets just waiting for the right techniques to make an easy video/computer connection.

To help you add a slice of life to your Apple II creations, several companies (including Apple itself) offer hardware

products that let your Apple II acquire and manipulate video images from a variety of sources. In some cases, you can use the image with graphics software, such as a painting, drawing, or desktop-publishing program.

In this article we'll take a look at four products, evaluate their effectiveness, and discuss possible uses for each. Three of the software/hardware systems are video *digitizers*—devices that convert analog (nondigital) data, such as sound or video images, to a form the computer understands, numeric (digital) data. Once you've reduced the information to numbers, your computer can use it. In the case of video information, that means you can display and manipulate the resulting pictures.

While the three digitizers discussed here share some common ground—the ability to capture and display

images on the Apple II—each takes a different approach. Your needs and equipment will determine the one that's best for you. Choose the right product and you'll open new doors in personal creativity and productivity; select the wrong one and you'll probably end up with more headaches than solutions.

The fourth device isn't a digitizer at all. It's Apple's new Video Overlay Card, which lets you mix computer-generated graphics and actual video signals from almost any source (including TV, VCR, laser disc, and camcorder), then send this new signal back to yet another video device for display, recording, or even broadcast by a television station.

ALL EYES ON THE GS

Our first stop is Digital Visions' **Color ComputerEyes**, the company's latest video-digitizer board; it's strictly a GS product. (For a look at ComputerEyes for the Apple IIe see "Digitize to the Max," July 1987, p. 40; a review of Color ComputerEyes appears in July 1988, p. 33.)

Color ComputerEyes operates with any GS with at least 512K of RAM and a 3½-inch floppy-disk drive. It works with any monitor, but you'll get a better image with an RGB (red-green-blue) model than you will with a composite monitor. (A composite monitor gives you the option of viewing the incoming video signal directly, however, simplifying actions such as aiming the camera or fine-tuning the focus.)

One of the most important things to know about Color ComputerEyes is that it's *not* a real-time video digitizer—it can't grab a video frame instantly and convert it to a computer image. If you're looking for a "real-time frame grabber," ComputerEyes isn't for you. Instead it uses a technique called *slow scanning*; processing the incoming video signal takes from 6 to 12 seconds. It's imperative therefore that the source image be as motionless as possible to avoid blurring.

Digitizing from a photograph or projected slide works best, but if your VCR has a good-quality freeze-frame or ►

Digitizers, scanners, and genlock technology are the stars of this show—Apple II hardware devices that let you merge graphics and video input for realistic illustrations, presentations, and home entertainment.

I Images





Color photo digitized with Color ComputerEyes, black-and-white 320 mode, KodaVision 2400 color Camcorder.



Color ComputerEyes' black-and-white 640 mode, KodaVision 2400 color Camcorder.



Color ComputerEyes' Color 320 Super mode (320 by 200 pixels) with 16 hues on screen.

pause option ComputerEyes should work just fine. If you want to take an image from your favorite television show, it's best to record it on your VCR first, then pause at the scene you want and digitize from the tape.

ComputerEyes installs in any available GS slot; the process is fairly simple and straightforward. Just insert the card, run three small RCA-style cables through one of the rear-panel openings out the back of the computer, replace the cover, and you're ready to go.

Supplied with the hardware is a disk containing the ComputerEyes software, an easy-to-use, menu-driven program. Although you can use the mouse to make your selections, the menus are actually easier to use via keyboard; you select options by pressing a number followed by the return key.

The main menu consists of seven options, which let you capture or view an image, adjust the colors or change your default settings, modify a previously captured image, and perform a variety of disk functions, such as saving or loading pictures.

Capturing images is of course the most important part of the whole package, and ComputerEyes includes several

different formats you can use to achieve this. One of the more important is Color 320 Super, which uses the IIGS' 320-by-200-pixel mode with 16 colors (selected automatically from the palette of 4096) to acquire and display the incoming video signal.

The quality of the resulting pictures can vary a great deal, but many of the factors that influence the final outcome are completely under your control. For example, your video source of course plays a major role in how your picture will look. The better the quality of the incoming signal, the better the picture you can expect. Naturally the opposite is true as well—use a poor-quality source and the result will be poor.

I tried two cameras with ComputerEyes. For color digitizing I used the KodaVision 2400 Camcorder; for black-and-white, Panasonic's model WV1410 closed-circuit camera. The Panasonic generated a much higher-resolution image than the color camcorder; it's preferable for black-and-white work. The color camera in black-and-white mode still produced very good results, though.

Lighting's an important factor when using a video camera. If you try to digitize with insufficient lighting, your picture will be dark and poorly defined. For color images, the hues of the subject and background can make a difference. If the source contains several different colors, the software will do its best to approximate them, with varying degrees of success. If the number of colors is more limited you'll get a truer representation in the final image.

Because the GS is an excellent color-graphics machine, you might expect that color images would be the area in which Color ComputerEyes excels. Surprisingly, that's not the case. Although it does digitize in color, the results aren't quite as good as I'd hoped; they're significantly less sharp than the black-and-white images it produces. Nevertheless, a little touching up with your favorite painting program will make them quite respectable. Also, it's important to remember that ComputerEyes is the only available color digitizer for the GS.

Black-and-White Super is another 320-by-200 digitizing mode. It isn't actually black-and-white; instead it uses 16 shades of grey to make up the image. The pictures captured with this mode are good and sharp, especially if you intend to produce hardcopy on a black-and-white printer anyway, as you would if you were using a desktop-publishing program. I found that I preferred this format to all others because of the high quality of the output. (One of the reasons ComputerEyes is so good at black-and-white images is that when digitizing in this mode it turns off the board's color decoder, eliminating signal noise present with the color information.)

ComputerEyes' 640-by-200 Super mode is still another black-and-white option. It uses only four grey shades to generate its images; although it does have twice the horizontal resolution, its color resolution is very limited. This mode seems to be most useful for digitizing line art for use with drawing or desktop-publishing software.

Once you capture an image, you can edit it further in a number of ways. You can adjust color, brightness, contrast, and number of colors used in the separation; you can even convert it to other display modes, all without rescanning the original. This lets you quickly find what parameters work best with a given image.

But you can modify your picture even more radically. With Color ComputerEyes, you can quickly convert pictures to a variety of other display formats, including standard hi-res, double hi-res, or even Print Shop graphics. If that isn't enough, once you have the image you want, you can alter it from ComputerEyes' Modify menu using

options such as mirror, invert, and shrink.

Once you have a picture just the way you want it, you can save it to disk in any of a number of formats, including standard hi-res, Dazzle Draw's double hi-res, or Apple Preferred (used by PaintWorks, DeluxePaint, and others).

If you want to use digitized video images in your work, Color ComputerEyes' rich array of display formats makes it worth considering. It's an all-around good product.

YOU'LL LOVE THE THUNDER

ThunderScan, from Thunderware, is a black-and-white scanner/digitizer that works with the Apple IIe, IIc, IIc Plus, or IIGS (reviewed in January 1988, p. 26). This powerful product is unique because it doesn't use any standard video equipment as the source; instead it transforms your ImageWriter printer into a high-resolution optical scanner.

Installing ThunderScan is a snap, partially because it comes with an excellent manual with step-by-step instructions and lots of photographs, but mostly because it really is that easy. All you need do is remove your printer-ribbon cartridge and install the scanner module as you would a printer cartridge. Connect a cable from the scanner to either the game or the mouse port (depending on the Apple model you have) and you're ready to go. Of the three digitizers tested, ThunderScan is absolutely the simplest to install.

To scan or digitize an image, the original has to be in a form you can insert into your printer as you would a sheet of paper. Most photographs will work, although I found some were too thick to properly feed and others were so slick and glossy they slipped. In both cases I photocopied them and used the reproductions instead, with acceptable results. Newsprint worked very well, and I was able to generate a fair collection of clip art from newspaper ads. Even a page from a child's coloring book worked, giving me an image I could use as clip art (and one my kids loved to color with PaintWorks Plus).

ThunderScan's software is menu-driven, and easy to learn to use. The manual is outstanding, with clear, concise instructions and ample illustrations.

Once you've inserted the original into the printer, select New Scan from the menu. The program presents you with the Scan Select screen, an important part of the program, because that's where you select the area of your original to scan and indicate the resolution at which the hardware will generate the scanned image (measured in dots per inch).

ThunderScan can digitize from the relatively coarse level of about 40 dpi to an impressive 300 dpi—the same as a laser printer. Because of its ability to selectively scan any section of an image at high resolution, you can digitize an area as small as a square inch and make it fill your Apple's entire screen.

You can also select the format into which you want to

digitize the image. ThunderScan supports just about all possible Apple II graphics modes, including the hi-res and double hi-res available to all Apple IIs, and the super-res and ultra-res of the GS. You can combine most of these formats with one or more modes (half-tone, line art, or color), giving you a rich variety of screen possibilities for your final image.

Depending on the size of your original and the settings you've selected, scanning can take anywhere from one to ten minutes, making it the most time-consuming of the digitizers examined. Luckily, once you've scanned the original, you don't have to rescan just to see how it would look in another display format. Because the scanned data remain in memory, you can just select a display option, change the mode or format, and generate it quickly on screen.

On the GS I used the super-res option for the most part, resulting in an image made from 16 shades of grey. The picture was good, nearly as good as you could achieve with ComputerEyes and a color camera in black-and-white mode. And even though ThunderScan doesn't work in color, you can alter its built-in palette to generate false-color images on screen that approximate the original. Other options let you fine-tune the brightness and contrast of your digitized image.

You can save data in several formats. The first is ThunderScan, which actually saves the huge amount of information the scanner generates. Once saved, you can reload your data anytime and use them to re-create the digitized image your computer will display. Or you can save the displayed portion of the screen in a format usable by a variety of Apple programs, including DeluxePaint, PaintWorks, MousePaint, or Dazzle Draw. ►



Black-and-white photo digitized with Color ComputerEyes and KodaVision 2400 color Camcorder.



Same photo digitized with Panasonic WV1410 closed-circuit black-and-white camera, with better-looking results.

PRODUCT INFORMATION

Apple II Video Overlay Card

Apple Computer
20525 Mariani Avenue
Cupertino, CA 95014
(408) 996-1010
\$549

Color ComputerEyes

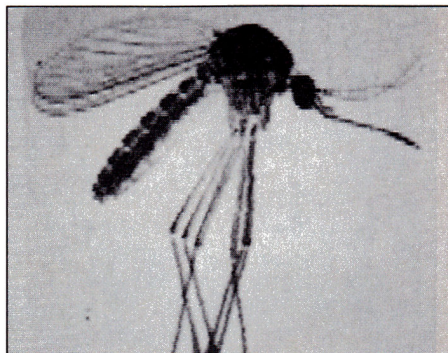
Digital Vision
66 Eastern Avenue
Dedham, MA 02026
(617) 329-5400
\$249.95

ImageWorks II

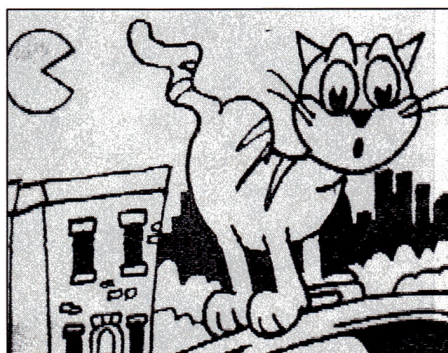
Redshift Ltd.
P.O. Box 4335
Mountain View, CA 94040
(415) 322-7373
\$350

ThunderScan

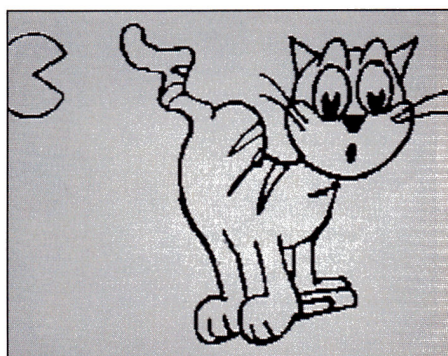
Thunderware
21 Orinda Way
Orinda, CA 94563
(415) 254-6581
\$219



Scanned and digitized image created with ThunderScan, from a photo in a biological-products catalogue.



ThunderScan offers high-quality grey-scale and black-and-white digitization; here, image taken from a coloring book.



Same image loaded into PaintWorks program and edited for on-screen colorization.

ThunderScan is another excellent package for the Apple II. It can generate graphics for use in painting or animation programs as well as desktop-publishing programs. It has some limitations, such as digitizing only what you can send through the printer, and it's not a true color digitizer. Nevertheless, it offers high-quality grey-scale or black-and-white images well suited for professional use as clip art or illustrations. And because it doesn't require an expensive camcorder—just an ImageWriter, which many Apple owners already have—it's an excellent choice if you're on a budget or don't want to fool around with a camera. It's so easy to install it will appeal to you even if you're not technically oriented.

TURNING PROFESSIONAL

The third digitizer we'll examine is the **ImageWorks II** card from Redshift Limited. It's a professional-level digitizer; it offers *real-time frame grabbing*—it can capture an image in about $\frac{1}{60}$ of a second, quick enough to grab fast-moving images without blurring. It also has the distinction of offering a screen resolution of 256 by 256 pixels with a palette of 256 shades of grey on screen at one time, even on the Apple IIe.

ImageWorks can generate this large number of on-screen shades because it bypasses the Apple II's video hardware and generates its own composite image, overlaying it on the Apple's regular image.

This technique incurs some severe disadvantages, though. For example, if you're using ImageWorks with a GS and an RGB monitor, you'll see on-screen menus, but you *won't* be able to see any video output from the digitizer. ImageWorks requires a composite monitor for that; to use it I hooked up two monitors to my GS—the standard RGB and a regular composite monitor.

Installation of the ImageWorks card (in slot 7) isn't difficult, but it's hampered by a poor manual, which is

really only a few photocopied pages of technical information. (The documentation states it's both preliminary and incomplete.)

Once you've installed it and hooked it to the proper monitor, you can boot the software supplied with the card. The program is menu driven and is written in BASIC with calls to the specialized machine-language code that drives the ImageWorks card. Because it's BASIC, it should be easy for you to modify or study if you have programming experience.

Using a video camera, VCR, or other NTSC (National Television Standard Code) video source connected to your computer's video-input jack, just press the letter C (for *capture*) to digitize an image.

The picture appears instantly on the composite monitor. If this image isn't what you want, you can try again, because the time required to capture it is insignificant.

ImageWorks' digitized pictures are by far the best of those produced with the three digitizers tested here. They look like frozen images from an extremely sharp black-and-white TV.

When you have the picture you want, you can save it to disk, or you can choose to modify it in a number of ways—mirror it, rotate it, dim it, filter it, reverse it, or even convert it to a pure black-and-white binary image.

Once you've saved the image, though, your options are limited. Because ImageWorks II uses its own display system, you can't use pictures captured with any other software. That is, you can't load a saved image into a painting or desktop-publishing program. And Redshift doesn't supply utilities to transform these very high-quality images into a format you can use outside the ImageWorks II card.

What can you use ImageWorks pictures for? The product appears to be aimed at technical users who need to generate digital pictures for image processing and analysis and can write custom software to use them. It's well suited for laboratory use; some technically oriented hobbyists will just love it. But if you're an average user, this one isn't for you. That's a shame, because the images are so good many people would love to be able to use ImageWorks II.

ROLL 'EM

The latest in Apple video technology is the **Apple II Video Overlay Card** from Apple Computer. This device, also called a *genlock*, lets you mix computer graphics with an external video source to create a new signal you can record or display.

Television stations use this technique all the time, placing text on top of video images for special effects. With the Apple II Video Overlay card, you can do the same type of thing.

It's called an *overlay* card because the graphics data from your Apple are superimposed, or overlaid, on the video signal. Because it works with any computer image, you can use almost any program to generate the computer data.

To install the overlay card insert it into slot 3 on the GS; it can go into any slot on the Apple IIe. Mount a couple of connectors on the rear-panel openings of the Apple, and hook up the cables from the connectors to the card. The manual describes the process accurately and contains plenty of illustrations.

After you've installed the card, you must connect your monitor to it. (It works with either composite or RGB.) The video source connects to the video-in plug, via an RCA phono plug, to the new video-in plug, and you run the signal out to another video source such as a VCR (for recording) or TV (for display).

The overlay card works by letting one or more hues on the computer screen act as transparent colors, so that when the two signals are mixed the video image will "show through" the transparent colors. Computer colors that aren't transparent will appear to be on top of the combined image, thus creating your special effect.

The software key to all this is a new desk accessory (NDA) for the GS and a standalone application program for the Apple IIe called VideoMix. If you're using an Apple IIe, run VideoMix before any application you want to use to generate computer graphics. On the GS, you must install VideoMix on your system disk (using supplied software), where it will appear as an option on your Apple desktop.

When you run VideoMix, the software presents a palette showing available colors. You can select one of them to be your transparent color, or you can pick the color you want from the computer screen. This transparent color is called the *key color*.

You don't have to make just one color transparent—you can also set a range. For even more unusual effects you can make some colors translucent, so that they remain visible, but the video image shows through. This generates an effect that looks something like colored glass.

How good are the results produced with Apple's Video Overlay card? According to the company, the quality of the final video output depends on the quality of what you start with. Judging from my experience with the product, even home video equipment seemed to work well. I wouldn't expect serious broadcast or video professionals to drop their current equipment in favor of the Apple II Video Overlay Card, though.

So what can you use it for? The product is well suited to a variety of home, school, and semiprofessional applications. The most common use will probably be titling for home videos. For example, using two VCRs (one as the video source and the other to record the final results), the Apple IIGS, the Overlay Card, and PaintWorks Plus, I added colorful titles and art to video recordings of family events. Names, places, and dates appear in large colorful displays; if you're feeling particularly mischievous you can add funny messages in appropriate places, too.

In a more serious vein, schools that use video cameras

for class or instructional purposes will find the Overlay Card a valuable addition to their Apple II repertoire. Adding titles to the class play or creating instructional tapes are obvious applications.

Small businesses can use it to create self-running videos for storefront displays. Ambitious companies can save a bundle by creating their own commercials for broadcast on local TV stations.

IT'S A WRAP

There you have it. From scanners to digitizers, from frame grabbers to genlocks, one of the top video products we've examined here will help you capture the real world. The trick in selecting the right one is to know what you want to do before you decide on the equipment.

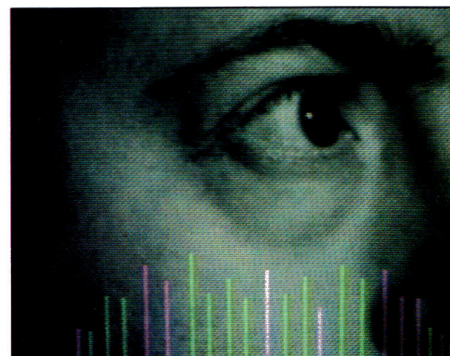
Do you want to incorporate real-world pictures into your Apple IIGS paintings or illustrations? In that case, you'll probably want to look into Color ComputerEyes.

If you're more interested in using illustrations in an Apple desktop-publishing package and if those graphics are on paper, ThunderScan is what you're looking for.

Need high-quality images for the hospital lab? ImageWorks II is just what the doctor ordered. And if you've decided to enter the exciting world of video production, or at least experiment in it, you'll certainly need the Apple II Video Overlay Card.

Each of these products offers quality and versatility; each is aimed at a different audience, though. For home or business, before you shop, decide what you're looking for and you'll find an Apple II video product to help you achieve the effect you're after. □

LOU WALLACE IS TECHNICAL SUPERVISOR FOR *RUN* MAGAZINE (IDG COMMUNICATIONS/PETERBOROUGH). WRITE TO HIM C/O *INCIDER*, 80 ELM STREET, PETERBOROUGH, NH 03458.



Real-time frame grabbing with ImageWorks II: Histogram shows intensity of light in each column.



Composite monitor lets you see ImageWorks menus overlaid on digitized video output.



Overlay Card mixes computer graphics and video signals; here, DeluxePaint clip art overlaid on video frame.

TEN STEPS

By CYNTHIA E. FIELD, Ph.D.

Ten easy steps help you master
AppleWorks GS' page-layout
features for news bulletins
and all your other
desktop-publishing needs.
AppleWorks GS has got it—
it's up to you to flaunt it!



AS YOU'RE CHEERING ON the boys of summer, consider this: AppleWorks GS is a lot like the Boston Red Sox. They're both major-league competitors, neither one excels in speed, and once or twice their valiant attempts result in a crash. Still, they make an all-out effort, and if you stick by them, you'll end up with a championship product.

This month let's "warm up" by designing a one-page bulletin for a hypothetical senior-citizens organization. We'll use **AppleWorks GS** (minimum requirements: 1¼-megabyte Apple IIGS and one 3½-inch drive).

Retired folks probably invented the terms "day trip" and "bus tour," so our bulletin is one you'd likely find posted on a cork board at a senior center or apartment complex.

READERS' CHOICE

Because I wanted my bulletin to be as clean, crisp, and easy to read as possible, I opted for a straightforward layout. I purposely selected familiar-looking fonts such as New York and Courier and avoided any "squint print." To underscore this less-is-more look I implemented a single illustration and used color judiciously.

Despite its simplicity, the publication (see the next page for a color rendition of the final product) contains some 20 objects. Fortunately, you can duplicate this one-page wonder (or create your own) in just ten steps.

STEP 1: THE BASIC PAGE

Launch AppleWorks GS. Select the Page Layout (PL) icon from the Open File dialog box that appears. To select the icon, just double-click on it with the mouse.

Once you've loaded the PL application, click on Fit in Window from the Options pull-down menu (or press Open apple-W). You should see a blank page like that shown in **Figure 1**.

Click on Set Guides from the Options menu. Click on radio buttons in the dialog for margins and columns: Choose 0.5-inch margins for *Left/Right* and *Top/Bottom*. Opt for *three* columns and 0.25-inch column spacing. Click on *OK* or press Return to accept these values. The resulting page complete with guides should look like **Figure 2**.

Pull down the Options menu and turn on Magnetic Guides; they "attract" objects positioned near them for greater precision than you could obtain manually.

Click on Lock Guides (Options menu) to prevent guides from being jarred accidentally. From the File menu, Save this file as Lets.Go.1.

Saving your progress frequently is good policy, especially if you're using an early release of AppleWorks GS, which may have an annoying penchant for messing up page layouts without warning.

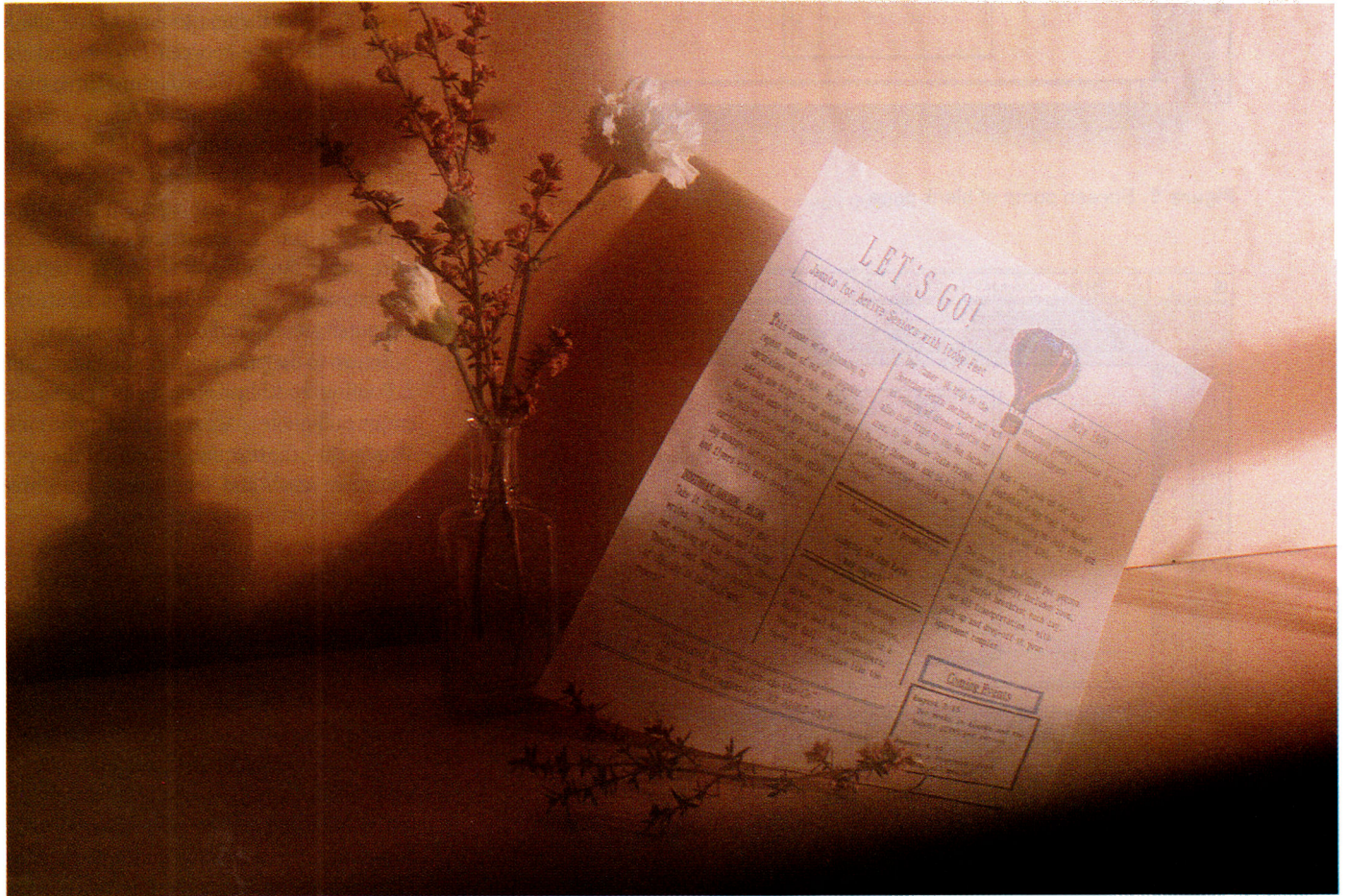
STEP 2: TYPE THE CONTENTS

Pull down the File menu and click on Open. At the dialog, click on the Word Processing (WP) icon to open a window. Don't worry, the PL window isn't lost, just hidden behind the WP window.

Select the 9-point (Size menu) Courier (Font menu) font, and type the bulletin's body text. To keep the bulletin short and sweet, and to save room for special effects, restrict this file to about 200 words.

Begin dressing up some of this text now. Select the subheading *Boothbay Harbor, Maine*.

to BASIC DESIGN



One way to select text is to hold down the mouse button and drag across the words. A quicker way is to select a whole line of text by placing the I-beam (the WP cursor) on the line and triple-clicking. With the subheading selected, pull down the Style menu and click on UPPERCASE. Pull down the menu again and click on Underline (or press Open apple-U).

In the second paragraph, italicize the name of the musical *Singing in the Rain*: Select the play's title, pull down the Style menu, and click on Italic (or press Open apple-I).

Scroll to the top of the WP file. Click on

Spelling (Search menu) and insert the AppleWorks GS Utilities disk, which contains the program's "dictionary." Following the on-screen prompts, ignore flagged words or correct them when appropriate. When you're finished editing, save the WP file as Lets.Go.Text.

Click on the close box in the upper left-hand corner of the WP window to remove it.

STEP 3: LINK IMPORTED TEXT

Pull down the File menu and click on Import File. Select Lets.Go.Text from the appropriate disk directory by double-clicking on the filename.

After reading the file, PL changes the appearance of the cursor to a partial-page icon. Move it to column 1 and click. PL creates a text area automatically, and text flows into it. With the selection arrow, activate column 1 by clicking on it. Four "handles" appear in the corners of the text area and two "tags" appear centrally located along its upper and lower borders. Click on the lower tag.

Move the partial-page icon to column 2 and click. PL creates a second text area automatically. Click on column 2 to activate it. Click on its lower tag, move the resulting partial-page icon to column 3, and click. A third text ►

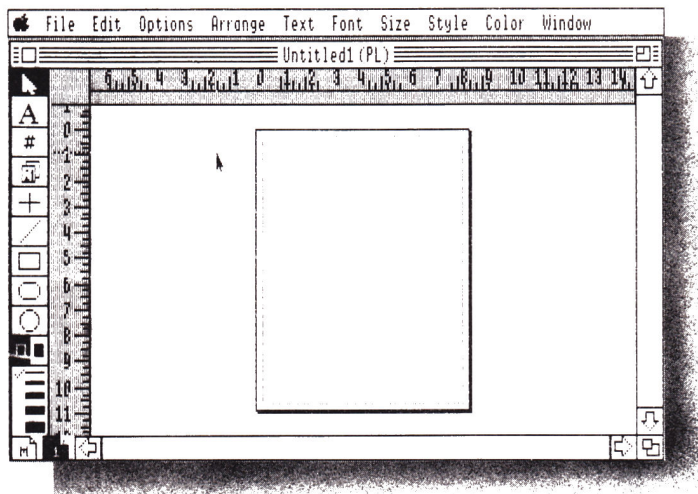


Figure 1. Screen dump of blank page.

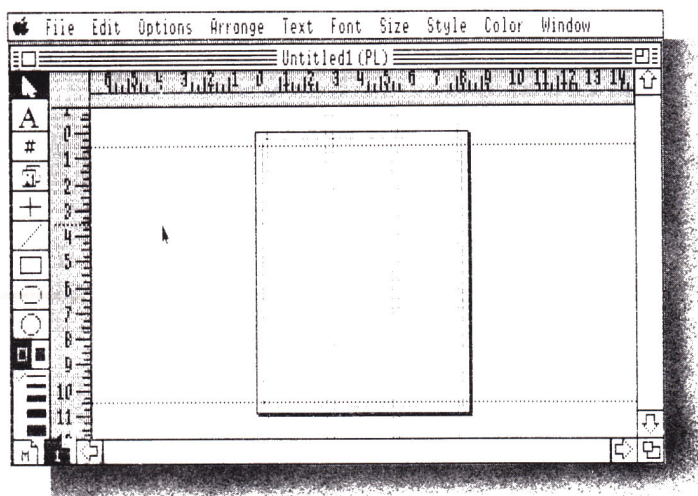


Figure 2. Page with columns and margins.

area now fills column 3. For now, don't be concerned that column 2 is filled only partially with text and column 3 is empty.

To understand what you've accomplished, select all three text areas: Click on column 1; then, while holding down the shift key, click on columns 2 and 3. All three display tags with plus signs indicating linkages: in column 1, the lower tag only; in column 2, the top and bottom tags; in column 3, the top tag only. Click outside the page to "deselect" these objects and remove their handles and tags. Save this PL file as Lets.Go.2.

With the selection arrow, click on column 1. Shrink its size by pointing to its lower right-

hand handle, pressing the mouse button, and dragging it upward. Glance at the vertical ruler to help you make the column about 6 inches high. If you've set up text links properly, shrinking column 1 will make any "squeezed out" text flow into column 2.

Shrink column 2 to about 6 inches. Some text will flow into column 3. Now shrink column 3 to about 5 inches. One by one drag each column so that its top border is positioned about 2 inches below the top margin. To drag an object such as a text column, place the selection arrow on the object, hold the mouse button down, and drag the column into position.

Switch from Fit in Window to Actual Size mode (Open apple-W or Options menu). Toggle this way as often as necessary to zoom in and out; you'll be able to see the page's details and fine-tune its text or view its overall construction. Save this file as Lets.Go.3.

STEP 4: CREATE A PULL QUOTE

In Actual Size mode, use the scroll bar to move about halfway down column 2. You'll want to insert a pull quote between paragraphs 1 and 2. Select the text tool and place the I-beam in the space between *Freeport* and the line *During your stay*. Press Return three times to make room for this special effect.

In column 1 select the part of Mary Kelly's quotation that reads *last summer's production of Singing in the Rain was superb!* Press Open apple-C to take an electronic "snapshot" of these words. AppleWorks GS stores a copy of the statement temporarily in a special area of computer memory called the *clipboard*.

Return to the pull-quote location in column 2. Position the I-beam about halfway down the empty pull-quote space and press Open apple-V to "paste" the text into place. Add the open quotation mark and the leaders (the three initial periods).

Select the pull-quote text, then enhance it with boldface (you'll find it on the Style menu) and centering (look for it on the Text menu).

Now place the I-beam after the word *of* and add a carriage return. To place the words *was* and *superb* on the same line, hit Return after the word *Rain*.

Select the horizontal/vertical line tool. (It looks like a large plus sign.) "Rubber-band" (press and drag) one horizontal line (a "rule") above and one below the pull quote. Select line thickness #2 from the line palette, and rubber-band companion rules, as shown in Figure 3. Delete any unnecessary "white space" above or below the pull quote by placing the I-beam in the blank area and pressing the delete key. Don't panic if your rules disappear. (It's temporary.) Just choose the selection arrow, and the rules will reappear.

Adjust each rule's length precisely by selecting it and dragging one of its handles. Fine-tune a rule's placement by selecting it, picking it up anywhere *except* on a handle, and dragging it into position.

In Fit in Window mode, use the horizontal/vertical line tool to rubber-band a rule of #1 thickness between columns 1 and 2 and

another identical rule between columns 2 and 3. Use Actual Size mode to adjust each rule's length and position as required. Save this file as Lets.Go.4.

STEP 5: HIGHLIGHTING WITH RECTANGLES

Select the rectangle tool, the "hollow" icon (it's the default), and line thickness #3. Pull down the Color menu and click on the light-blue color (third from the bottom). Rubber-band a hollow blue rectangle for the "Coming Events" box.

Switch to line thickness #1, and rubber-band a hollow rectangle for the "Jaunts" subtitle area. Select black from the Color menu and line thickness #2. Rubber-band a hollow rectangle for the August events box.

STEP 6: SUPERIMPOSE TEXT AREAS

With the text tool, rubber-band text areas on top of these hollow rectangles. While you're at it, rubber-band two other text areas—one for the "Let's Go!" title and another for the "Sponsored by..." area.

In Actual Size mode, place the I-beam in each text area and enter its contents. You may need to enlarge a text area to accommodate selected type sizes. Use 24-point (Size menu) bold (Style menu) New York (Font menu) for the title; 12-point bold Courier for the Subtitle; 12-point underlined New York (centered) for the "Coming Events" box; 9-point Courier for the August events area; and 12-point Courier (centered) for the "Sponsored by..." information.

Adjust the size and position of final text areas with respect to their accompanying hollow-rectangle "borders" by first selecting the text or shape object you want to edit. Drag a handle to shrink or enlarge the object. Pick up an object anywhere (except on a handle) to move it. Use the same methods to fine-tune text areas lacking graphics borders. Save this page as Lets.Go.5.

STEP 7: IMPORT CLIP ART

For our high-flying seniors, I used the hot-air-balloon graphic from the "Vehicles" file in Mediagenic's **Clip Art Gallery**. This handy art disk comes free packaged with the Apple IIGS paint program **Paintworks Plus**.

Open (File menu) AppleWorks GS' graphics (GR) application by double-clicking on the paint-palette icon that appears in the dialog.

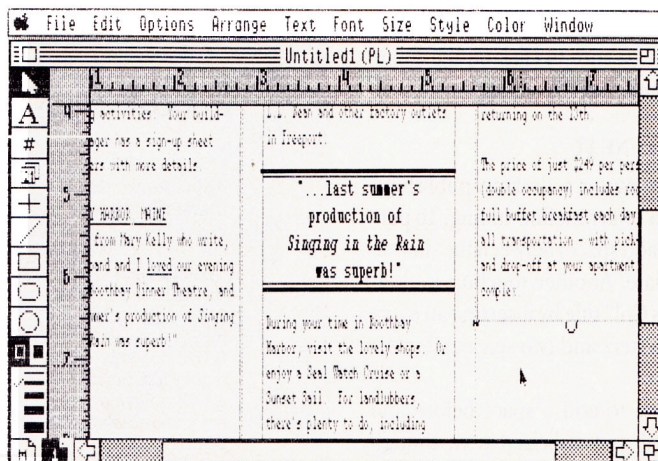


Figure 3. Screen dump of pull quote.

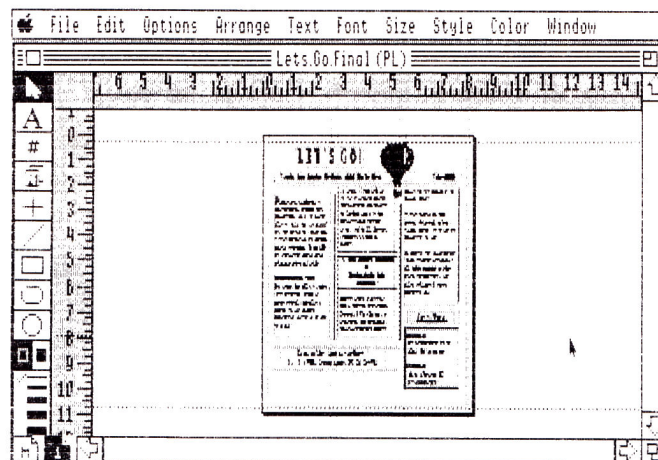


Figure 4. Screen dump of final proof.

Place your clip-art disk in a drive and select Import File (File menu). Select the desired clip-art file from the appropriate directory.

When the clip art appears on screen, choose the lasso (the second tool in the second column) from the GR tool palette. Lasso the piece of artwork you want by dragging this tool around the illustration's periphery. Press Open apple-V to drop the clip art onto the page. Drag the illustration into precise position with the mouse. Use Actual Size mode to make sure the graphic doesn't crowd any text. Save this file, which will look something like **Figure 4**, as Lets.Go.PROOF.

Put away the GR application by clicking on its close box. Choose No when AppleWorks asks whether you want to save the GR file.

In the PL window use Fit in Window mode to determine where you'd like the graphic to

appear. Press Open apple-V to drop the clip art onto the page. Drag the illustration into precise position with the mouse. Use Actual Size mode to make sure the graphic doesn't crowd any text. Save this file, which will look something like **Figure 4**, as Lets.Go.PROOF.

STEP 8: PRINT THE PROOF

Select Choose Printer (File menu) and opt for the ImageWriter.CL driver (the program's default). Select Print (File menu or Open apple-P). For optimum printout quality, choose the Better Text option from the ImageWriter.CL dialog. Place a black (or four-color) ribbon in your ImageWriter and generate a ▶

draft, or "proof," of your bulletin. If you want to print in color, be sure to click on the Color box in the ImageWriter.CL dialog.

STEP 9: FINE-TUNE IT

I've yet to encounter a desktop-publishing proof that doesn't warrant fine-tuning. To perfect this project add spaces between the subtitle and the issue date. Another touchup is elongating the "Let's Go!" title by inserting an extra space between letters and two spaces after the word *Let's*.

We'll also have to add a space before and after underlined and italicized text, though words with both types of formatting look properly spaced on screen.

For a touch of color in the lower left-hand area of the page, I decided to add pairs of blue rules (#1 line thickness) above and below the "Sponsored by..." area. I adjusted the length of the vertical rule under the hot-air balloon in the gutter between columns 2 and 3.

Finally, I selected the first letter of the first

PRODUCT INFORMATION

AppleWorks GS

Clarix Corporation
5201 Patrick Henry Drive
P.O. Box 58168
Santa Clara, CA
95052-8168
(415) 960-1500
\$299
\$169 upgrade
from MultiScribe
\$149 upgrade
from MultiScribe GS
\$99 upgrade
from AppleWorks 2.0

PaintWorks Plus
with **Clip Art Gallery**
Mediagenic
3885 Bohannon Drive
Menlo Park, CA 94025
(415) 329-0800
\$79.95

paragraph, enlarged it to 12-point size, and converted it to bold outline style (Style menu).

Whatever cosmetic surgery you decide to perform on your version of this project, don't forget to save the last draft as Lets.Go.Final.

STEP 10: POST IT

No single project can exploit a desktop-publishing program's complete array of features. Nor would you want to read anything that did. But creating a one-page notice like this one, and learning to work around the program's flukes, can bring you closer to mastering AppleWorks GS' colorful, integrated publishing power. □

CYNTHIA E. FIELD IS A FREE-LANCE JOURNALIST SPECIALIZING IN COMPUTER-RELATED TOPICS. SHE IS A CONTRIBUTING EDITOR AND THE AUTHOR OF *FIELD TRIP*, *INCIDER'S* COLUMN ON EDUCATIONAL SOFTWARE, AND *PRESS ROOM*, OUR 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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MULTIPLE

By RICHARD SPITZER

Break out of that boring
single-column format!

Your AppleWorks Classic
word processor has a hidden
talent—the versatility of a
desktop-publishing program that
lets you create attractive,
multicolumn reports and newsletters.



IF YOU WANT TO CAPTURE someone's attention, create a striking first impression. After all, it's not just *what* you say that matters, it's *how* you say it, too. A clean, crisp-looking document will entice your reader's eye; see what multiple columns can do for fast, easy reading and a professional-looking newsletter or brochure.

Dozens of Apple II programs let you produce multicolumn documents. The success of programs such as Publish It! proves that the appeal of feature-rich, font-filled page-layout programs isn't lost on Apple II users. But what if you use 8-bit AppleWorks (Claris Corp., \$249) and don't want to invest the money or time a desktop-publishing program demands?

Here's a pleasant surprise: In some respects, you *already* have one. First, AppleWorks' word processor can produce multicolumn formats in the spreadsheet by way of the database manager. That involves transferring your information via ASCII and DIF files, though. Not only is it cumbersome, but you end up losing AppleWorks' printing options—justification, boldface, underlining, superscripts, subscripts, and so on. You can't always achieve the effect you're after.

SINGLE FILE

There's a simpler way. If your printer lets you roll the page back and print a second or even third time on the same sheet of paper, you're all set to produce two- or three-column layouts in the AppleWorks word processor. The basic procedure is simple: Produce the document, then format it into the column widths you want. After you print a column, roll the paper back into the printer, adjust the margins, and print the next.

Begin by creating your document in standard form with one-inch margins, the easiest way to edit and check your spelling. Design breakheads (enlarged subtitles) by changing the characters-per-inch setting on AppleWorks' printer-options menu (Open apple-O, or OA-O here) from 10 to 5. After you've finished writing and editing your document, you're ready to format for columns. (Don't forget to save.)

Start by creating one long, narrow column: Set the printer options at the beginning of your document, so that the screen will show the same column width as your hardcopy. If you're producing two columns, set the left margin at 0.5 and the right one at 4.4 inches. If you want three columns of text, use 0.5 for the left margin and 5.5 inches for the right.

Now proofread your document. You may find that long words or hyphenated expressions wrap awkwardly onto the next line. If that happens, try using synonyms or change the order so that long words appear on only one line.

Breakheads prepared with printer options (fewer characters per inch to produce larger letters) may no longer fit into the narrower format. You can either rephrase them or change the character-per-inch setting from 5 to a more appropriate number.

FALL IN

Once you're satisfied with the overall appearance of your document, you're ready to format multiple columns on screen. If you want left and right margins justified for all columns, return to the beginning of the column and press OA-O. Once you've called up the printer-options screen, select JU to indicate *Justified*. Keep in mind, though, that full

COLUMN LAYOUT



justification with narrow columns may produce large spaces between words.

The basic procedure involves calculating the page breaks in your single-column document. At each page break, you'll use AppleWorks' printer options to set margins that will place that part of your document on the left, center, or right side of the paper (so that when you roll back the paper in your printer the next column of your document will appear to the right of the previous column).

There are two ways to indicate printer options. You can type them in each time you want to change the margins, but that's time-

consuming (and boring). The second method involves copying all printer options to the clipboard. Then, at each page break, copy all options from the clipboard and delete any you don't need.

This second method has two advantages: First, you're less likely to make errors; second, by storing your two menus as separate files, you can set up two- and three-column formats without having to retype the information.

Now create two new word-processor files from scratch and call them COLUMNS 2 and COLUMNS 3. Bring up COLUMNS 2; press OA-O and duplicate these printer options:

Set a Marker: 1
New Page
Pause Here
Left Margin: 0.5 in.
Right Margin: 4.4 in.

Set a Marker: 2
New Page
Pause Here
Left Margin: 4.4 in.
Right Margin: 0.5 in.

Save the file. Now bring up COLUMNS 3; hit OA-O and duplicate these options: ►

Set a Marker: 1
New Page
Pause Here
Left Margin: 0.5 in.
Right Margin: 5.5 in.

Set a Marker: 2
New Page
Pause Here
Left Margin: 3.0 in.
Right Margin: 3.0 in.

Set a Marker: 3
New Page
Pause Here
Left Margin: 5.5 in.
Right Margin: 0.5 in.

Save your file. Note that "Set a Marker" has no printing function. You'll use it on screen simply to identify the printer format for column 1, 2, or 3.

DOUBLE UP

The example we'll follow here produces a two-column document, so the next step is to copy (OA-C) the file COLUMNS 2 to the clipboard. Then return to your single-column document.

The printer options at the beginning of your document should be Left Margin 0.5 inches and Right Margin 4.4 inches.

Hit OA-K to calculate the page breaks, and find "End of Page 1." If necessary, move the column to a logical break. Then press OA-C to copy the formats from the clipboard.

Because AppleWorks will print page 2 in column 2, you must delete all printer options listed between Set a Marker 1 and Set a Marker 2.

Also delete hard-carriage-return markers and any additional blank lines or they'll appear in your printed document. Save your file.

Recalculate the pages (OA-K), and copy the formats again from the clipboard at the next break.

This time delete the options for Set a Marker 2, as well as all hard-carriage-return markers. If you're installing the printer options correctly, your document's pages will alternate from left to right on screen. (Don't forget to save.)

THREE'S NO CROWD

If you're formatting for three columns, be sure the printer options at the beginning of your document are Left Margin 0.5 and Right

*"IT'S NOT JUST WHAT YOU
SAY THAT MATTERS, IT'S
HOW YOU SAY IT, TOO.
MULTIPLE COLUMNS GIVE
YOU EASY-TO-READ,
PROFESSIONAL-LOOKING
DOCUMENTS. YOU WON'T
NEED A DESKTOP-
PUBLISHING PROGRAM—
YOU'VE GOT APPLEWORKS!"*



Margin 5.5 inches.

Use the same procedure outlined above, but delete the printer options for the two columns that don't apply at that particular page break. Remember to delete any Return markers.

Again, if you do this correctly you'll see your document's pages print on the left side of the screen, then in the center, and finally on the right.

ROLL THE PRESSES

Adjust the paper in your printer, and note the position of the perforation relative to a fixed point. Accuracy is essential, because you'll have to roll the paper back to this point each time you print another column on the same sheet.

Begin printing your document (OA-P); the first column appears on the left side of the paper. Printing stops when the printer reaches the option *Pause Here*.

Roll the paper back and realign the perforation with the fixed point you identified. Hit the spacebar, and AppleWorks continues printing the second column in the correct location, then stops at the end.

Roll the paper back a second time if you're printing a third column. Now align the perforation and hit the spacebar to print the first column on the next sheet. Continue until you've printed your entire document.

You can add a headline to the top of any page, but do it before you calculate your page breaks. Be sure margins are set to .5 inch on each side. Type the headline with fewer characters per inch (5 in this example) and center it if you like. Insert two blank lines to separate headline from text.

MARGINAL EFFECT

If you want to add a line completely across the screen (using equal signs, pluses, minuses, or any other character) insert two more blank lines and place the printer option *Pause Here* at that point.

Adjust the paper so that the perforation is aligned according to the fixed point on the printer, then run out only the headline. Measure how far the paper has moved up from the fixed point, add that amount to the existing top margin, and insert the total as a new Top Margin printer option at the beginning of the column.

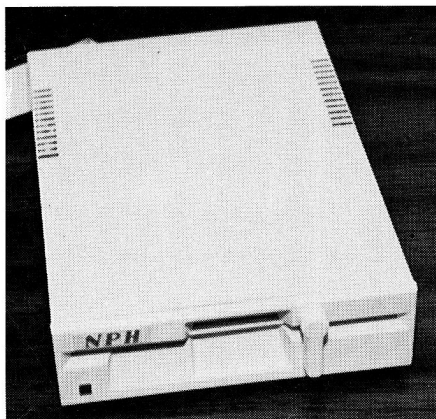
Calculate page breaks as described earlier. After AppleWorks figures the page breaks for your two- or three-column headlined page, insert the original Top Margin printer option for the remainder of the document. Roll the page back and align the perforation with the fixed point before printing the columns below the headline.

A FLAIR FOR DESIGN

After working with column formatting awhile you'll discover a number of variations you'll want to try. Add headlines on other pages; move columns so that text beginning on the first page continues on later pages; insert blank spaces for clip art and graphics you'll paste in later. Experiment with color ribbons when printing different parts of your document.

It's simple, but the procedure described here can save you time and money. To create great-looking, multicolumn documents just boot up AppleWorks—your word processor and your trusty printer are all the design tools you'll need. □

RICHARD SPITZER IS A JUNIOR-HIGH-SCHOOL SCIENCE AND PHOTOGRAPHY TEACHER AND CO-CHAIRPERSON OF HIS DISTRICT'S COMPUTER RESOURCE TEAM. HE IS THE AUTHOR OF THE APPLEWORKS TEMPLATE/MACRO PROGRAM TEST-MAKER (AVAILABLE FROM THE AUTHOR). WRITE TO HIM AT 912 KINGSLEY DRIVE, COLORADO SPRINGS, CO 80909. ENCLOSE AN SASE IF YOU'D LIKE A PERSONAL REPLY.



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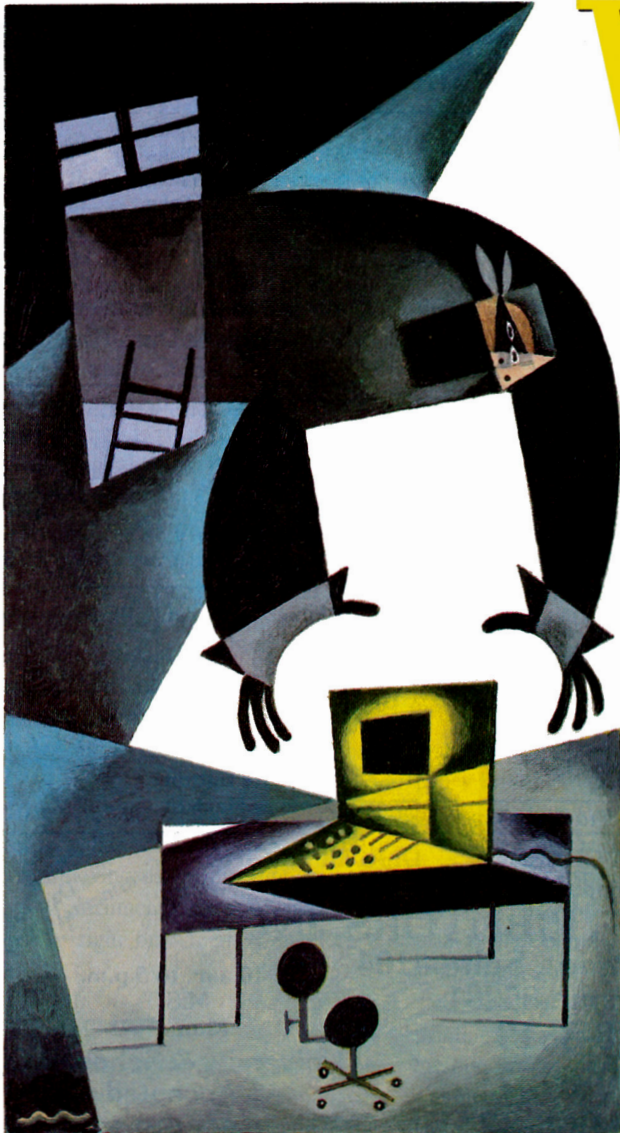
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W By CYNTHIA E. FIELD, Ph.D.

hen thieves broke into an elementary school in a usually peaceful town in southern Rhode Island early last year, they walked away with five cherished and well-worn Apple IIe systems. But worse than the hardware loss was the feeling of personal loss the kids and their teachers experienced. Don Waterous, a second-grade teacher at Peace Dale Elementary School, remembers the incident vividly: "The kids were scared. When the students saw police officers fingerprinting objects, they realized some people had broken into their school."

The nighttime theft left Peace Dale School computerless for about a month. "It cost me one or two editions of my school newspaper," recalls Waterous, whose students write and edit their newsletter, *The Bridge*, with Springboard Software's Newsroom.

Imagine the effect a one-month computing hiatus would have on you—especially if your Apple II helps run your business, teach your class, or balance your checkbook.

LEARN FROM OUR MISTAKES

From the kids and teachers to the town's school committee, this small community has become more acutely aware of the need for computer security. Like the rest of us who've experienced robberies in our homes, businesses, or schools, Peace Dale Elementary didn't think much about security—until it was too late.

Even the best insurance policy won't compensate for the fear, ►

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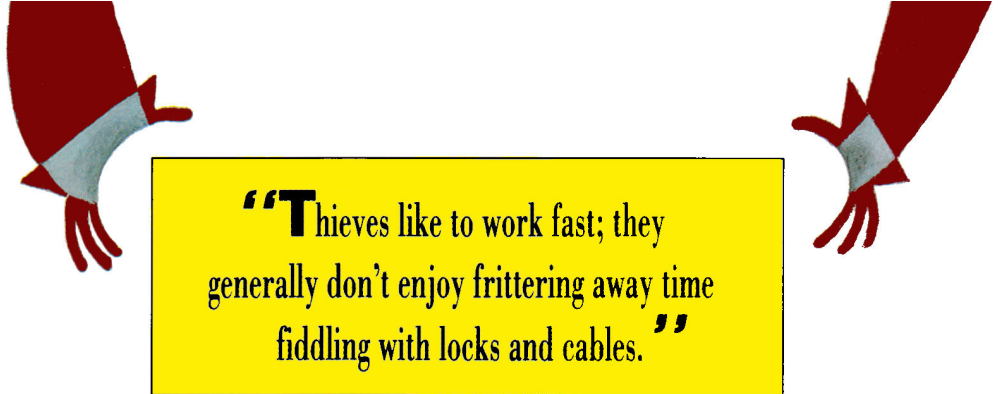
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“Thieves like to work fast; they generally don’t enjoy frittering away time fiddling with locks and cables.”

anger, and frustration you feel after a break-in. Short of installing an expensive electronic security system, what can you do to ensure that your Apple II stays put when you’re away? Depending on your preferences and the level of security you think you need, you have at least three alternatives to keep your Apple where it belongs—in *your* family room, office, or classroom.

MARK IT

The least intrusive method for protecting your computer components may be simply to mark them with an engraving tool. (See the accompanying sidebar, “Operation Identification.”)

If you prefer not to mar the surfaces of your computer and peripherals with visible engraving, you can opt for the **Securikit** invisible marking system, which uses special ultraviolet pens to tag items. With either type of tool, posting warning stickers can help deter theft, because law-enforcement agencies can trace marked goods more easily.

TIE IT DOWN

A second type of system physically secures your Apple and its related components to a desktop. These materials typically include high-strength, adhesive-backed metal or rigid plastic

mounting plates; vinyl-coated steel cables; and combination or key locks.

Such systems are easy to install, but require a little planning and site preparation. For one thing, you need a special cleaning fluid to prepare surfaces for the adhesive-backed plates.

Some cable-based security kits, like the one sold at Radio Shack stores, include three mounting plates: one for your desktop, one for your Apple, another for your monitor. If yours is a typical Apple II system, you may need expansion kits with extra mounting plates to secure your printer and disk drives.

After attaching the mounting plates, thread the vinyl-coated, twisted-steel cable through them in sequence to tie all peripherals together. One end of the cable has an eyelet to accommodate a combination lock or key padlock. To move your system to another location, simply unlock it, thread the cable back out of the desk-bound mounting plate, and reattach the system to a mounting plate you’ve installed elsewhere.

If you have a number of peripherals spread out on your desktop—or if you want to secure your stereo components or other office equipment while you’re at it—use additional security kits. The cost for protecting thousands of dollars’ worth of equipment is hardly prohibitive: A typical kit costs less than \$50. ►

PRODUCT INFORMATION

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Apple IIs Security Kit

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Bretford Microcomputer Security Center, \$393.85

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Technalock Security Kit (with combination or key lock), \$23.05

Expansion Kit for Technalock (2 extra mounting plates), \$13.90

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(800) 558-2110
(414) 563-9571

Compu-Gard Enclosures

Compu-Gard, Inc.
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Seekonk, MA 02771
(800) 333-6810
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\$255

Computer Security Cabinet

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DeKalb, IL 60115
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(800) 345-4335 (IL)
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Computer Security Lock System

Radio Shack
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Fort Worth, TX 76102
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Kensington Computer Security System

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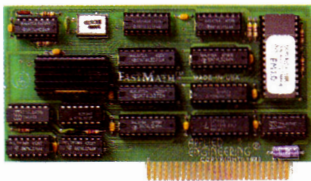
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"Imagine the effect a one-month computing hiatus would have on you —"

Some cable-based systems, like those offered by **Grimes** and **Kensington**, have special inserts that lock permanently into the security brackets built into newer Apple products like the IIGS. (Look for the "chain" icon on the left rear panel.) Manufacturers claim that thieves can't remove these security devices, including the adhesive-backed mounting brackets described above, without physically harming the computer's chassis. Damaged goods are worth less to a thief because they're more difficult to fence. Besides, thieves like to work fast; they generally don't enjoy frittering away time fiddling with locks and cables.

The **Wilson Jones Anti-Theft Alert** is a high-tech variant of the cable-based systems already described. This setup, composed of a Master Control Unit and four satellite sensors, links as many as five pieces of equipment in a network. Use the on/off key lock to activate it, much as you would a home-security system. Tamper with the network, and a 98-decibel alarm sounds. If there's one thing thieves hate, it's attention.

HIDE IT

Security cabinets that lock are a third option you can consider



Operation Identification

Statistics prove that "Operation Identification" is an effective way to protect valuable property, including computers, in your home, office,

or school. This project, administered by the Law Enforcement Assistance Administration of the U.S. Department of Justice, is typically run by local police departments.

It couldn't be easier to put Operation Identification to work for you. First, borrow an engraving tool from your local law-enforcement agency and mark valuables with an identifying number. (Some police officers recommend engraving your state driver's-license number, *not* your Social Security number.)

— especially if your Apple II helps run your business or teach your class. ”

for protecting your Apple II system. Costing about \$150 and up, these enclosures may be more suitable for protecting computer systems housed in areas such as classrooms, libraries, or faculty offices. These cabinets conceal a computer system when it's not in use. Out of sight, out of mind, right?

Several security cabinets offer adjustable monitor and keyboard shelves and built-in fluorescent-light fixtures. Some rest on stationary or rolling tables and are ordinarily bolted down or secured in place with high-strength adhesive pads.

KEEP IT SAFE

Follow the adage "Better safe than sorry": You'll enjoy peace of mind knowing your Apple II will be there when you need it—at the office, at school, or at home. □

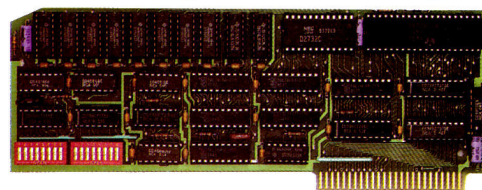
CONTRIBUTING EDITOR CYNTHIA E. FIELD IS A FREE-LANCE JOURNALIST SPECIALIZING IN COMPUTER-RELATED TOPICS. SHE IS THE AUTHOR OF *FIELD TRIP*, *INCIDER'S* COLUMN ON EDUCATIONAL SOFTWARE, AND *PRESS ROOM*, OUR COLUMN ON DESKTOP PUBLISHING. WRITE TO HER AT 60 BORDER DRIVE, WAKEFIELD, RI 02879. ENCLOSE A SELF-ADDRESSED,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

Second, as you mark items, prepare a list describing them, jotting down their serial numbers and other pertinent information, such as purchase date and price. You should photograph any unmarkable items—jewelry, artwork, collectibles. Keep the list and photos in a safe place, preferably a safety-deposit box.

Third, where practicable, attach the small (1-by-1½-inch) Operation Identification sticker to each marked item and display 3½-by-5-inch Operation I.D. warning stickers in windows near entrances to your home. Both kinds of stickers are available free of charge from your police department.

According to law-enforcement authorities, Operation Identification really works! Warning stickers serve as effective psychological deterrents to would-be thieves. Marked items are much more difficult to fence, and they provide firm evidence of ownership of stolen goods. □ —C.F.

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DATABASE DOINGS

Seeing is believing! Mastering a few AppleWorks tips lets you display all your pertinent database information on screen or paper.

By RUTH K. WITKIN

BELIEVE IT OR NOT, PEOPLE USE DATABASES for all kinds of wild and woolly things. Just yesterday I ran across stories of databases that keep track of kayak races, Yiddish records, relatives on the family tree, daily-exercise regimens, bottles in a wine cellar, and even bird species sighted. Then, of course, there's the more mundane stuff—inventory, customers, employees, accounts receivable, and the like. When you have mountains of details to store and retrieve—whether for pleasure or business—a database is truly a *file cabinet extraordinaire*.

Database jargon is distinctive. In AppleWorks, a database consists of entries, categories, and records. An *entry* is one piece of data, such as the name of a company or a zip code. A *category* is one type of data, such as the name of every company or every zip code. A *record* is a collection of data about one subject—such as company name, contact person, phone number, address, and so on.

I've covered databases in this column before, hitting high spots that can help you develop your skills. Lots more remain as yet not covered—so much material that I've had to split it into two columns. This month you'll create a small database, then use tricks and techniques (known here as *TA-DAs*, as in Big Deals) you may never have tried before. In this session, you'll create a tables report con-

taining category headings but no header—a combination you may think AppleWorks is unable to produce. You'll soon find out it can.

A DATABASE FROM SCRATCH

Let's say you're executive director of the Long Island Bowling Association, an umbrella group that keeps track of island-wide bowling activities and provides news to members and the public. You need a database to hold such information as names, locations, and phone numbers of bowling alleys, types of leagues, when they form, when they bowl, contacts at each alley and each league—a veritable mountain of material that changes with the season.

Relax. You're not going to create all those categories and enter lots of data. To keep things neat and trim, I've limited this database to seven categories, including the perennial spare (in my lexicon, a synonym for *lifesaver*).

When you see such key combinations as OA-Y, hold down the open-apple key and type Y. With repeated combinations, such as OA-Left Arrow (3 times), hold down the open-apple key and tap the left-arrow key three times. If you make a typo, hit the delete key to back up the cursor and erase.

ENTERING CATEGORIES

Load the AppleWorks program and create a new database file named **DBDOINGS**. You should now see the Change Name/Category screen with the cursor on the C in *Category 1*.

Press OA-Y to erase *Category 1*. Type the following category names (in uppercase, to make them stand out), pressing Return after each one:

ALLEY NAME
TOWN
LEAGUE NAME
START DATE
SECRETARY
COUNT
SPARE

Press OA-S to store the database on disk. AppleWorks now advises that you'll go automatically into the Insert New Records feature. Press Return and Record 1 appears, awaiting your entries.

TA-DA 1: SETTING A STANDARD VALUE

The first thing to do when you start a new database is to check the input information for entries that are common to most or all records. When you define these common entries as standard, AppleWorks will enter them in every new record, saving you typing time.

Figure 1 shows the records in this database. The number 1 appears in the COUNT category in every record. The COUNT category is interesting. It lets AppleWorks count every record or selected groups of records in the database—a real plus in a busy database. You'll find out more about this shortly.

Make 1 a standard entry: Press OA-V to bring up the Set Standard Values screen; press the down-arrow key five times to reach the COUNT category, type 1, and press Return. Hit Escape to return to the Insert New Records screen, which now shows the standard entry in Record 1.

FILLING THE RECORDS

Now make the other entries in Record 1. Press the up-arrow key six times to reach the ALLEY NAME category. Type **Baldwin Bowl-O-Rama** and press Return. Type **Baldwin** and ▶

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hit Return again. Type **Thursday Night Men** and hit Return again. Referring to **Figure 1**, enter the start date and secretary name (yes, you can substitute the name of someone you know), pressing Return after each one.

Notice that AppleWorks converted the date you typed as 9/7/89 to Sep 7 89—a three-character month, two-character day, and two-character year. That's because the word **DATE** appears in the category name. Now, with the cursor in the **COUNT** category, press OA-Down Arrow to bring up Record 2.

Referring to **Figure 1**, fill Records 2–6 the same way. In Record 6, enter the secretary's name and leave the cursor in the **COUNT** category. Press OA-S to store the database on disk.

CHANGING THE LAYOUT

Now press OA-Z to see the records in multiple-record layout. AppleWorks displays the first five categories with some entries (alley names and league names) truncated, while others (town and start date) have more room than they need.

Figure 1. Records 1–6 in bowling-alley database.

CATEGORY	RECORD 1	RECORD 2
=====	=====	=====
ALLEY NAME:	Baldwin Bowl-0-Rama	Sayville 300 Bowl
TOWN:	Baldwin	Sayville
LEAGUE NAME:	Thursday Night Men	Sunday Morning Mixed
START DATE:	9/7/89	9/10/89
SECRETARY:	Corey Thompson	Larry Merow
COUNT:	1	1
SPARE:		
CATEGORY	RECORD 3	RECORD 4
=====	=====	=====
ALLEY NAME:	Plainview Bowl	Hav-A-Ball
TOWN:	Plainview	Wantagh
LEAGUE NAME:	Tuesday Night Mixed	Women's Wednesday Matinee
START DATE:	9/5/89	9/6/89
SECRETARY:	Karen Spolberg	Joan Corallo
COUNT:	1	1
SPARE:		
CATEGORY	RECORD 5	RECORD 6
=====	=====	=====
ALLEY NAME:	Village Bowling	Stewart Bowling Center
TOWN:	Huntington	Garden City
LEAGUE NAME:	Friday Night Mixed	Tuesday Night Women
START DATE:	9/8/89	9/5/89
SECRETARY:	Burtie Byrd	Champie LeCatt
COUNT:	1	1
SPARE:		

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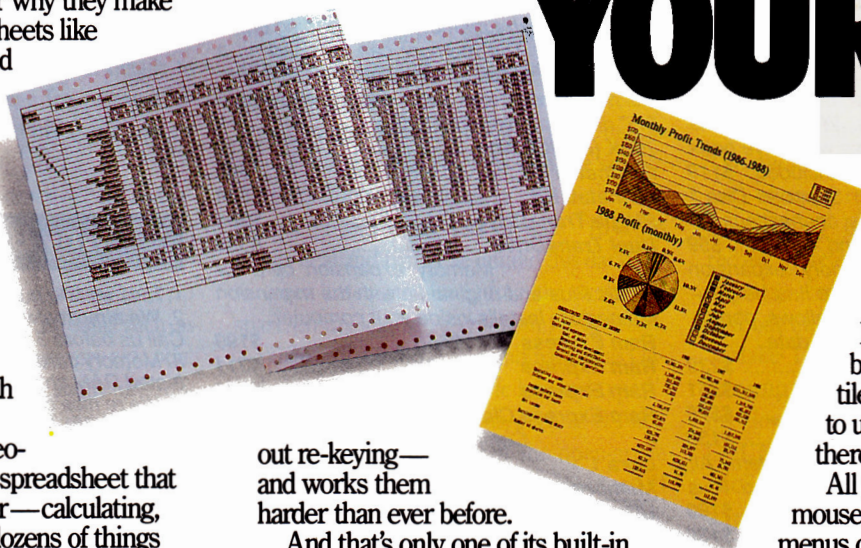


Figure 2. Report Format screen.

File: DBDOINGS CHANGE NAME Escape: Erase entry

Report: TABLES

Selection: All records

--> or <-- Move cursor @-J Right justify this category

> @ < Switch category positions @-K Define a calculated category

--> @ <-- Change column width @-N Change report name and/or title

@-A Arrange (sort) on this category @-O Printer options

@-D Delete this category @-P Print the report

@-G Add/remove group totals @-R Change record selection rules

@-I Insert a prev. deleted category @-T Add/remove category totals

ALLEY NAME	TOWN	LEAGUE NAME	START DATE	SECR
ALLEY NAME	TOWN	LEAGUE NAME	START DATE	SECR
-A-	-B-	-C-	-D-	-E-
Baldwin Bowl-O-Rama	Baldwin	Thursday Night Men	Sep 7 89	Core
Sayville 300 Bowl	Sayville	Sunday Morning Mixed	Sep 10 89	Larr
Plainview Bowl	Plainview	Tuesday Night Mixed	Sep 5 89	Kare

More --> 1031K Avail.

Type title line at cursor position

To show more of the long entries, change the column widths: Press OA-L to bring up the Change Record Layout screen. With the cursor in the ALLEY NAME category, press OA-Right Arrow four times to widen the column. Press Tab to move to the following categories and change their widths the same way: TOWN OA-Left Arrow (5 times) LEAGUE NAME OA-Right Arrow (7 times) START DATE OA-Left Arrow (5 times)

Now press the escape key. AppleWorks asks which way the cursor should travel when you press Return. The standard *Down* is fine, so hit Return. The Review/Add/Change screen returns with categories nicely spaced.

TA-DA 2: COPYING RECORDS

Each alley hosts many leagues, which means that many records will contain the same alley name and town. Names of leagues, start dates, and secretaries will differ. Instead of typing common entries over and over, you can copy a record, keep what applies, and simply over-type the rest.

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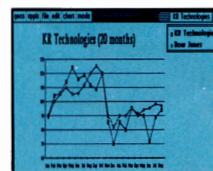
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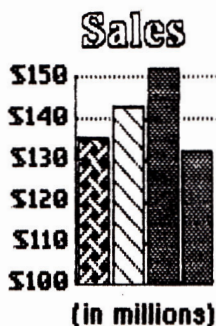
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Press the down-arrow key twice to place the cursor on *Plainview Bowl*. Press OA-C to start the Copy command. AppleWorks highlights the Plainview record and asks what and where you want to copy. Press Return to confirm *Current Record*. Type 2 and hit Return again. You now have three identical records for Plainview Bowl.

Press the down-arrow key to reach the second Plainview record, then OA-Z to enter the single-record screen. Because you're about to overwrite entries, press OA-E to switch to the overwrite cursor (a flashing rectangle).

Press Down Arrow twice to reach the league name, type **Friday Night Men**, press OA-Y to get rid of the excess characters, and hit Return. Change the other entries in Record 5 as follows:

START DATE: **Sep 8 89**

SECRETARY: **Mike Sheridan**

Press OA-Down Arrow to reach the next Plainview record, and make these entries:

LEAGUE NAME: **Monday Afternoon Juniors**

START DATE: **Sep 11 89**

SECRETARY: **Harriet Chong**

Figure 3. Tables report with category names.

ALLEY NAME	TOWN	LEAGUE NAME	START DATE
Baldwin Bowl-O-Rama	Baldwin	Thursday Night Men	Sep 7 89
Hav-A-Ball	Wantagh	Women's Wednesday Matinee	Sep 6 89
Plainview Bowl	Plainview	Tuesday Night Mixed	Sep 5 89
Plainview Bowl	Plainview	Friday Night Men	Sep 8 89
Plainview Bowl	Plainview	Monday Afternoon Juniors	Sep 11 89
Sayville 300 Bowl	Sayville	Sunday Morning Mixed	Sep 10 89
Stewart Bowling Center	Garden City	Tuesday Night Women	Sep 5 89
Village Bowling	Huntington	Friday Night Mixed	Sep 8 89

You now have all the records you need, so press OA-S to store the database on disk.

CREATING A TABLES FORMAT

Next, create a report format, so that you can explore ways to create headings for a tables report: Press OA-P to start the Print command, and hit Return to confirm *create a new "tables" format*. Type **TABLES** and hit Return again. AppleWorks brings up the Report Format screen showing keystrokes, categories, and entries in the first three records.

In the same way that you changed the width

of the columns in the multiple-record screen, change them in this report format: With the cursor on *ALLEY NAME*, press OA-Right Arrow 11 times; press Tab twice to move to *LEAGUE NAME* and press OA-Right Arrow 14 times. Tab to *START DATE* and press OA-Left Arrow twice. Tab to *SECRETARY* and press OA-Right Arrow four times. Tab to *COUNT* and press OA-Left Arrow nine times.

TA-DA 3: PRINTING CATEGORY NAMES

When you want to print a tables report with category names at the top of columns but without the standard AppleWorks header (file-name, report name, date, and page number), AppleWorks obligingly suppresses the header—but also makes the category names disappear! Quite a dilemma. You have two ways of getting around it, and each has its pluses and minuses.

First, turn off the AppleWorks header: Press OA-O to bring up the Printer Options screen; type **PH** to toggle the *Header* to *No*, and hit Return. To fit more categories across the page, specify smaller characters: Type **CI** and press Return; type **12** and hit Return again. Now press Escape to return to the Report Format screen. Press OA-S to save the print settings. This last step brings you back to the Review/Add/Change screen. Return to the Report Format screen by pressing OA-P, then hitting Return twice.

Now turn on your printer. To see the printed (but not yet perfect) result, press OA-P to bring up the Print the Report screen. Press Return to confirm the printer (or type the printer number, then Return) and hit Return again to confirm one copy. Things certainly look bare without header or headings.

Figure 2 shows one approach to producing category names at the tops of columns. (Next month you'll explore another.) You're still in the Report Format screen. Press Left Arrow until the cursor reaches *ALLEY NAME*. Now



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press OA-N, then Return, to jump the cursor to the line above the category names. Type **ALLEY NAME** and press the spacebar 14 times. Type **TOWN** and hit the spacebar nine times. Continue in this way to enter **LEAGUE NAME** and **START DATE**. After **START DATE**, press the spacebar once so that the cursor is above the *S* in **SECRETARY**, and pause.

The drawback to this method is that you can enter only 78 characters' worth (one screen line) of category names. If you try to scroll to an off-screen category, AppleWorks will beep you. Type **SECRE**. AppleWorks accepts **SECR**, but beeps at *E*. You've typed as many characters as possible. Press Delete five times to erase **SECR** and the space.

Now press Return to enter what you typed and jump the cursor to the first category. Delete the categories without a header: Press the right-arrow key until the cursor reaches the **SECRETARY** category and press OA-D three times. You should now see *Ln75* to the right—the character count of the remaining categories. To see the result of your actions, print the report: Press OA-P, select the printer, and hit Return. Your report should look like the one in **Figure 3**.

If category names plus spaces between them stay within the 78-character limit, this is a quick and easy way to print report headings. The advantage is that category names print at the top of *each* page. You can also print a report title; use the spacebar to center it. Because AppleWorks allots only one line to headings or titles, you can print one or the other, not both.

NEXT MONTH

Next month, you'll continue working with this database, including printing a more elaborate tables report heading consisting of category names, underscores, and a blank line. You'll also select records and print category names in a labels report. So that we're all at the same place at that time, don't save the alterations between now and then. □

RUTH K. WITKIN IS THE AUTHOR OF THE TEMPLATE/HANDBOOK PACKAGES *SUCCESS WITH APPLEWORKS I, II, AND III* (INCIder, IDG COMMUNICATIONS/PETERBOROUGH), *MANAGING WITH APPLEWORKS* (HOWARD W. SAMS & CO.), AND *PERSONAL MONEY MANAGEMENT WITH APPLEWORKS* (JOHN WILEY & SONS). WRITE TO HER AT 5 PATRICIA STREET, PLAINVIEW, NY 11803. ENCLOSE A SELF-ADDRESSED, STAMPED ENVELOPE IF YOU'D LIKE A REPLY.

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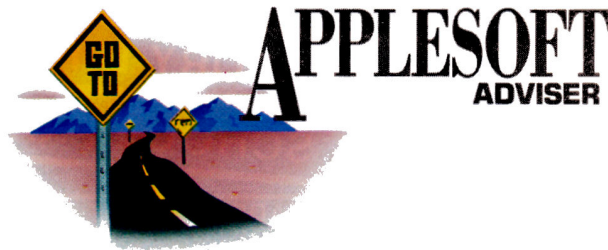
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REMARKABLE BASIC

You must REMember this . . . Use plenty of REM statements for clear documentation. The information they provide will help you debug, modify, or convert your programs later.

By DAN BISHOP

PROGRAMS RUN FINE WITHOUT THEM, YOUR COMPUTER ignores anything that follows them, and you'll have more program memory if you avoid them. Yet this month I intend to build a strong case for using the REM statement (short for *remark*) freely in your BASIC programs.

PLAIN ENGLISH

The REM statement, or "comment," is a line of common-language text (English, Spanish, Italian, and so on) that you insert anywhere in a BASIC program to provide information to anyone reading the listing. The computer ignores anything written on the same program line following the REM keyword. During processing, your Apple will jump automatically to the next program line when it encounters a REM.

Usually, REM is the first keyword in a program line. For example:
199 REM SUBROUTINE TO CALCULATE DISTANCE

Presumably, a subroutine that calculates distance begins on line 200 of the program containing this line. It could just as well have read:

199 REM \$*@%*%*@!! CATGUT!

Your computer doesn't care, because it ignores everything beyond the REM.

The difference, of course, is that the first example provides helpful information to anyone reading the listing. That's exactly the purpose of a REM statement. You should think out your remarks carefully so that they provide necessary information as concisely as possible to others using the program.

You may also place REM in the middle of the program line. Just remember that the computer will ignore everything else on that line. Precede the REM with a colon, the same way you separate multiple commands that share the same program line. For example:

330 X = SQR(Y*Y + Z*Z) : REM FIND HYPOTENUSE

Once again, the computer processes everything in this line until

it comes to the REM keyword, then ignores the rest.

PLACEMENT

Remarks are very useful for documenting your programs. You can set aside several lines at the beginning of your program to list its title, the date you created it, and your name. If the program contains a HIMEM: command, that has to come first. But after that (say, lines 2-9) you can use as many comment lines as you need.

If your program contains subroutines, each of those sections should also begin with at least one REM line describing the subroutine's function. That makes it easier to find subroutines when you're trying to debug or modify your program.

Additionally, you can use rows of equal signs or asterisks to further set off a program title or subroutine name. If you'd like to skip lines between sections of code in your printout, you can insert one or more lines containing only the keyword REM, and nothing more. For example:

```
395 REM
396 REM *****
397 REM MAIN MENU DISPLAY SUBROUTINE
398 REM *****
399 REM
400 PRINT "ENTER THE LETTER OF YOUR CHOICE."
405 REM
410 PRINT : PRINT "A. ADD A NEW NAME TO THE LIST"
```

This example might precede a subroutine beginning at line 400 that displays the program's main menu. Note that lines 395, 399, and 405 contain only REM keywords. They have absolutely no effect on the program. They simply space parts of the listing for easier reading.

If you actually ran this example, you'd see a blank line between the instruction ("ENTER...") and the first option ("A. ADD..."). But this one is the result of the extra PRINT command in line 410 and has nothing to do with the REM statements.

Note also that you place the program instructions on lines 400 and 410. If you write the entire program this way, spacing program lines apart by tens and numbering all REM lines in between, you can spot the nonessential REM lines easily. That could be important if the program becomes so long you run out of available memory and have to remove some of the less essential REM lines.

For programs this long, REM lines are especially helpful. The more ►

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complex the program, the more difficult it is to debug and maintain with adequate documentation. REM statements become a real lifesaver.

What do you do when you need to preserve remarks, but must delete them to make room for additional program lines? The solution is to maintain two copies of the program simultaneously. The first copy contains all your REM statements; it's the one you edit first when you make changes in your program. Keep track of the exact alterations you make as you go along. Then save this copy of the program, and load the one in which you've removed most of the REM statements. Make the same changes in this copy and save it. That's the one you'll RUN.

Be careful to avoid placing REM statements at line numbers that correspond to your program-line sequence. (Use 399 REM, for example, not 400 REM.) This way, you're less likely to accidentally remove a line to which a GOTO or GOSUB command refers. In the previous example, the command to direct program execution to the menu-display routine would be:

GOSUB 400

Line 400 contains an executable statement, PRINT. Now if you find it necessary to remove lines 395, 396, 398, and 399, you can do so without fear of losing a line to which a GOTO or GOSUB refers. The rule of thumb is to never refer to a line number that begins with REM.

DECLARE YOUR VARIABLES

BASIC is very forgiving when it comes to using variable names in your listing. You simply program along, and when you need a new variable, such as MP, just insert it into the code and keep going. No introductions are necessary. Some other languages, such as Pascal and C, aren't quite so amenable; you have to list the variables you intend to use at the beginning of each block of code and indicate each variable's type (for example, integer, real, or character).

One advantage of a list of variables is that it makes the program considerably easier to read, which in turn makes it easier to debug and maintain. Every serious program, whether written in a language that requires it or not, should have a list of variables near the beginning. It should include the variable name and its definition.

In BASIC, the obvious way to do this is with REM statements immediately following the program title. For example:

```
11 REM X, Y      2D COORDINATES OF A POINT
12 REM ARRY(20)  ARRAY OF DATA VALUES
13 REM DX, DY    INCREMENTS FOR GRID LINES
14 REM I, J      LOOP COUNTERS
15 REM
```

Anyone reading this program listing can glance back quickly to the first page to find out what any variable in the program represents.

AVOID THE OBVIOUS

You may have heard, "The more comments [REM statements] in your program, the better." This advice is aimed at beginning programmers who aren't experienced with complex programming jobs and tend to use too few comments. As with all things, REM statements can be overdone. Using too many remarks may make your program read like a novel, but it wastes valuable time and memory.

If the purpose of a particular sequence of program code is obvious,

there's no sense adding comments about the code, too. For instance:

```
1177 REM
1178 REM ***** INITIALIZE ARRAY
1179 REM
1180 FOR I = 1 TO 200
1190     ARY(I) = 0
1200 NEXT I
1201 REM
```

In this case, the program is obviously using the loop to initialize an array; line 1178 is therefore redundant. On the other hand, depending on the code immediately before and after lines 1180-1200, line 1179 or line 1201 (or both) may be useful to separate this block of code visually from its neighbors in the program listing.

Keep comments short. Complete sentences are rarely necessary. Remember, you insert remarks solely for the reader's benefit. A remark that's clearly understandable in an abbreviated form won't be any more valuable two or three times longer.

DEBUGGING AND TRANSLATION WITH REM

REM also serves as a useful debugging tool. Say you've written a program and you try running it, only to find that it isn't functioning the way you intended. If the problem isn't obvious, try isolating it by blocking out certain program lines temporarily and running the program again. You can also block out time-consuming loops if they aren't essential to the part of the program you're testing. For example, changing

```
3210 XT = RL / (ST + F*F) * 10 ^ (AK - 1)
```

to

```
3210 REM XT = RL / (ST + F*F) * 10 ^ (AK - 1)
```

effectively blocks line 3210 from processing the next time you run the program.

To block out a line of code, simply enter the word REM on the same line, right after the line number. To avoid retyping the line from scratch, first LIST it (for example, LIST 2240), then press Escape to put your Apple into "move cursor" mode. Now press I, M, J, or K as needed to move the cursor up, down, left, or right. Position the cursor on top of the first digit in the line number and press Escape again. Press the right-arrow key to move the cursor one character at a time across the line number to the space immediately following. This is where you'll type REM.

If you type REM right now, though, it will overstrike other characters; to avoid that, hit Escape, press I once to move the cursor above the line, then press Escape again. Now type (space)REM(space), and hit Escape. Next, press M once, then J four times, and hit Escape.

Finally, hold down the right-arrow key until the cursor has sped through the rest of the line of code, and press Return. You've just edited the line of code by inserting REM at the beginning of the line. List it again to be sure you didn't accidentally clobber it.

The only cases in which this technique won't work are with program lines containing quoted items (such as PRINT or INPUT commands) and DATA statements. For these, enter POKE 33,33 before you do anything else. This narrows the edit window so that the program line has no left or right margins. Then continue following the directions stated above. When you're finished, enter POKE 33,40 to return the edit window to 40 columns.

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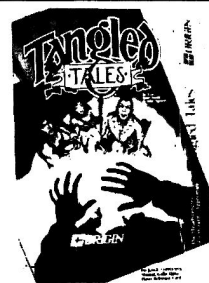
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APPLESOFT ADVISER

If the program bug disappears after you've "commented out" several suspicious lines of code, you'll probably want to look closely at those lines. They may contain the source of the problem. If the bug is still present, you might conclude, at least for the time being, that the edited lines aren't the problem and continue looking elsewhere.

Using REM is also helpful when you're converting programs to Applesoft BASIC. Other languages, even other "dialects" of BASIC, contain constructs and commands Applesoft doesn't recognize; you'll have to rewrite parts of the original code into their Applesoft equivalents. Keep it in the program until you've tested the new block and determined that it's working properly.

Of course, you can't just leave the original code in your program as is—the Applesoft interpreter will find it and the program will crash. But if you precede the original code segments with REM, they can remain right where they are without affecting the program.

For example, consider the ELSE portion of an IF/THEN/ELSE/ENDIF command in FORTRAN. Applesoft has neither an ELSE nor an ENDIF. You might translate FORTRAN code that looks like the following:

```
IF (XY .EQ. RT) THEN
  X = SQRT(P*B + 12.00)
  Y = X * X
ELSE
  X = SQRT(R*Q - 12.00)
  Y = Q * Q
ENDIF
```

Your BASIC translation might look like this:

```
860 IF XY <> RT THEN GOTO 900
864 REM
865 REM *** IF (XY .EQ. RT) THEN***
870 X = SQR(P*B + 12.00)
880 = X * X
890 GOTO 920
899 REM *** ELSE ***
900 X = SQR(R*Q - 12.00)
910 Y = Q * Q
911 REM *** ENDIF ***
912 REM
920 (rest of program)
```

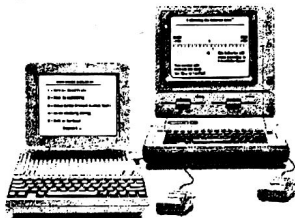
As you can see, the FORTRAN code is still present; it's just been commented out. If you're looking for bugs in your translation, you'll find them much more easily if you can read the original code at the same time you're scanning through your own code.

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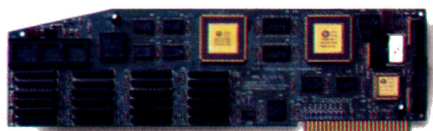
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PC Transporter controls Apple and IBM compatible disk drives. It supports 3.5" and 5.25" MS-DOS and ProDOS formatted diskettes.



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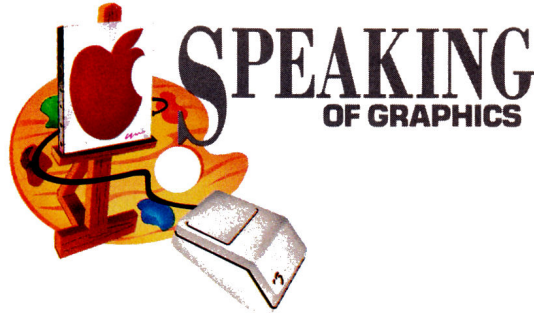
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MONTAGE

Dabble! Experiment! Discover your artistic talents—and your Apple II's—with a variety of graphics tools.

By **ROBERTA SCHWARTZ**
and **MICHAEL CALLERY**

ADD A TOUCH OF BLUE, A DAB OF yellow, and you've created green. In a similar way, you can combine different features from selected programs to achieve a spectacular new effect.

Over the years we've developed a cadre of favorite software, tools that let us best do our work, whether we're teaching computer graphics or creating our own designs for educational software. We'll probably refer to these tools often in our columns, so here's a summary of the what and why.

BY DESIGN

Most educational software operates in standard (single) hi-res mode, because the majority of schools are still using Apple II Pluses and IIs. Their limited resolution (280 by 192 pixels in black-and-white and 140 by 192 in color) and restricted range of colors (white, green, purple, black, orange, and blue) make it quite a challenge to design professional-quality graphics.

To create full-page title or game screens, or windows for animation, we generally use Apple's **Designer's Toolkit**. This program, which is no longer sold, works only with the Apple Graphics Tablet, also no longer on the market. Why do we stay with a program that's discontinued and perhaps a bit outmoded? Because

it lets us do what we want to do.

Beginning students sometimes ask us why the computer can't do something. Usually, it's not the computer's limitation, but the programmer's shortsightedness. One of the developers of Designer's Toolkit is an artist, who, knowing what features other artists would want, included them in the program.

Foremost among these features is the availability of two screens on which to work, with easy cutting and pasting between them. This setup encourages us to experiment freely, knowing that if we're unhappy with our design-in-progress, we can switch instantly to the other screen containing the previous version. Two working screens also let us merge all or part of one screen with the other to create montages easily.

Designer's Toolkit also features an x-y coordinate readout. This simplifies capturing partial screens for animation and determining precisely where to place an image. With the program's slide function we can take any area of the screen and move it up, down, left, or right.

WORD AND IMAGE

One program, however, can't provide for all our drawing needs. Another program we use often is **Blazing Paddles** from Baudville. This graphics program lets us incorporate AppleSoft shapes on drawn screens easily and offers good geometric object-drawing tools.

(Designer's Toolkit doesn't draw good circles. Mathematically correct circles, when drawn on the hi-res screen, look like ovals, and the algorithm Designer's Toolkit uses fails to consider the screen's aspect ratio.) **Blazing Paddles** uses a "rubber band"-type tool, so that you can draw perfect circles or ovals.

For title screens or other screens with lots of type we use Data Transforms' **Fontrix**, a predecessor of today's desktop-publishing programs. Fontrix lets you work on a full 8½-by-11-inch page and integrate graphics and text easily.

Many artists have created exceptionally beautiful fonts, sold in sets as Font Paks, to use with the program. We create our screens with the paint program, then, when we need text, load the drawn screen into Fontrix and add it.

Almost every image we create, then, wends its way through at least two, and often three, programs. Just as a painter uses different tools for different purposes, we use different programs.

DAZZLE 'EM

For double-hi-res work, **Dazzle Draw** from Broderbund is our choice. Dazzle Draw was among the first drop-down-menu programs for the Apple II and remains a favorite of nearly everyone who tries it.

Dazzle Draw isn't perfect, though. Our main frustration is that you can't remove the menus and palette area from screen. Consequently, you can't work on a whole page at a time. You must remember to scroll up and down to complete a full-screen image. The typeface selection is very limited, as well, and there's only one screen to work on.

For high-quality double-hi-res type, we create our type in Fontrix and convert the screen to double-hi-res with **Beagle Graphics** from Beagle Bros or Roger Wagner's **Graphic Exchange**. Once again, using multiple ►



Not all modems are created equal.

The right modem can change the way you use your computer. Modems allow you to step outside the limitations of your own hardware and software. But the degree to which you are benefitted by your modem is directly proportional to the quality of modem you select.

Not all modems are created equal. A new generation of 2400 baud modems, both internal and external, have appeared on the scene as of late. While Hayes AT compatibility and equivalent raw transmission speed can be expected, there are differences. Some are subtle. Others, quite significant.

Expensive features *and* low cost

Applied Engineering's entry into this market, the DataLink 2400™, was designed to combine the features of expensive modems with the price of low-cost modems.

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Other advantages are more evident. Like the inclusion of sophisticated, genuinely useable communications software, something others offer as an expensive option.

Hardware considerations:

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*OnLine 64 and DataLink have most, but not all the features of DataTerm and DataLink 2400 respectively.

programs lets us achieve the effect we want.

Super-hi-res offers much more powerful tools, thanks to the power of the Apple IIGS Toolkit and to the greater speed and capacity of the GS. We're evenly divided between **DeluxePaint II** from Electronic Arts and **PaintWorks Gold** from Mediagenic.

TWO PHILOSOPHIES OF COMPUTER ART

Both programs, using different basic painting philosophies, offer roughly the same set of features. In **DeluxePaint**, the primary tool is a brush—you can use any piece of the screen as that tool. **PaintWorks Gold** takes the more traditional approach with pencils, paint-brushes, spray cans, and so on.

That's not to say there's no crossover—you can use the smallest single-pixel brush in **DeluxePaint** to achieve the pencil effect, and you can use a selected area of the screen as a brush in **PaintWorks Gold**.

PaintWorks Gold has the better interface. It looks and works according to Apple's guidelines, while **DeluxePaint II** depends on hard-to-remember keyboard commands.

Fair warning, though—**PaintWorks Gold** is a memory hog and isn't GS/OS friendly. If you've read this far, you can probably guess that we create many images in both programs, utilizing the features we like in each.

For those of you who want to work in all three graphics modes without investing in lots of software, we recommend Baudville's **816/Paint**. This one package offers three paint programs: standard-hi-res, double-hi-res, and super-hi-res. Something for everyone!

SHAPING UP

In addition to painting, we've also done a fair amount of Applesoft shape-table work in our commercial projects.

Two programs stand out: Beagle Bros' **Shape Mechanic** lets us capture pieces of a drawn screen into a shape table; **Pixit** from Baudville lets us rearrange and fine-tune the table.

In commercial software, most animation is accomplished via proprietary routines. When you're using a package, Polarware's **Graphics Magician** and Baudville's **Take One** have the lead.

Graphics Magician offers two types of graphics: block-shape routines suitable for animating game pieces and picture-object routines suitable for creating "painted"-style graphics.

PRODUCT INFORMATION

Animation Toolkit, \$60
Blazing Paddles, \$34.95
816/Paint, \$75
Pixit, \$34.95
Take One, \$59.95
Baudville
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Picture-object routines, which save the moves you make in creating a graphic rather than the graphic itself, re-creates your image step by step, before your eyes. Many adventure-game programs use these routines, because they provide compact storage.

A full-screen image created with picture-object routines can be as small as one disk sector or block rather than the usual 33 sectors or 17 blocks, which a standard-hi-res image takes up. **Take One** uses a traditional block-shape approach and, combined with Baudville's **Animation Toolkit**, enables Applesoft BASIC programmers to integrate animation into their programs easily.

While these are the programs we favor, there are lots of other good Apple II graphics programs; we'll take a look at some of them in future columns.

OUTSTANDING GRAPHICS: TIPS FOR PROS AND NOVICES

Among our colleagues, our students, and you, our readers, we see a lot of Apple II

graphics. Some have a professional quality others lack. What's the difference? Can you emulate it?

Of course, experience and talent play a significant part. The computer can't make up for lack of skill; it's only a tool. There are ways to achieve superior results, though, even if you're just learning.

1. Use source art. Even professional artists use models, photographs, and other reference material.

If you want to draw a cat the best thing to do is to look at cats; study them walking, sleeping, running, sitting, and so on.

Second to studying the real thing is to refer to pictures. Get lots of pictures of cats and study them.

Dover clip-art books are excellent sources of images. Be careful, though—don't copy a copyrighted image. The image should be a only a springboard for your creative interpretation.

2. Pay attention to detail. With limited reso-

lution (even in super-hi-res mode, you have only 64,000 pixels to work with) every dot counts.

All graphics programs worth owning have a magnification (or "zoom") mode. Overall we probably spend more time in zoom mode than standard.

Look especially at edges. In single-hi-res mode, you can use outlines of white or black to clarify and smooth jagged edges.

In double-hi-res and especially in super-hi-res mode, you can take advantage of extended palettes to make edges look smoother. (For example, you can soften dark-blue edges against a white background by bordering them with light blue).

3. Be aware of color idiosyncrasies, especially in standard-hi-res mode. Because of the way color works in this mode, you can't, for example, place orange next to violet just anywhere on screen; placing an orange pixel in a violet area will flip some of the violet pixels to blue.

Other combinations create similar problems. Unresolved color problems clearly identify amateur work.

4. Refine your work. Eliminate stray pixels, clean up overly jagged lines, correct color problems, and so on.

In the hit play *Sunday in the Park with George*, Seurat declares, "Art isn't easy." That's an understatement. With a little time, a lot of care, and attention to detail, though, you can create stand-out graphics on your Apple II.

WE BEGIN ANEW:

CORRESPONDING WITH OUR READERS

We'd love to hear from you—our new readers as well as our old.

Please write and tell us what you'd like us to discuss in future columns. Let us know how you're using graphics on your Apple II.

Are you beginners, experienced artists, professionals? What are your favorite programs? Do you have any graphics tips you'd like to share with other readers? We look forward to hearing from you. See you next time! □

ROBERTA SCHWARTZ AND MICHAEL CALLERY TEACH COMPUTER GRAPHICS AND DESKTOP PUBLISHING AT THE NEW SCHOOL FOR SOCIAL RESEARCH IN NEW YORK AND CREATE GRAPHICS FOR COMMERCIAL SOFTWARE. WRITE TO THEM C/O INCIDER, 80 ELM STREET, PETERBOROUGH, NH 03458.

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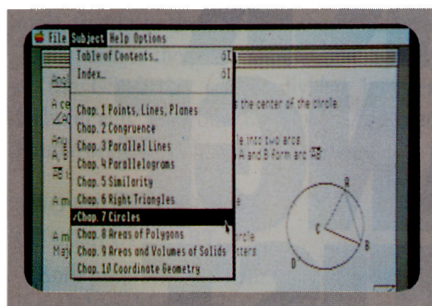
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GEOMETRY



BRODERBUND SOFTWARE,

**17 Paul Drive, San Rafael, CA 94903, (800)
527-8263, (415) 492-3500**

Geometry-education program; 512K Apple IIGS;
\$79.95

Rating: ♦ ♦ ♦ ♦

Just think where mathematics would be today if Euclid and Pythagoras had had a computer and a program like Geometry to play with.

With Geometry, you can see the angles of a triangle change as you move one of its vertices; you can compare the slope formulae for a line as you drag its points about the screen. With a tool like this, you can master trapezoids and rhombuses, even if you aren't a master mathematician.

GET TO THE POINT

Geometry spans the subject, from points, lines, and planes through the formulae for areas of polygons and the areas and volumes of solids. It also introduces analytic geometry from the Cartesian coordinate system through the slope-intercept formula for a line and the theorems relating slope to the concepts of parallelism and perpendicularity. If you aren't a math teacher, that means the package covers the same topics as most high-school geometry courses.

You might describe the course format as a living textbook. It has ten chapters—five each on two disks—with a third disk containing startup and printer-driver files. Because Geometry runs only on the GS, it uses the desktop format and supports mouse input.

Once you launch the program, you'll see the title page, complete with pull-down menus. From there you can select any of the five chapters on the current disk. You won't have to page through a chapter to find specific topics, though. From the pull-down menu, you can select a table of contents, which enumerates

the material in each chapter or gives you a comprehensive index of the entire "book." Click on any topic and let your disk drive do the searching.

Once you've selected a subject, you'll see a page that at first appears much like an old-fashioned geometry book—lots of text with definitions of terms such as *parallel* and *equilateral*, and some simple drawings of lines and triangles.

But as all geometry students know, apparent similarity can be misleading. Just click on a definition and the skew lines lounging to one side of the screen suddenly stand at attention, parallel to a point. Click on another page and a scalene triangle reconnoiters its vertices to become equilateral. Try that with your high-school textbook.

Turn another page and you can see a theorem, a line drawing illustrating it, and the word *Proof*. Click on *Proof* to paste an overlay onto the screen. If you want, you can even print the proof.

Suppose you don't believe, though, that the sum of the interior angles of a polygon equals the number of sides minus two times 180 degrees—no matter what the proof says. Just close the proof window and click on the illustration to see for yourself. The polygon transmutes from a hexagon made up of four triangles to a heptagon made up of five triangles to an octagon made up of six triangles and keeps going for about as far as you can distinguish on a double-hi-res screen.

Finally convinced, you turn the page. These items look like the math problems we all know and love. But these problems don't test you for the sake of keeping score—they ensure you can apply what you've just learned. Suppose you've just studied the slope-intercept equation. An x-y axis appears on screen with a line segment and the equation $y = x + 3$. A table below the equation offers some possible values for x and y and asks you to fill in the rest.

If you've forgotten how already, just ask for a Reference from the pull-down menu, and the page on which the concepts were presented will overlay the problem page. You can review the tutorial section until you're certain you understand the material. Then close the Reference to return to the problem.

Do you need a hint? Call Help from the pull-down menu. Are you totally stymied? There's a Solution option, but why use it? By experimenting, you can discover the answer to most problems even if you're baffled at first.

The program will ultimately tell you whether your answer is right or wrong.

There are other ways to use Geometry, too. You can select just the tutorial or just the problems, for instance. If you're only reviewing, set the system to problem-only mode to see how much of the material you've already mastered. When you run into a problem you can't solve, opt for a Reference and page through that section of the tutorial.

GREAT EXPECTATIONS

Geometry is a program I've been looking forward to since it was announced in 1985—someone had finally applied the power of the computer toward helping students visualize a subject in a way never before possible. The GS version promised to be even more exciting. In many ways, Geometry has lived up to my expectations, but of course there are limitations to every program.

Launching is slow. If you run Geometry from one 3½-inch drive, you'll do a fair amount of disk swapping. These are minor inconveniences, however, compared to the delays you face if you use the index extensively to leap from topic to topic. Every time you want to jump from a concept in the first half of the "book" to one in the second half, you have to quit and restart the entire program. If you use the material chapter by chapter, however, you won't suffer much from this flaw.

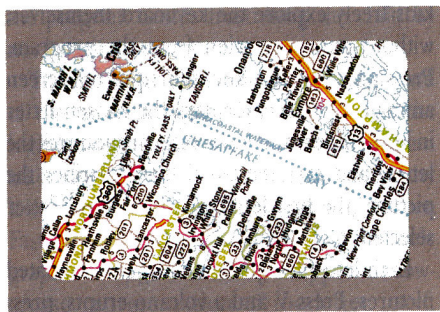
On the content side, Geometry is the "Reader's Digest Condensed Version" of the subject. No teacher would want to introduce students to geometry without discussing the way Euclid's work in 300 B.C. built on the discoveries of earlier peoples and how later mathematicians built on the work of the Greeks.

And nowhere does Geometry suggest that there's the slightest practical application for the material it teaches. Nor does it lure anyone to the contemplation of the beauty of the concepts and relationships it presents. In fact, you can solve many of the problems correctly by simple substitution and mimicry, without an understanding of the underlying theorems.

Still, like drill-and-practice arithmetic software, Geometry serves a useful function—and it's a lot more fun than a standard workbook. Whether you need to pass a test, teach a class, or just do a few mental push-ups with the right hemisphere of your brain, Geometry's an enjoyable way to do it.

**Jeanne Dietsch
Peterborough, NH**

MAP SKILLS



**OPTIMUM RESOURCE,
10 Station Place, Norfolk, CT 06058, (800)
327-1473, (203) 542-5553**

Map-reading program; 48K Apple IIs, available
on 5¼- or 3½-inch disk; \$49.95

Rating: ♦ ♦ ♦

Daddy, are we there yet?" Weekly Reader (Optimum Resource) comes to the rescue of family vacationers all across the USA, with a new program that invites children to sharpen their map-reading abilities by "driving" their way through five different communities. You can't take it with you, but at least you won't get lost.

WHICH WAY?

Children can take as many as 100 trips through Map Skills' ten levels of difficulty. The object is to reach the assigned destination quickly, following travel directions as closely as possible to navigate the most direct route. A child may play alone or compete with a friend; when kids complete an exercise successfully, they move up automatically to the next level.

The package includes two paper versions of the program's five travel maps—Vista Del Mar, Sherman County, East Warwick, Puffin Island, and Goose Bay. One is a colorful full-detail poster showing all five communities. The other consists of five smaller black-line master maps, suitable for copying and distribution to students.

Each map contains a legend with an accurate scale showing distance in inches and miles (such as 1 inch = 14 miles or 1 inch = ½ mile). There's also a key explaining the symbols used to indicate interstate, primary, and secondary roads, plus a directional compass for orientation. Road numbers are clearly marked on all maps. City, town, and place names appear on the paper maps, but not on their screen versions.

At the beginning of each game, players receive their travel instructions. For example, one trip may require the driver to travel in East Warwick en route to Tiger Stadium (the football field). The directions may ask you to start from the Carlson School on 32nd Street; then take 32nd Street north to 4th Avenue to 40th Street; turn north at 40th Street and stay on that until 10th Avenue.

Another trip may involve driving the following route on a map of Vista Del Mar: From Pelican Island at the eastern end of Route 18, go home to Sierra at the junction of Route 72 and Route 9. Take Route 18 west all the way to Route 15 north, then Route 68 west and Route 9 north to Route 72.

LOST IN SUBURBIA

At higher levels, the travel instructions become pretty cryptic. For example, the game may tell players to go north, right, north, right, left, north, right, straight, south, left, straight, east, south, left, straight, east, south, south, left to Pine. Students may have to try several different routes to achieve their best time and lowest mileage.

Directions incorporate route, street, and road numbers, place names, and left or right turns, in addition to standard compass directions. The compass at the bottom of the screen doesn't change direction as players drive, but it's helpful for reference.

Map coordinates aren't included for either the screen or paper versions. Students must track down the starting position by reviewing the entire map, instead of looking it up in an indexed legend.

START YOUR ENGINES

During game play, drivers may toggle between the driving screen and the instructions, but Weekly Reader suggests taking a few notes to save driving time.

After reading the instructions, students can press any key to start the clock. The car becomes a flashing rectangular cursor on the map. Children maneuver the vehicle by pressing the arrow or I, J, K, M keys to drive in the appropriate direction—up for north, down for south, left for west, and right for east.

The vehicle stops at every intersection, so players must think about their next move before pressing a directional key to keep going. A magnified version of the intersection appears on the "dashboard" at the bottom of the

screen. Magnification mode comes in handy while manipulating the vehicle around jags in the road or making a decision about which way to travel.

When players take a wrong turn, they'll hear an error buzz. If this happens, they should study the car's position in magnification mode and make the necessary corrections to get back on the right track.

As the vehicle proceeds along the map, gauges on the dashboard at the bottom of the screen mark the distance traveled in miles and indicate current travel time. Players will know they've reached the correct destination when they hear a round of musical reinforcement. The program will then present a report screen with information about distance traveled and time taken, as well as best distance and time achieved by the people at Weekly Reader. Students may then repeat the exercise or opt for a new assignment.

BLAZING YOUR OWN TRAIL

Map Skills also includes a customizing feature. You can tailor the program options to meet the needs of individual students when you first load the game. Pressing Control-C at the title screen lets you enter the name of a specific student, select a difficulty level (1-11) for the exercises, and choose which maps the student will navigate. Level 11 contains the exercises you've designed. You may also specify any combination of maps to be included in an exercise.

Pressing Control-R at the title screen calls up the Report Card option. Reports indicate starting level, current exercise level, number of exercises attempted, and number of exercises completed for every student on the list. You can check a student's report card, delete a record, or look at options chosen for each student. You can also print an individual's report card.

Map Skills lets you create your own travel exercises by pressing Control-A at the title screen. You can add up to eight trips per map, for a total of 40 exercises. Once you add an exercise, you can print it or delete it to make room for new ones.

CHART YOUR COURSE

The first task in setting up a personalized trip is to choose a map. The program will then ask you to select starting and end points. For memory reasons, Map Skills allows only a limited number of locations to serve as starting ►

REVIEWS

and ending points. All of these are displayed in the accompanying *User's Guide*.

After selecting an end point, you must name the trip, type in travel directions, and set goals for optimum time and distance. To obtain information on time and mileage, you should navigate the route on screen yourself, using the appropriate map. You might also consider letting children devise their own travel exercises, as a way of giving them additional opportunities to reinforce their map-reading aptitude.

WHERE THE HECKAWA?

If your kids seem about as discombobulated as the folks of *F Troop*, Map Skills may be the answer. It's easy to play; and while the graphics may be repetitive, the program is an entertaining simulation.

To be successful, students must translate traditional map symbols such as direction (north, south, east, and west) and route numbers into visual guides. The program's customizing feature also increases its usefulness in the classroom or home, because it lets youngsters strengthen their map-reading skills by giving directions to others. It teaches children how to navigate simple routes, gives them an understanding of the concept of relative position, and above all helps them learn to read maps with confidence.

Carol S. Holzberg, Ph.D.
Shutesbury, MA

TALKING STICKYBEAR ALPHABET



OPTIMUM RESOURCE,
10 Station Place, Norfolk, CT 06058, (800)
327-1473, (203) 542-5553

Alphabet and beginning word recognition: 512K
Apple IIGS, 3½-inch drive; \$49.95

Rating: ♦ ♦ ♦ ♦

Although Stickybear Alphabet has been around in one form or another for quite some time, the continual demand for this program is proof of its excellence. Now Apple IIGS owners can enchant and educate their youngsters with an all-new version of this best seller—Talking Stickybear Alphabet.


Talking Stickybear Alphabet lets a child select from three basic activities, all intended to aid him or her in learning the alphabet and recognizing simple words.

The first item on the menu is called, appropriately enough, Alphabet. This activity lets kids freely explore the keyboard themselves, without any instruction from the program. Pressing any letter key calls up a full-screen animated graphic, displays the chosen letter in both upper- and lowercase, pronounces the letter, and says the word that describes the picture (the first letter of which is the letter selected, of course).

Each letter is represented by two animated pictures. Press V and a volcano erupts; press V again and a violin begins to play. Each action will repeat itself until you interrupt it by pressing another key.

The second activity is called Letter Hunt, a step up the learning scale. Here a full-screen image of Bedford Stickybear instructs the child to press a specific letter. Pressing the correct letter makes the program show an appropriate graphic and pronounce the letter. Should the child make a wrong choice, the sensitive Stickybear displays and pronounces the correct letter, saying, for example, "This is B. Press the letter B," to give the child a second chance. If he or she makes another mistake, the program simply moves on to another random letter.

Letter Hunt employs two effective teaching methods. To begin with, the child is given two chances with strong verbal and visual hints in between to increase his or her chance of success. Then, in the event of another mistake on the child's part, the program downplays the



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failure by continuing as if nothing had happened. The only reinforcement is positive and the program avoids frustrating the child by not insisting on a correct answer.

The final selection is called Fast Letters, and of the three activities this one requires the highest cognitive skills. Stickybear once again takes over the screen and pronounces any letter the child selects. The difference between Fast Letters and Alphabet is that the only graphic to appear here is the upper- or lowercase representation of the letter itself. No animated graphics representations are displayed.

There are numerous alphabet programs on the market, but what separates Talking Stickybear Alphabet from the rest—including its nonspeaking predecessor—are its enhanced graphics and its impeccable speech emulation.

In almost every case, animation is full-blown—no token hand wave or eye blink here. The airplane flies across the screen—dipping, climbing, and skimming treetops as it goes by. The duck swims around the lake, bobbing its head under the water from time to time. Every graphic is also accompanied by appropriate digitized sound effects.

The "talking" portion of the program stands in testimony to the leaps and bounds by which the software industry has grown. You won't have to interpret what Stickybear is saying; the digitized voice pronounces both letters and words more clearly than many people.

Talking Stickybear Alphabet comes on two copy-protected 3½-inch disks and requires 512K of memory. You can install the program on a hard disk, but you'll still have to place the master disk in a drive before the program will run. This type of "key disk" protection minimizes the benefits of a hard drive and can't be applauded.

Note also that if your GS is equipped with the minimum 512K required by the program, you may not be able to launch Talking Stickybear Alphabet from the Finder, because the Finder itself requires a certain amount of memory overhead.

Despite these caveats, Talking Stickybear Alphabet is a superior program. Children under the age of 7 will be enthralled not only by the animated graphics screens that have been a hallmark of Stickybear programs since the very first, but also by the near-perfect speech and sound effects accompanying them. □

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PAUL STATT PLAYS...

Uninvited GS, Mindscape, 3444 Dundee Road, Northbrook, IL 60062, (312) 480-7667, \$49.95

THE PREMISE OF UNINVITED IS inviting, so to speak. You drive your car into a tree in front of an ancient Victorian mansion, a "haunted house" if ever you saw one. Your brother, who was with you, disappears while you're blacked out. He must be in the house.

You'll actually see all this happening—Uninvited is a graphics adventure, not a text adventure. As you crawl from the wreckage, stroll up to the house, walk in "uninvited," and explore the many rooms, you're looking



at pictures. To move, to look at things, or to pick things up, you must point and click with your GS' mouse.

The interface works surprisingly well. Double-clicking on a door opens it, double-clicking on an open door makes you walk through.

Double-click on a portrait to see it. The interface isn't slow, but the screen quickly becomes as cluttered as your grandmother's bedside table.

The allure of the graphics interface, however, fades faster than old newspapers. I explored the house happily, poking into broom closets, browsing in the library, reading other people's mail and diaries, and even (because I do have some experience with adventure games) picking up everything in sight.

But I died young. In every adventure from Eamon to Zork, I've died young, but my Uninvited death was particularly graphic. I never found my brother, and never satisfied my curiosity about the owner of the house. Was it really H.P. Lovecraft—the H.P. Lovecraft?

Adventure games in general, and Uninvited

SHORT TAKES

FINAL ASSAULT

Epyx, P.O. Box 8020, 600 Galveston Drive, Redwood City, CA 94063, (415) 366-0606, \$44.95

Now here's something you haven't seen simulated before—mountain climbing. Final Assault incorporates realistic variables (hunger, cold, and unstable snow) and uses excellent graphics for an interesting alpine experience. (See Games Editors Play, June 1989, p. 117.)

Rating: ♦ ♦ ♦

THE ANCIENT ART OF WAR AT SEA

Broderbund Software, 17 Paul Drive, San Rafael, CA 94903-2101, (415) 482-3500, \$44.95

The Ancient Art of War at Sea tests your artfulness on all levels—strategic decisions, individual ship handling and combat, and hand-to-hand combat after you've boarded another ship. It's a brilliant simulation—guaranteed to make you whistle a few sea chanteys. (See Games Editors Play, June 1989, p. 117.)

Rating: ♦ ♦ ♦ ♦

THE GAMES: WINTER EDITION

Epyx, P.O. Box 8020, 600 Galveston Drive, Redwood City, CA 94063, (415) 366-0606, \$49.95

Downhill skiing, slalom skiing, luge, figure skating, speed skating, ski jumping, and cross-country skiing all in one? It must be one of Epyx's series. The long-awaited Winter Edition includes some excellent games (and one or two mediocre ones). (See Games Editors Play, May 1989, p. 66.)

Rating: ♦ ♦ ♦

SERVE AND VOLLEY GS

Accolade, 550 South Winchester Boulevard, San Jose, CA 95128, (408) 985-1700, \$39.95

This is the stuff real tennis is made of—precise timing, absolute concentration, even line judges and seed orders. Like Accolade's Hardball and Mean 18 (baseball and golf games, respectively), Serve and Volley is sure to become a classic in the sports genre. (See Games Editors Play, March 1989, p. 83.)

Rating: ♦ ♦ ♦ ♦

SUPERSTAR ICE HOCKEY

Mindscape, 3444 Dundee Road, Northbrook, IL 60062, (312) 480-7667, \$44.95

Superstar Ice Hockey is a good, fun game. The smoothly scrolling graphics are most impressive (even the spray of ice shavings when your players stop and change directions). The only really annoying thing is the dim-witted goalie who stops the puck, then drops in front of the net—regardless of the color of the jerseys surrounding him. (See Game Editors Play, May 1989, p. 66.)

Rating: ♦ ♦ ♦

ARKANOID IIe/IIC

Taito, 267 West Esplanade, North Vancouver, BC, Canada V7M 1A5, (604) 984-3344, \$29.95

Just as addictive as the game you love on your GS and in your local pizza parlor, although the less sophisticated graphics and sound effects don't warp space with quite the same effect. (See Games Editors Play, May 1989, p. 67.)

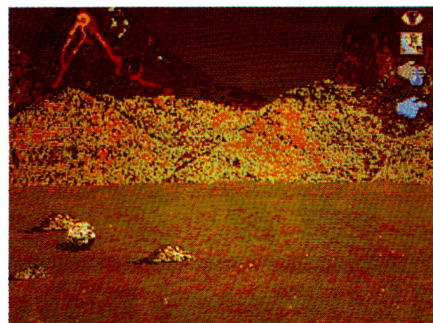
Rating: ♦ ♦ ♦ ♦

in particular, need to improve what literature professors call "character development." Uninvited's got the plot and the locale, but where are the people? If I didn't meet them I assume they're too hard to find.

LAFE LOW PLAYS...

War in Middle Earth, Melbourne House, 711 West 17th Street, Costa Mesa, CA 92627, (714) 631-1001, \$49.99

THIS WAS QUITE AN AMBITIOUS undertaking for the programmers of Melbourne House—capturing the vastness of J.R.R. Tolkien's Middle Earth on scant computer disks. Nevertheless, it appears they've succeeded. You guide Frodo, Sam, and Pippin throughout their "quest" (although I



hate to use that word, because it's such a cliché in adventure games) to destroy the magic ring in the fires of Mount Doom, smack in the middle of Mordor.

Along the way, you'll inevitably do battle with orcs and other evil denizens of Middle Earth. Like our literary heroes in the trilogy, you'll have to keep on your toes, stay on the right roads, and forge the right alliances.

Trying to save Middle Earth from the clutches of the evil wizard Sauron and his legions of mean and nasty critters is fun—graphics and animation are smooth and artistic. But what's better is just scrolling around the colossal map of Middle Earth and zooming in wherever you have the urge to investigate.

That's true to the Hobbit spirit—exploring the far reaches of the Shire, Mirkwood, and beyond from the safety and comfort of home.

...and plays...

The Games: Summer Edition, Epyx, 600 Galveston Drive, P.O. Box 8020, Redwood City, CA 94063, (415) 366-0606, \$49.95

HERE WE GO AGAIN—INTO THE Olympic arena with Epyx. As the "other season" companion to The Games: Winter Edition, the summer series offers an equally faithful experience. From the

"Olympic Village," you can opt to compete (or practice) in diving, rings, hammer throw, pole vault, archery, uneven parallel bars, bicycling, or hurdles.

Diving was my favorite event, followed by



bicycling and archery. I'm no Greg Louganis or John Williams (a famous archer; I figure you all know who Louganis is), but I managed to walk away with a medal or two.

Bicycling is also exciting. You have to keep to a smooth, steady rhythm, much as you do in Winter Edition speed skating.

All the games are enjoyable, but I think it's most interesting to play something that isn't simulated anywhere else. For originality alone, Epyx will go home with the gold. As for the individual games, they'll take a few silvers. □

ARKANOID GS

Taito Software, 267 West Esplanade, North Vancouver, BC, Canada V7M 1A5, (604) 984-3344, \$29.95 (requires mouse)

Classic arcade action—this GS version looks as good or better than the games you've played in pizza parlors and video arcades. You better buy this one—you'll save a lot in quarters. (See Games Editors Play, March 1989, p. 83.)

Rating: ♦ ♦ ♦ ♦ ♦

WARLOCK GS

Three-Sixty Pacific, 2105 South Bascom Avenue, Suite 290, Campbell, CA 95008, (408) 879-9144, \$39.95

Don't worry, this isn't another fantasy role-playing game that takes the better part of a year to complete. This is fast-moving arcade-type action, with a bit of mystical magic mixed in—all-around good fun. Let us know if you get past level 12. (See Games Editors Play, March 1989, p. 82.)

Rating: ♦ ♦ ♦ ♦

BUBBLE GHOST GS

Accolade, 550 South Winchester Boulevard, San Jose, CA 95128, (408) 985-1700, \$34.95

Casper's gone from kids' cartoons to computer games. Direct a pesky little ghost to blow a bubble throughout a series of maze-like rooms that look like your worst nightmare. Terrific graphics and bizarre sound effects add to this unique game. (See Games Editors Play, March 1989, p. 82.)

Rating: ♦ ♦ ♦

CALIFORNIA GAMES GS

Epyx, P.O. Box 8020, 600 Galveston Drive, Redwood City, CA 94063, (415) 366-0606, \$44.95

Super graphics and radical music make the GS version of this old favorite cooler than ever. Surfing's the best, but you've also got half-pipe skateboarding, roller-skating, footbag, bicycle motocross, and flying disk. The only things missing are sunburn and salt spray. (See Games Editors Play, February 1989, p. 90.)

Rating: ♦ ♦ ♦ ♦ ♦

MINI-PUTT

Accolade, 550 South Winchester Boulevard, San Jose, CA 95128, (408) 296-8400, \$39.95

To the best putter go the spoils, not to mention the windmills and elephants, over four minimalist courses of nine holes each. It's not as wacky as Electronic Arts' Zany Golf; it's played on a two-dimensional map without the labyrinthine twists and turns. Music and animation are also missing, but Mini-Putt's a tougher athletic challenge. (See Games Editors Play, February 1989, p. 90.)

Rating: ♦ ♦ ♦

RAMPAGE

Activision Inc., 3885 Bohannon Drive, Menlo Park, CA 94025, (415) 329-0800, \$34.95

Good, old-fashioned, smash-'em-up arcade fun—monsters loose on the streets, in the cities, climbing buildings. You're one of them—pound those tanks into the dirt. What more can we say? (See Games Editors Play, May 1989, p. 66.)

Rating: ♦ ♦ ♦ ♦

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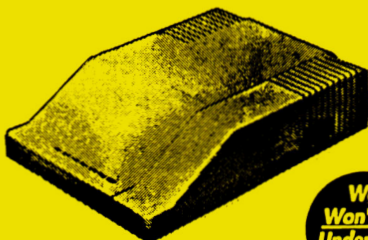


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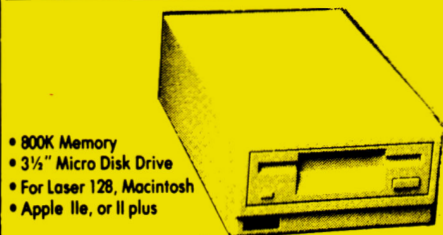
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COMPUTER MASTERY

Thanks to rabbits and bears, typing and information management are kid stuff. Take the fear out of computing with software that introduces children to their Apple IIs.

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

WHO SAYS KIDS HAVE TO DESCEND into the murky abyss of machine-language programming to become computer literate? Not Field Trip!

Among the five computer-literacy programs reviewed here, one features a popular bear family that helps even preschoolers decipher the QWERTY keyboard; a second program can literally talk elementary-school children through database-management basics; and still another gives junior- and senior-high-school kids a step-by-step guide to creating their own interactive fiction—with an assist from AppleWorks.

SO HOP TO IT!

COTTON'S FIRST FILES

Rabbits are infamous for "getting around." And Cotton is no exception. Initially this floppy-eared character showed up in **Cotton Tales**, the rebus-writing desktop-publishing program for young children. Now MindPlay's bunny is back in **Cotton's First Files**, a talking database-management program for youngsters aged 5–11.

Cotton's First Files helps children get a grasp on organizing information through colorful, animated graphics, musical rewards, and reassuring messages.

With a Street Electronics **Echo IIb** or **IIC** speech-synthesis device connected to your Ap-

ple II, Cotton even *speaks*—in a clear, feminine voice that bolsters kids' self-esteem with remarks such as "Great job!" or "Very good. You found the gorilla."

Cotton's First Files combines four activities: Peek and Find, File Hunt, Clue Search, and Build Your Own Files.

The first three games center on the program's built-in "Animals" database, which includes some 200 animal graphics. You can print records in the form of "data cards" on the Apple ImageWriter (or Silentype) or Epson printers.

Certain animal records are incomplete, and the program encourages kids to research the information in traditional media (magazines and books) and type it into the database.

FUN AND GAMES

AND REASONING SKILLS

But first things first—games! In Peek and Find, Cotton challenges you to search through the labeled file drawers that appear on screen and "Find the Wolf" or other animal whose picture and name are displayed.

Do you look in the "Wings" drawer? The "Pets" drawer? How about the "4 Legs" drawer? Pick a drawer and watch animal graphics parade out until you find the right match.

File Hunt presents a written description. Read it for clues, then search through the screen's file drawers to find the target animal.

Clue Search, the third game, provides hints about an animal. If the Clue reads "large seabird," it might be a good idea to look in the "Water" drawer, but pass up the "Furry" drawer.

DATA ORGANIZATION: CUSTOMIZE YOUR FILES

Build Your Own Files gives children the opportunity to create custom databases. Follow suggestions given in the manual (birthdays, explorers, vocabulary words) or come up with your own ideas.

For each record, type in the name, a short description, and clues. Select a graphic from the animal illustrations provided on the program disk or from drawings in **Cotton Plus**, a 160-picture library the company sells



Mavis Beacon's rival car is traveling at your target pace, but speed and accuracy will send you flying past.

separately. MindPlay's trademark Challenge Upgrade lets parents control the complexity of each activity. Among other options, you can limit the number of file drawers and control game speed.

Parents or older brothers and sisters who want to become more directly involved in a preschooler's computing exercises can investigate Sunburst's **Muppet Learning Keys Toolkit**.

The ready-made programming routines included let you make custom educational software—or listable public-domain programs—that support **Muppet Learning Keys**, the sturdy “children's keyboard” available from Sunburst Communications.

The Key Editor program on the Toolkit disk lets you change the identity of selected keys by typing in alternative ASCII values, a handy feature if you intend to use keyboard overlays with preschool programs.

Implementing programs from the Muppet Learning Keys Toolkit presupposes experience with the computer language BASIC, so this package isn't for everyone.

But parents or teens who like to program and who want to expand a younger child's software repertoire at the same time should take a closer look at this product.

FICTION WRITING FOR CREATIVE TEENS

Teenagers with a creative-writing streak *and* a love for computing can take a lesson—or two or three—from Chet Day, a novelist, ed-

“AMONG POPULAR LITERACY PROGRAMS, ONE FEATURES BEARS TO GUIDE YOU THROUGH TYPING; ANOTHER TALKS YOU THROUGH DATA MANAGEMENT; A THIRD HELPS YOU WRITE INTERACTIVE FICTION.”

School in New Orleans, Louisiana.

The “Guide” includes AppleWorks word-processing files containing the program's documentation—an entertaining and well-written user's guide for individual creative writers and a teacher's guide complete with course syllabus.

The two-sided program disk (a low-cost demo disk is available) includes a copy of Tom Weishaar's public-domain program *Type*, and a sample interactive-fiction story called “The Morgue.”

DARK AND STORMY NIGHTS: ANALYZING YOUR WRITING

Using “The Morgue” as an example, Day leads you step by step through the creation of

location and object information, which will eventually show up on screen during play.

Finally, write the game's program code in Applesoft BASIC.

Sounds daunting? It's not. Day gives line-by-line explanations of each command's or variable's function. He even provides a “skel-ton” program you can build on or change as you become adept at writing interactive fiction.

Ever the teacher, Day includes time- and frustration-saving hints along with graphic-design and desktop-publishing project ideas to help you “market” your story.

Day's also compiling a public-domain disk, **The Penman's Pick: Top-Notch Adventures**, which contains stories that users of *Shem the Penman's Guide* submitted.

BEARLY WORKING: BEDFORD'S GUIDE TO GOOD TYPING

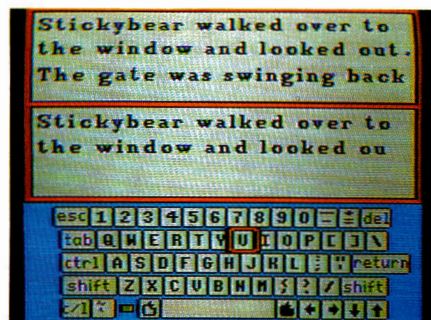
Before a youngster even begins to think about programming imaginative, interactive stories, he or she should strive to abandon the “hunt and peck” method of cruising around the Apple II keyboard. With programs like **Stickybear Typing** from Optimum Resource/Weekly Reader, even the youngest computer-philies in your family can tame the dread QWERTY monster. (Check the accompanying sidebar for other sources of typing programs.)



Guide Hands help beginners learn correct finger placement in **Mavis Beacon**.



Stickybear Thump: This robot throws a mean curve ball.



Stickybear Typing's Keypress activity: Practice makes perfect.

ucator, and author of **Shem the Penman's Guide to Creative Writing, Reasoning, and Programming**. Day developed and refined his hands-on system for creating text-only interactive fiction at the Metairie Park Country Day

your own story.

Begin by mapping the “Core Game,” then use the AppleWorks word processor (or another word processor than can save files in ASCII format) to type text files containing

Stickybear Typing offers three activities: Stickybear Keypress, Stickybear Thump, and Stickybear Stories.

In Keypress you practice typing whatever appears on screen. Use the on-screen key- ➤

TYPING ASSISTANTS

If **Stickybear Typing** and **Mavis Beacon** aren't in sync with your learning style, check out this list of typing helpers. At least one of the nearly two dozen programs included here should suit you to a capital T!

Dungeon Doom
Typing Game, \$44.95
Backup Disk, \$10
Lab Pack
Network Version
\$164.95 each
requires 48K
ages 11-adult
Gamco Industries
P.O. Box 1911K34
Big Spring, TX 79721
(800) 351-1404
(915) 267-6327
(collect in TX)

How Fast Can You
Type Right?, \$39.95
Class Pack, \$240
requires 48K
Typing Strategy, \$39.95
requires 48K
Opportunities for Learning
20417 Nordhoff St.
Chatsworth, CA 91311
(818) 341-2535

Junior Typer
Aquarius Instructional Material
P.O. Box 128
Indian Rocks Beach, FL 34635
(813) 595-7890
\$45
ages 8-11
requires 48K

Just Your Type
Right On Programs
755 New York Avenue
Huntington, NY 11743

(516) 424-7777
\$50
all ages
requires 48K

Keyboard Cadet, \$29.95
Lab Pack, \$59.90
ages 7-18
requires 48K
MasterType, \$39.95
Lab Pack, \$79.90
ages 7-18
requires 48K
Typing Well, \$49.95
Lab Pack, \$99.90
ages 8-18
requires 48K
Mindscape, Inc.
3444 Dundee Road
Northbrook, IL 60062
(800) 221-9884
(312) 480-7667

MicroType: The Wonderful
World of Paws, \$39.95
Lab Pack (5 copies), \$289.75
ages 7-11
requires 48K
Rainbow Keyboarding, \$46.70
ages 7-9
requires 64K
Success with Typing, \$69.95
Lab Pack (5 copies), \$109.95
ages 10 and up
requires 64K
SuperKey, \$59.95
Lab Pack (10 copies), \$195
ages 8-adult

requires 48K
Scholastic Inc.
P.O. Box 7502
2931 East McCarty Street
Jefferson City, MO 65102
(800) 325-6149
(800) 392-2179 (MO)
(314) 636-5271

Text Tiger, \$49.99
Lab Pack (6 copies), \$129
ages 6-18
requires 48K
MindPlay
Unit 350
P.O. Box 36491
Tucson, AZ 85740
(800) 221-7911

TouchType, \$20
plus \$2.50 shipping
Site License, \$800
requires 64K with DOS 3.3
Kinko's Academic Courseware
Exchange
Box 800
Ventura, CA 93002-8000
(800) 235-6919
(800) 292-6640 (CA)
(805) 652-4158

Type!, \$26.95
Lab Pack, \$73.95
ages 10-18
requires 64K plus shift-key
modification for Apple II Plus
Broderbund Software
17 Paul Drive
San Rafael, CA 94903-2101
(800) 527-6263
(415) 492-3500

Typeasy
Focus Media, Inc.
839 Stewart Avenue
P.O. Box 865
Garden City, NY 11530

(800) 645-8989
(516) 794-8900
\$39
requires 48K

Type to Learn, \$75
Lab Pack (10 copies), \$225
requires 64K
free 3½-inch disk swap
Type to Learn
Gradebook Disk, \$65
requires 64K
Type to Learn Posters, \$16
Type to Learn Workshop
Manual, \$65
Type to Learn Student Activity
Book, \$7.95
Tips for Teaching Keyboarding
with **Type to Learn Video**
(Beta or VHS), free 30-day loan
to educators
Sunburst Communications
39 Washington Avenue
Pleasantville, NY 10570
(800) 431-1934
(800) 221-5912 (NY)
(800) 247-6756 (Canada)
(914) 769-5030
ages 7 and up

Typing Is a Ball,
Charlie Brown
McGraw-Hill
Princeton-Hightstown Road
Hightstown, NJ 08520
(800) 262-4729
\$29.95
ages 5-8
requires 48K

Typing Tutor IV, \$39.95
Lab Pack (5 copies), \$150
Simon & Schuster
Software Division
1 Gulf & Western Plaza
New York, NY 10023
(212) 373-8882

PRODUCT INFORMATION

Cotton's First Files, \$49.99
Lab Pack (6 copies), \$129
ages 5-11
requires 128K
supports Echo IIb and IIc
Cotton Plus, \$29.99
Lab Pack (6 copies), \$72
requires Cotton Tales
Cotton Tales, \$49.99
Lab Pack (6 copies), \$129
ages 5-8
MindPlay
Unit 350
P.O. Box 36491
Tucson, AZ 85740
(800) 221-7911

Echo IIb, \$129.95
Apple II Plus, IIe, GS
Echo IIc, \$179.95
Apple IIc, IIc Plus
Street Electronics
6420 Via Real

Carpinteria, CA 93013
(805) 684-4593

Mavis Beacon
Teaches Typing!,
\$39.95 IIe/IIc
backup disk, \$5
requires 64K
\$49.95 GS
backup disk, \$5
unprotected backup disk, \$10
requires 512K
The Software Toolworks
One Toolworks Plaza
13557 Ventura Blvd.
Sherman Oaks, CA 91423
(818) 907-6789
ages 7 to adult

Muppet Learning Keys
with Muppets on Stage
software, \$99
Apple II Plus Adaptor, \$9.95
requires 64K
Muppet Learning Keys Toolkit,
\$40
free 3½-inch disk swap
requires 64K
ages 14 and up
Sunburst Communications
39 Washington Avenue
Pleasantville, NY 10570
(800) 431-1934
(800) 221-5912 (NY)
(914) 769-5030

Shem the Penman's Guide to
Creative Writing, Reasoning,
and Programming
\$65, home version or
unrestricted school site license
requires ASCII word processor

AppleWorks recommended
demo disk, \$3
Chet Day
625 Smith Drive
Metairie, LA 70005
E-mail GENIE: A2.CHET
ages 12 and up

Stickybear Typing, \$39.95
Lab Pack (5 copies), \$75
backup disk, \$10
free 3½-inch disk swap
all ages
Optimum Resource, Inc./
Weekly Reader Software
10 Station Place
Norfolk, CT 06058
(800) 327-1473
(203) 542-5553

board and "helping hands" as aids in locating correct keys and learning proper finger positions. A "progress report" at the end of each practice session tracks your speed in words per minute as well as your errors.

Begin at Level 1 (the *j, k, d, f*, spacebar, and Return keys), progress through Level 24 (the @ sign), and finally achieve Level 30 (proper spacing and mastery of the most commonly misspelled words). The program offers three-minute and five-minute timed tests.

In Stickybear Thump, you'll have to type fast to prevent Bedford Stickybear from being "thumped" by blocks hurled by a robot. You'll have to type even faster to have Stickybear throw a ball to stop the block in midair.

Select "Stories," "Riddles and Jokes," or "Serious Thinking" for typing practice sessions. Working with selections from these categories can make keyboarding chores more "real"—even if the passages you're typing are from "Waiter, waiter!" jokes.

AI IN TYPING?

MAVIS BEACON'S A WINNER

If you're looking for a "one size fits all" typing program, **Mavis Beacon Teaches Typing!** from The Software Toolworks may be it. The Apple II/GS version I tested (an Apple IIe/IIc version is also available) elevates attractive features found in other typing programs to new heights.

"Mavis" provides practice sessions of graduated difficulty, immediate feedback in nearly two dozen types of progress charts, and a car-racing game for variety's sake. But that's not all.

You'll be astounded by the GS version's graphics: the title screen with its "ancient" Underwood manual typewriter, the on-screen GS look-alike, and the Guide Hands that help beginners learn correct finger placement. (Mavis turns this feature off automatically if she "senses" you're an experienced typist.) The program's text appears in yellow, while your copycat typed material shows up in black and your mistakes in red.

Mavis Beacon Teaches Typing! is unique in a still more significant way. The program's artificial intelligence tailors each typing lesson to your individual needs—whether you've opted to learn the traditional QWERTY or the faster Dvorak layout, whether you're "under 9," "9–14," or "over 14" years of age.

You determine the length of each session, set your speed goal, and take a pretest. Mavis determines what kinds of errors you tend to

make and how you can correct them.

At the "Chalkboard"—a full-screen illustration that looks like the real thing—Mavis discusses each lesson in terms of the Problem, its Remedy, and a Focus. She may advise you to practice typing to the rhythm of an on-screen metronome, do transcription typing from one of the lessons contained in the program's manual, or perform the Shift Key Drill.

THE ENTERTAINING EXPERT:

MAVIS MEANS BUSINESS

For a change of pace, Mavis may suggest the Arcade Race. Type whatever appears in "skywriting" and, watching the speedometer on your dashboard to keep track of words per minute, try to safely pass a rival car that's traveling at your target speed.

The program also allows for user "Alternatives." Ask Mavis to suggest another, "next best" lesson. Create a custom lesson that forces you to use one hand more than the other or to negotiate tricky letter combinations called "Keyboard Hurdles."

The program's easy-reader manual includes

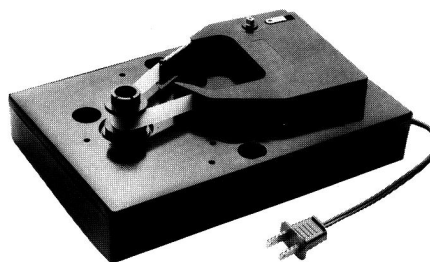
"A History of Typewriting," samples of business letters, and a chapter describing "The Résumé Writer." This accompanying program helps you organize, select, and format education and employment information to present your qualifications in the best possible light.

Mavis Beacon Teaches Typing! offers conventional typing lessons through state-of-the-art personal-computing power. It's easy to be critical of programs that spew superlatives about themselves, but here's a software package that, as the manual asserts, is "the finest typing program in the history of microcomputing." Mavis Beacon Teaches Typing! is both expert *and* entertaining—a combination that may be impossible to beat. □

CYNTHIA FIELD IS A FREE-LANCE WRITER SPECIALIZING IN COMPUTER-RELATED TOPICS. SHE IS A CONTRIBUTING EDITOR AND THE AUTHOR OF PRESS ROOM, *INCIDER'S* 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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BUILDING A FUTURE

By DAVID THORNBURG

AS THE CITY OF BAKERSFIELD DISAPPEARED in the rear-view mirror, we traveled far into the surrounding countryside. The car bumped its way along rural roads; groves of trees gave way to clusters of derricks, and the odor of crude oil seeped through the closed windows.

I saw a small residential area nearby—McKittrick, California, a company town located in one of the richest oil fields in the country. Next to the cluster of neat homes with their manicured lawns stood the object of my visit, the Belridge School—otherwise known as DACOTT 21/20, a District and Community of Tomorrow Today.

I've had the honor of visiting many technology-intensive schools, but I'd never seen anything like Belridge's universal computer access: Every student in the school has a computer in the classroom and a computer (with printer and modem) at home.

Student desks have transparent tops, to allow computers to be installed inside, with keyboards on pull-out trays for easy access. Most are Apple IIGSes, although there are a number of Macintoshes as well.

In addition, Belridge's Apples are networked. Students work in cooperative-learning groups of four, each with its own printer. The teacher has a separate computer, plus VCR or videodisc player connected to a large-screen monitor so that the whole class can see what's going on.

Technology pervades the entire school. The music room has not only a "real" piano, but a cluster of networked synthesizers as well, which allow the instructor to talk and listen to each student privately, even though several students may be working at the same time. Outside the school building, a satellite dish and antenna let Belridge broadcast on a UHF television channel to each home in the district.

UNLOCKING CREATIVITY

The driving force behind this program is Gary Peterson, district superintendent and principal of Belridge. Peterson and a devoted staff have created an educational oasis in the middle of a desert.

One of the classrooms I visited was set up for thematic instruction. All subjects were being taught around a common theme—the California coast. As I entered the room I could hear the faint sound of waves hitting the shore (from a tape player in one corner). The walls were filled with the beginnings of a "visual database" on marine mammals.

I had the pleasure of engaging this class in a brainstorming session, beginning with the presentation of abstract computer graphics I had synchronized to Debussy's *Girl with the Auburn Hair*. We knew from previous work that a few minutes of synchronized graphics and music can help break down mental blocks to the generation of creative ideas.

As I captured their thoughts on white boards, the kids started writing stories based on their ideas. In the time it would take to find a sheet of paper, they downloaded McGraw-Hill's word processor II Write from the network and were busy composing essays. Because II Write sports a "Mac-style" interface, the students experimented with typeface and page-layout options they wouldn't consider if they were writing by hand. But rather than interfere with the writing process, the computers seemed to be natural tools for them. They approached the technology with an ease that had taken me years to acquire.

Yet, as natural as everything in that classroom appeared, it didn't happen of its own accord.

WHAT'S THE POINT?

Computers have scarcely begun to penetrate our schools. We have more than 45 million elementary, junior-high, and high-school students in this country, but only 2 million classroom machines, most of which are locked away in computer labs. From this small base, it's hard to predict the impact of the technology, but Belridge serves as a model for what education can become.

Computers are so rare in most classrooms that the focus is often more on the technology than on education; by placing computers everywhere, Belridge has allowed the technology to fade into the ►

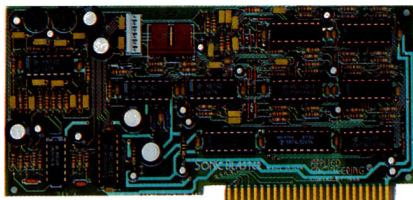


Sonic Blaster.™ It's why they put the "S" in IIGs.

Sonic Blaster™, the IIGs's first full-featured stereo digitizer, brings a new dimension to computing...the element of fun.

Record sounds, tailor them with extensive editing options and play your own amplified versions back through your home stereo speakers. Sonic Blaster automatically digitizes and plays back GS games that use the computer's built-in Ensoniq sound chip (as almost all do), with thundering results.

Kick back with your favorite computer game and immerse yourself in a roomful of sound effects. Create strange answering machine messages. Drop an interesting background sound into your phone conversations (we provide 17 to get you started). Change screen colors with a virtually infinite palette of color.



Sonic Blaster's ultra-low-noise digital design is certified by the FCC.

Use your own equipment.

Use the equipment you already have. You don't need special amplified speakers because Sonic Blaster's built-in amplifier works with standard 8 Ohm speakers, small or large, including those monsters next to your stereo. Take sounds from your favorite TV show, album, compact disk, VCR, even a microphone. Then amplify, play backward, create echoes and

fades, cut, copy and paste with the Super Hi-Res software we include.

We designed Sonic Blaster to be complete. Here's a quick tour of part of the software screen:

The Buttons

Stop, Play, Pause and Record buttons, perform the same functions they do on a tape recorder. Also included are Single and Continuous Play buttons and a VU Meter to visually represent input levels.

The Sound Graph

The Sound Graph is the waveform at the bottom of the screen. Portions of the Sound Graph are selected with the mouse and then edited using the cut, copy and paste options within the Edit menu.



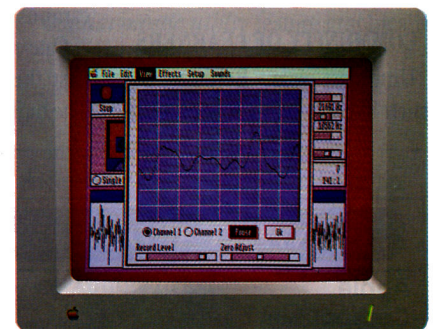
Seventeen sound effects to get you started. Add your own collection of sounds.

The Bars

The Volume bar controls amplitude of the playback. Playback and Record mode sample rates are adjusted with the next pair of bars and the Record Level bar adjusts the level from the source connected to the Sonic Blaster's input connector.

The Blocks

Three blocks give readouts of file length, available memory, bytes selected and resolution ratio.



"See" the sound on the oscilloscope.

The Oscilloscope

Sonic Blaster's built-in oscilloscope gives you a real-time display of input sounds. Use it to set your input levels before recording. Or use the Auto Gain feature to adjust the level automatically.

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background. Computers there are no more deserving of special attention than books, pencils, or any other educational tool.

Why is the distinction important? The reason for creating a technology-rich environment has little to do with technology itself. The ongoing transformation of our society from an industrial to an information-based economy presents special challenges for education. Belridge made a conscious decision to prepare students for their future, not for our past. The school doesn't see technology as a quick fix for education's problems, but as the next step in the logical movement from the tools of the past to those of the future.

A COMMUNITY OF LEARNERS

Until last year, Belridge was much like any other school in the

country. The Belridge Governing Board started exploring the impact of rapid social change and decided to transform their school in a way that would meet the long-term needs of the students and the town.

Acquiring the technology turned out to be simple. But in addition, the school had to tackle the more complex task of helping educators make the transition to a new kind of teaching—something that required tremendous dedication on the part of the teachers as well as a willingness to take risks and learn new skills. This effort took place in full view of the surrounding town, resulting in a school/community bond that's evident as soon as you step on campus.

One night I stayed at Belridge past the traditional closing time. The building stayed open, and en-

tire families came to school for informal sessions on computer graphics, programming, and any number of other topics.

The students served as teachers for the parents, and it was plain that "continuing education" was something that appealed to everyone—adults and children alike.

IN PERSPECTIVE

When you look at a project like this one, there's always the risk of confusing the tools with the process.

Belridge's goal isn't to "teach" with computers. It sees education as a human task, and recognizes that computers will never replace people in education.

The school is focused on helping students become independent, self-directed learners in a changing world. This belief in education as a lifelong process can be seen

in the students' enthusiasm for their course work, as well as in the spirit of the educators themselves. Their pride comes not from access to technology, but from their ability to develop minds in an atmosphere of trust and support.

A VISION OF EDUCATION

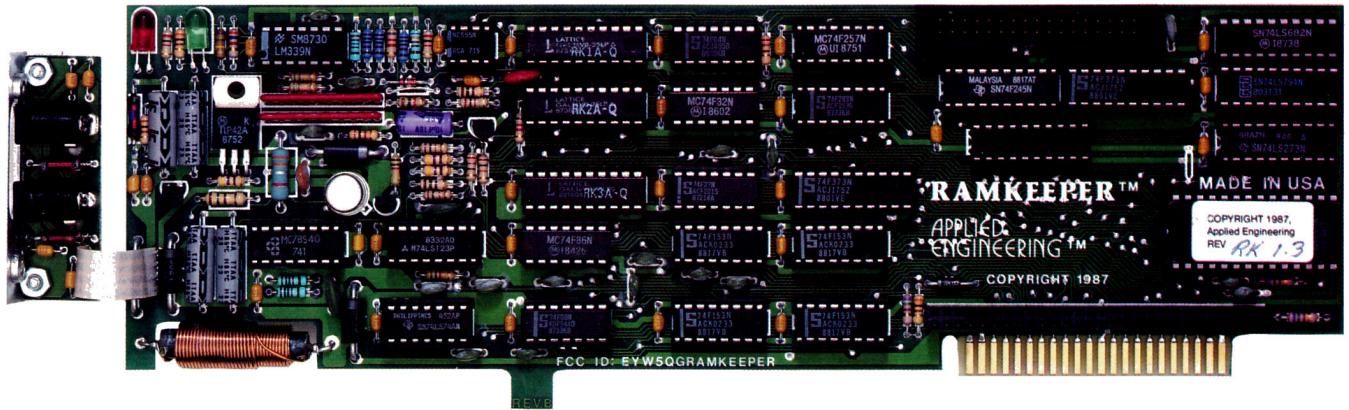
Belridge uses technology to empower teachers, students, and parents to become more effective learners, more flexible thinkers.

There's nothing in this school that can't be replicated in every corner of this country—all it takes is a lot of dedication and a clear vision of just how joyous education can be. □

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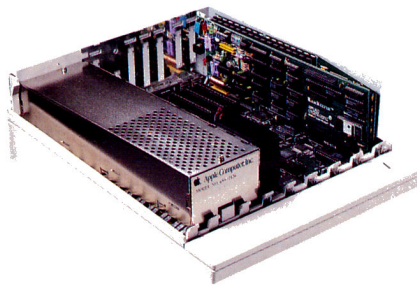
RamKeeper lets you add a second memory board to your memory expansion slot with a special "back pocket" connector. That way, you can use your 1 MEG Apple board and still expand beyond its 1 MEG limit. And RamKeeper "sees" the two boards as one, so all you'll notice is the increased memory.

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Safe storage

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RamKeeper is easy to install and stores programs in an "instant on" electronic hard disk.

while the power was off. To protect the operating software against program crashes, we installed RamKeeper's controlling firmware in an EPROM.

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We designed RamKeeper to be easy to use. Instructions are clear and most functions are automatic. For example, there's no need to manually configure if you add a second board, it's done automatically. The configuring is linear, so there's less chance of a program crash. And *you* decide how much memory to devote to ROM and to RAM—all without affecting your stored files.

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**MACE ON
GAMES**

DELICATE BALANCE

By **SCOTT MACE**

Two thrilling new current-events games simulate the dynamics of military and diplomatic conflict.

FUTURISTIC GAMES PIT YOU AGAINST THE netherworld of dragons and wizards; current-events games keep you firmly rooted in the here and now. Of course you can't simulate the entire world on your Apple II; although they depict realistic conditions, these games are limited by the computer's ability or the designer's imagination.

Two software companies have designed thrilling new world-events games by simplifying their objectives, however. Leisure Genius' **Risk** (711 West 17th Street, Costa Mesa, CA 92627, 714-631-1001, \$39.99) and Mindscape's **Balance of Power: The 1990 Edition** (3444 Dundee Road, Northbrook, IL

marily an entertaining social interaction, however, *Balance of Power* provokes a deep examination of today's geopolitical stakes.

WORTH THE RISK

Risk stretches the Apple II in new directions. Its map of six continents divided into 42 countries is displayed on a wraparound screen that scrolls rapidly in either direction. A "view world" option lets you see all six continents at once. Because your Apple II can't display all 46 countries' names, the scrolling map is a necessity.

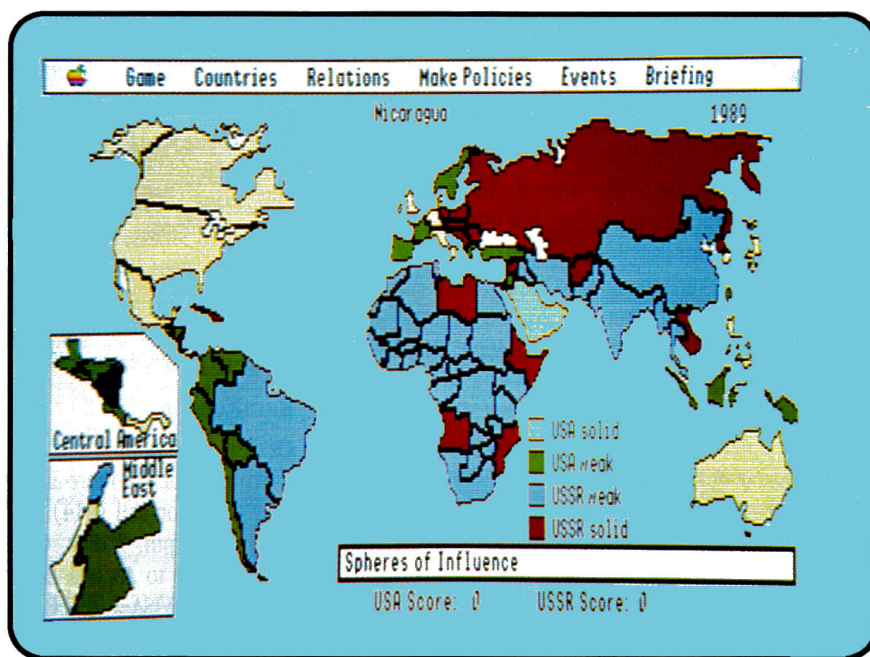
The game's objective is straightforward—you're out to conquer the world. It's a military-strategy game, and you'd better plan your troop deployment carefully or you'll wind up boxed in and prey to your foe. Two to six players start out with an equal number of countries (which either the computer or each player chooses) and armies. A simulated throw of the dice resolves every conflict. The game matches the attacker's highest roll against the defender's highest toss, then deducts the defeated armies automatically.

Although it's not dramatically different from the Parker Brothers board game, *Risk* makes for good computer entertainment. Its map and rules are similar to those of the original board version, and you can redeem simulated "cards" won during conquest for extra armies. *Risk* fans will love the new

optional playing parameters. For example, if you have more than 12 armies in any territory, you must redeploy them or you'll lose your extra troops.

PERFECT BALANCE

When you take global gaming to the Apple IIGs, you'll notice immediately that you can display many ►



Balance of Power: a deep examination of today's geopolitical stakes.

60062, 312-480-7667, \$49.95; see Editors' Choice, "Lessons for the Nuclear Age," June 1989, p. 148) represent the current leaders among Apple II world-building games.

Both games do far more than place countries on an electronic map—they simulate the dynamics of military and diplomatic conflict. While *Risk* is pri-

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more countries on screen. Balance of Power: The 1990 Edition features 80 nations. I recommend using an accelerator, though, because a plain-vanilla GS will spend a few minutes drawing those 80 countries on screen.

The conflicts in Balance of Power are diplomatic rather than military. The original game involved the United States versus the Soviet Union, a so-called *bipolar* simulation. The more advanced options included in the 1990 Edition are *multipolar*.

THIRD WORLD

The program now gives each country independent attitudes (such as being fully allied with or merely sympathetic to either of the two major powers) that affect its reaction to world events.

No longer is every country just a pawn of the U.S. or the U.S.S.R. This realistic simulation makes the game much more difficult—and enjoyable.

If a nuclear war breaks out, even accidentally, both sides lose. Balance of Power provides no scenario in which either side is completely victorious.

Rather, the winner of a given game is likely to be the side that gains the most prestige by facing down the opponent during a diplomatic crisis.

STAY COOL

During these critical times you're not alone. Four advisers counsel you by assessing your chances of bluffing past your opponent.

Clearly, it isn't easy to reduce the actions of 80 countries to a computer program, but Balance of Power is as close to global reality as we're likely to get on the Apple II.

PLUS AND MINUS

In both games, forcing players to deal with limited resources is both an asset and a handicap. Risk concentrates on armies; Balance of Power focuses on limited funds

for foreign aid.

The plus is that both games play fairly quickly, as conflicts inevitably come to a head as soon as you've deployed your armies or expended your funds.

The disadvantage is these simulations miss out on nations' military and economic vitality. Risk misses the natural escalation of armies that has marked modern history; Balance of Power glosses over nations being able to borrow billions to build their might.

Consequently, these games don't represent the ultimate global conflict. Yes, Balance of Power is especially rich in geopolitical details, and Risk is great fun. You can play as a benevolent participant or as a ruthless warmonger.

WORLD CLASS: MICROCOSMS ON SCREEN

Balance of Power's prestige rating, which measures your achievement in the game, suggests that someday computers will be able to capture the nuances of human interaction. Reducing all those nuances to choices on a menu or in a dialog box, however, should invite some hoots from real geopoliticians.

For now, let them hoot. We've come a long way from the early days of Apple II gaming. Computers can capture whole micro-worlds with increasingly vivid details, making games all the more exciting and challenging.

The mere video game, although seemingly immortal, pales in comparison to the computer simulations of today. The Apple II can be proud to have played such a pivotal role. □

SCOTT MACE IS EDITOR AND PUBLISHER OF *MICROCOSM*, A MONTHLY NEWSLETTER ON COMPUTER GAMES. WRITE TO HIM AT 9350F SNOWDON RIVER PARKWAY, SUITE 277, COLUMBIA, MD 21045-5260. ENCLOSE A STAMPED, SELF-ADDRESSED ENVELOPE IF YOU'D LIKE A PERSONAL REPLY.

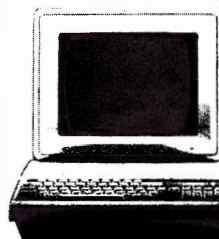
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V IDEO MAGIC

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.

NOTCH FILTER

By Bruce Jordan

MANY ARTISTS AND ANIMATORS are thrilled by the Apple IIGs' exciting RGB (red-green-blue) graphics capabilities. Unless you're willing to copy scores of disks or drag your GS around town, though, no one but you will ever appreciate the full, glorious color and detail of your designs.

Here's a brainstorm—why not copy your art with a videocassette recorder? That way anyone with a VCR (and there are a lot more VCRs than GSes!) can see your work. But hook up the composite output to your VCR, bring up your art, and all you see are messy colors. Try adjusting your television, and you still have a rainbow effect running wildly across the screen. What happened?

RGB is a very efficient, precise way to send and display video information. Your television and VCR don't use RGB format, though. Instead, they use a composite-video standard known as NTSC (National Television System Committee). The video information in NTSC format isn't as precise as RGB, and much of a picture's clarity is lost in the conversion process.

Why? Composite video transmits picture information via two separate electronic signals, hence the term *composite*. The first signal carries the *chroma*, or color, information for all

three hues, rather than separately as in RGB video. The second signal carries the *luminescence*, or brightness, information. Your picture loses its clarity when the chroma and luminescence signals overlap partially, creating a third signal your TV interprets as random color information. What you see on screen is your television trying to put random colors everywhere.

The solution to the RGB-to-NTSC conversion problem is simple: Remove the chroma/luminescence overlap with an electronic device known as a *notch filter*. It's a very selective

"gate" that lets signals pass through only if they're either above or below a particular "tuned" frequency, as shown in **Figure 1**. The overlap frequency in the GS' RGB-to-NTSC conversion occurs at approximately 3.58 megahertz. Surprisingly, a 3.58-megahertz notch filter is simple in design, inexpensive, and easy to construct.

According to the schematic in **Figure 2**, the circuit consists of eight commonly available parts (see the accompanying **Table**), and is powered by two nine-volt batteries. Capacitor 1 (C1), choke 1 (L1), and trimmer potentiometer (or *pot*) 1 (R1) make up the actual filter section you tune to 3.58 Mhz.

The rest of the circuit is a compensating amplifier, consisting of resistors R2 through R4 and an operational amplifier. Because no filter is perfectly selective, some of the composite signal's desired parts will be attenuated, or reduced. The amplifier's job is to boost the weakened signal back up to normal strength.

You can assemble the circuit on a breadboard, wire-wrap, or printed current card. ►

R1	20K Ω 15-turn trimmer potentiometer
R2	10K Ω 15-turn trimmer potentiometer
R3	100K Ω 15-turn trimmer potentiometer
R4	1K Ω carbon resistor
L1	14–28 μ h adjustable-core choke
C1	100pf ceramic capacitor
IC1	LM6316 operational amplifier (National Semiconductor)
B1,B2	9VDC batteries
OPTIONAL PARTS	
S1	DPDT switch
P1	5VDC red LED
R5	2K Ω carbon resistor
J1,J2	RCA-type jacks
	16-pin DIN socket
	battery clips and holders
	metal case

Table. Parts list.

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3	8	13	18	23	78	83	88	93	98	153	158	163	168	173	228	233	238	243	248	303	308	313	318	323	378	383	388	393	398
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Figure 1. Filter attenuates "tuned" frequencies.

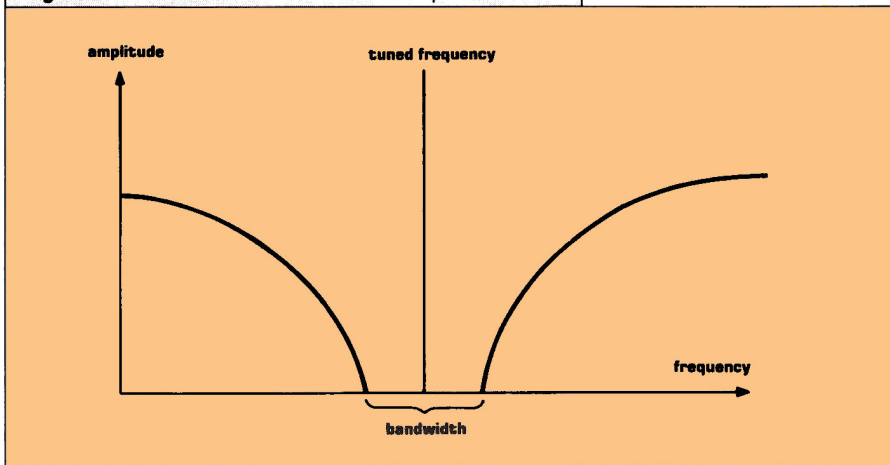
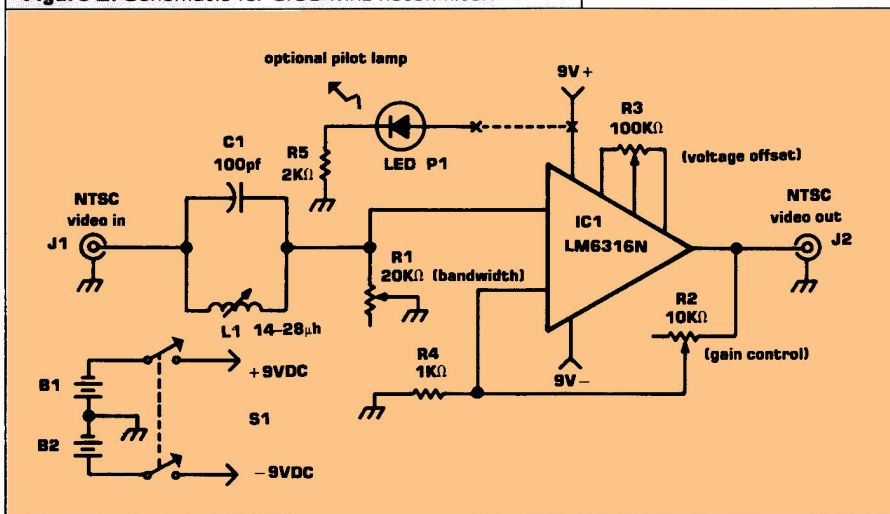


Figure 2. Schematic for 3.58-Mhz notch filter.



The connectors are simple, so I'll leave the details to you.

Once you construct the circuit, you'll have to make some adjustments. With the filter disconnected and the power off, center all three trimmer pots. Next, using a plastic allen wrench or a thin, wooden stick with one end whittled square, center the slug inside the coil, L1. (Never use anything metal, such as a small screwdriver, to adjust the coil.) Now you're ready to connect the filter and power up.

The notch filter goes in between your GS' video-out port and the video input on your television or VCR. Run a coaxial cable from your GS' composite-video output to the filter's input; run another coax from the filter's output to the video input of your VCR, or your television's monitor input (not the antenna).

Switch on your television, GS, and filter, and

an image should appear on screen. Adjust the coil carefully for the best picture. Next, adjust R1 slightly, and see whether the picture improves. (R1 controls the bandwidth of the notch.) By finding the proper settings for the coil and R1, you should notice a dramatic improvement in picture quality. If the picture seems a little dim, try adjusting R3, which controls the amplifier's gain for a slightly stronger video signal. □

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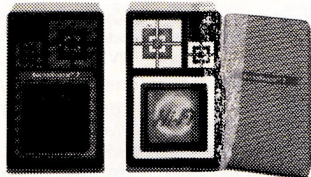
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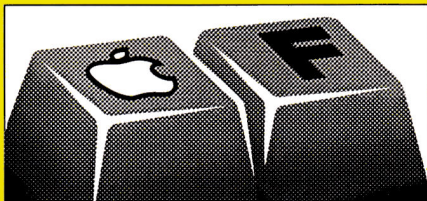
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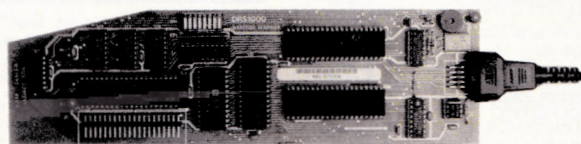
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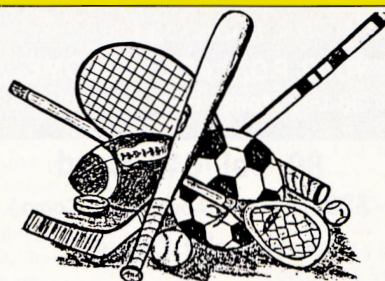
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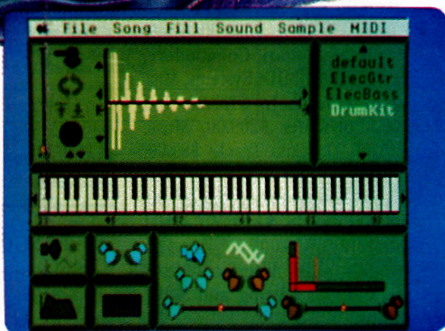
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INSTANT MAESTRO



ELECTRONIC ARTS HAS GOT THE BEAT, and you can hear it in **Instant Synthesizer**. Following Instant Music's lead, this program makes creating music and sound with your Apple IIGS as easy as, well, do-re-mi. As in Instant Music (Editors' Choice, October 1987, p. 144), you can select a recorded tune and play along with the mouse, but with Instant Synthesizer at your fingertips that's just the beginning. Professional musicians or novices can record and edit serious compositions or just jam along and have fun (as *inCider*'s editors are known to do).

Get ready to rock 'n' roll or twist 'n' shout—Instant Synthesizer, featuring a four-voice synthesizer, digitizer, and sound editor, turns your GS into a sophisticated studio. The program's main work screen reveals a full mixing-board display with all the options and functions of a "real" synthesizer.



The screen is divided into panels. Its top section contains the song, sound, sequencer, and file areas; running across the center of the screen is the keyboard where you'll see the appropriate "ivories" light up while you play.

The bottom left-hand corner contains four additional panels—synthesizer, effects, envelope, and keyboard map. Select the synthesizer panel to adjust pitch, octave, vibrato depth, speed, volume, and attack rate. Spice up your sound by adding such funky effects as stereo and stereo panning (increasing the volume of one channel or the other), delay and delay panning, vibrato lock, and doubling.

The envelope panel is similar to a piano's bass pedal, letting you alter the volume, sustention, and release of individual sounds and instruments. The map panel shows you a par-

ticular sound's keyboard map—shaded piano keys that combine to play a specific sound (such as a dog's bark) or voices (such as a flute or harp). You can edit the sample and even create multisample sounds. Instant Synthesizer supports sound-sampling boards from MDIdeas and FutureSound, as well as stereo cards for full stereo output.

Instant Synthesizer comes with a data disk of animal sounds (including three different dogs, plus elephant and sheep "voices"), instrument tones, and a variety of prerecorded songs. The quality is good, but to really appreciate the program, get some amplified external speakers such as the Bose Roommates.

If you have a MIDI-capable keyboard (*musical-instrument digital interface*, such as the Casio CZ-101 with which we tested Instant Synthesizer), you can record into the program, then edit, cut, warp, shape, blend, bend—whatever it takes to achieve the desired effect.

Senior Editor Paul Statt says, "This won't make things easier for Apple, given the company's current legal struggle with the Beatles' recording company, but Instant Synthesizer is a welcome addition to the growing roster of music products for the IIGS."

"With Instant Synthesizer," adds Review Editor Lafe Low, "you can make serious music on the IIGS without being a serious musician—or any kind of musician for that matter."

Stay tuned to *inCider*'s Reviews section for a full-volume evaluation of Instant Synthesizer in the near future. Listen to Electronic Arts (1820 Gateway Drive, San Mateo, CA 94403, 415-571-7171), and for \$79.95, you can surround yourself with sound. □

EDITORS' CHOICE SINGLES OUT ONE PRODUCT EACH MONTH THAT THE *INCIDER* EDITORS FEEL IS A SIGNIFICANT ADDITION TO THE APPLE II FAMILY OF PRODUCTS. PRODUCTS EVALUATED ARE AMONG THE MOST RECENT RELEASES AND MAY NOT BE AVAILABLE YET FOR RETAIL DISTRIBUTION.

BIG TALKERS



Street Electronics' Echo® products have set the standard for microcomputer voice output for over eight years. Teachers and parents have found that talking software adds a whole new dimension to computer-based learning.

Children not only enjoy the novelty of having their computer talk to them, their attention span is increased, verbal cues and reinforcement keep them motivated as well as assisting non-readers, and learning becomes more personalized and fun.

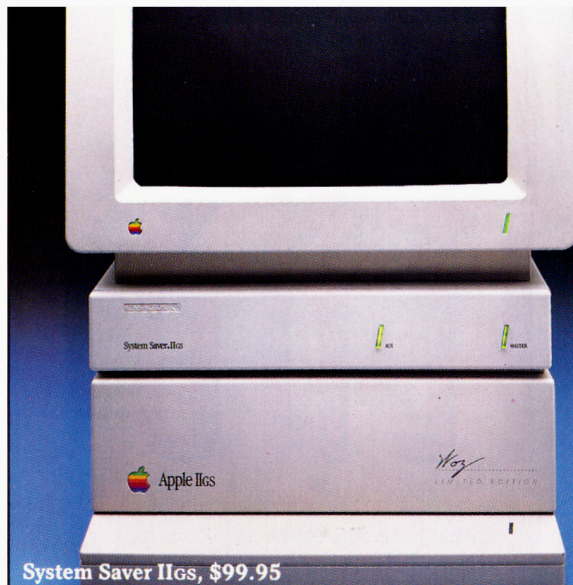
Although there are a few quality programs which process "software only" voice, it is still necessary to use a dedicated speech add-on peripheral or plug-in board for nearly all of the "talking" educational software. There are over 100 software manufacturers including *Scholastic*, *Optimum Resource/Weekly Reader*, *Houghton Mifflin*, *Hartley Courseware*, *DLM*, *Edmark*, and *Laureate Learning Systems* who presently offer Echo compatible educational and special needs programs, and the number is constantly growing.

Most of the educational programs which are compatible with the Echos take advantage of the high quality female voice output. However, in those programs which require an unlimited vocabulary; for example, a talking word processor, the Echos' text-to-speech capability produces speech in an intelligible robotic-type voice.

The Echos come with a tutorial style manual, an external speaker with a volume control knob and headphone jack, and supporting software. The Echo IIB runs on the Apple® IIe and IIGS, the Echo IIC runs on the Apple IIc and IIc Plus.



Street Electronics Corporation
6420 Via Real, Carpinteria, CA 93013
(805) 684-4593



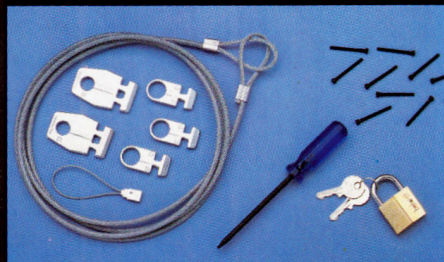
*"If it didn't say
Kensington on the
front, you might
think it came
from Cupertino."*

Editors' Choice
inCider magazine

System Saver IIGS, \$99.95



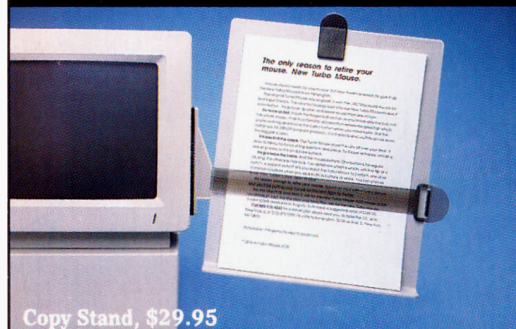
System Saver®, \$89.95



Apple® Security System, \$49.95



Mouseway, Mouse Pockets, \$9.95 ea.



Copy Stand, \$29.95



Printer Muffler® 80 and Stand,
\$69.95 and \$29.95



Universal Printer Stand, \$24.95



IIGS® Anti-Glare Filter, \$49.95



Turbo Mouse® ADB, \$169.95



Dust Covers, \$9.95 to \$24.95

That's why inCider magazine named System Saver IIGS Editors' Choice for March '88.

They were impressed at how well its styling blends in with the IIGS. They appreciated the convenience of its front-mounted switches. And they loved the way it offers surge suppression, extra outlets and a cooling fan, all for \$99.95. In summary, they thought it went "a long way toward making the computer easy to use."

Of course, we were delighted with their reaction. After all, making the Apple II easier to use is something we've been working on for the last seven years. In fact, we've figured out so many ways to do it, we can't fit them all on one page.

That's why we've also made it easy for you to get more information. Just call the toll-free number below, and we'll send you a free 20 page brochure. Or write to us at Kensington, 251 Park Ave. S., NY, NY 10010. (212) 475-5200.

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