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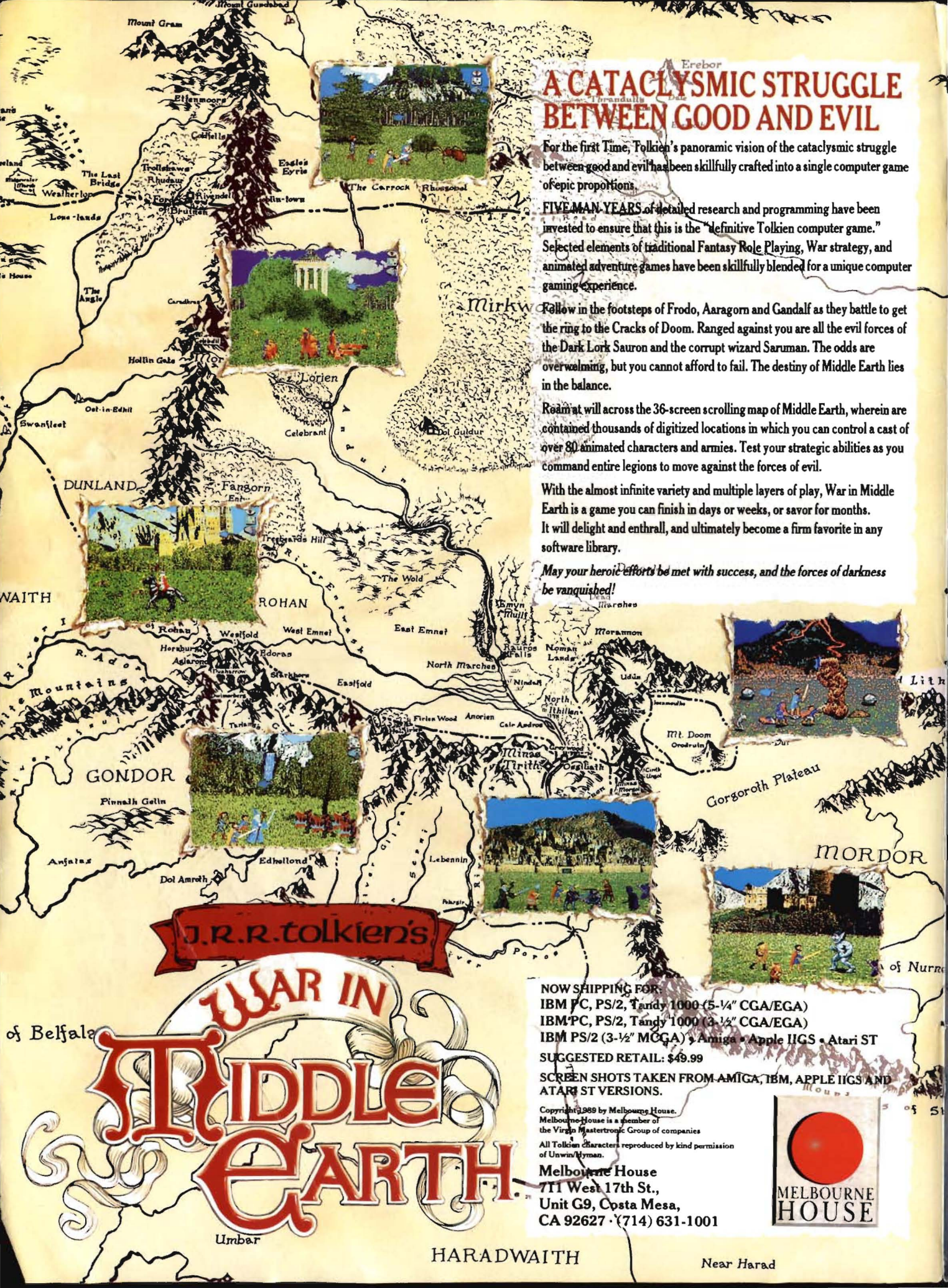
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J.R.R. Tolkien's

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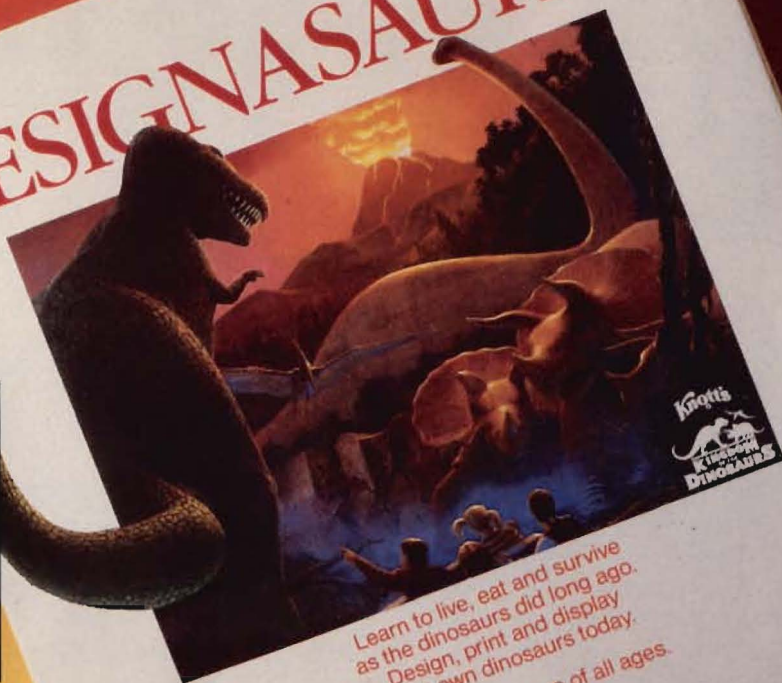
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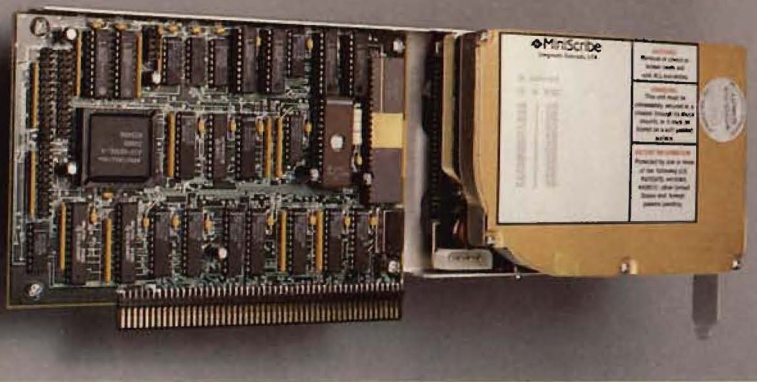
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The HardFrame/2000 photo shows the product with a MiniScribe twenty megabyte hard disk installed. Hard disks are *not* included in the purchase price of HardFrame. Note that if placed in the first slot, HardFrame uses only one slot even with a disk attached.



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Perspectives from the Editors

Ever since we decided it was time for us to produce an Amiga magazine, it's been a bit like a three-ring circus here at COMPUTE!. We've had high-level meetings, low-level meetings, and everything in between. We looked at the competition, asked our readers what they would like, talked to industry insiders, and finally came up with the product you hold in your hands—*COMPUTE!'s Amiga Resource*. To be honest, we love it. We hope you do, too.

We've put together some thought-provoking columns—and this is a strong part of our magazine—so we'd like to take a moment to introduce some of our writers. Throughout the magazine, you'll quickly recognize the columns by finding the digitized faces. These faces (or rather, the originals) belong to some of the most distinguished Amigaphiles around.

For instance, you'll see me and Randy Thompson facing each other in "Taking Sides." Randy is a long-time Commodore advocate who still writes "The Programmer's Page" in *COMPUTE!'s Gazette*. I'm one of those ex-Atari 800 people (I know—boo! hiss!).

Or take a gander at the inimitable Jim Butterfield, who was a Commodore guru long before there was such a thing as a guru-meditation error. Jim is a long-time contributor (to say the least) to many of COMPUTE!'s publications.

Shay Addams loves games. He's the founder of *Questbusters*, an excellent periodical devoted to coverage of adventure games. And if you're a beer connoisseur, you might recognize his name from another setting—he used to write a series for *High Times Magazine* titled "From Beer to Eternity."

Sheldon Leemon's face, which lights up our magazine, is also about to light up TV sets across the country on the game show "Jeopardy." The date will be April 19. We'll let you in on a secret: He has won a trip for two to the Bahamas. Sheldon has written popular Amiga books, including *Inside Amiga Graphics* and *The AmigaDOS Reference Guide* (with Arlan Levitan). Sheldon will be raking through the shareware world looking for gems in "Best of the Boards." He'll also be supplying us with a steady stream of hot gossip.

Arlan is on his third Amiga. It's a computer he loves to hate and hates to love. He writes the popular "Levitations" column in *COMPUTE!* magazine. While the rest of us compute almost exclusively on the Amiga, Mr. Levitan computes in the real world—on just about every computer. You'll find his face in "Abstractions," which begins this month.

Rob Peck, who wears the confident look of a genuine Commodore insider, was manager of technical documentation for the Commodore Amiga. He wrote *Programmer's Guide to the Amiga* and *The Amiga Companion*. If you have an Amiga programming question, Rob is, without doubt, one of the best people to ask.

John Foust has been writing about the Amiga since day 1. He's the former technical editor of *Amazing Computing* magazine. He created the AMICUS public domain disks, and he's a partner in an Amiga software company, Syndesis.

By the way, Randy and I would like to make a public apology to all of our columnists. If we stretched or squashed your face, added or deleted hair, or inadvertently created splotches that look like moles or tattoos, we take full responsibility for our creative rendering.

—Rhett Anderson

Looking ahead...

We've seen a veritable flood of quality artwork for "Amiga Art Gallery," so prepare for some real treats. Readers who like to create their own art will enjoy the preview of *Deluxe Paint III*.

On disk, we'll have "V," a powerful and flexible picture viewer that will handle just about any image you feed it, including brushes, HAM pictures, and overscan images. Also on disk, you'll find some great games and utilities—plus more.

The theme of our next issue is games. Hear what industry leaders say about them. What are the favorite games that they've published? And what games from competitors do they wish they had published? Also, you'll find out about the top-ten new games in Europe.

Our next issue isn't all games, however. Read about the latest developments with Commodore's Bridgeboard—the product that makes your Amiga 2000 compatible with the thousands of pieces of IBM PC software. And learn just how far you can customize your Amiga system.

As usual, our entertaining and enlightening columnists are at work, digging up rumors, looking hard at new products. Their efforts are your reward in the next issue.

READERS FEEDBACK

Send questions or comments to Amiga Feedback, *COMPUTE!'s Amiga Resource*, P.O. Box 5406, Greensboro, North Carolina 27403. We regret that, due to the volume of mail received, we cannot respond individually to questions. We reserve the right to edit letters for clarity and length.

Put Amigas in Schools

With Apple's recent price increases (\$2,000—IIGS, \$3,000—Mac SE), Commodore should be able to woo many schools into its camp. Children like bright, pretty things, but they hate to read a lot of text. An Amiga with good software can teach not only graphically, but also acoustically. Talking machines really interest young people (witness the success of *Speak 'n Spell*), and the Amiga's built-in speech capabilities are ideally suited for that purpose.

High schools and colleges are likely to be even more interested in lower-priced systems with CAD/CAM capabilities (industrial arts and engineering), spreadsheets and word processors (business classes), enhanced BASIC (computer classes), digital sound (music department), and outstanding graphics (visual arts). But Commodore must show its support and be willing to stand behind its machines.

Commodore must direct its energy to be successful, but more importantly it must be visible—let the people know about the Amiga, not just hope for word-of-mouth advertisement. If Commodore is able to make its presence felt in the education market, home users will flock to the system for the same reason that they went to Apples (*Our kids will have an advantage because they have the same computer at home that they have at school*). Commodore must focus on the education market if the Amiga is to be the huge success it can be.

Andrew Clark
St. James, MN

Bridge to the 500?

Is there any way I can use a 2088 Bridgeboard on my Amiga 500?

Laszlo Babocsi

If you're willing to make the investment, yes.

The 2088 Bridgeboard is a card designed specifically for the Amiga 2000. It plugs into the computer's internal expansion bus where the Amiga slots and IBM PC-compatible slots align. The biggest difficulty in using the Bridgeboard on a 500 is finding a place to plug it in: The 500 has no internal slots; it doesn't even have room for them.

Fortunately, a few companies make expansion boxes that allow you to use Amiga 2000 cards on the 500. These boxes plug into the left side of the 500 and provide 2000-compatible slots with their own housing, circuit board, and power supply (by itself, the 500's power supply is too weak to supply juice for additional hardware). Before you purchase one of these products, however, you must be sure that the expansion box provides IBM PC slots as well as Amiga slots. The Bridgeboard requires both.

Comp-U-Save (410 Maple Avenue, Westbury, New York 11590; 516-997-6707) sells a six-slot expansion box for around \$520 that can accommodate a Bridgeboard. (This and other 500 expansion boxes are mentioned in our feature "Expanding the 500," found elsewhere in this issue.) If you just want to run software written for the IBM PC, a \$520 price tag seems a bit high—you could almost buy a brand-new IBM PC clone for that much. Add in the price of the Bridgeboard—around \$700 suggested retail, \$500 mail order—and you're talking more money than it costs to get a whole new Amiga 500.

Depending on your needs, you may find adding 2000 slots to your Amiga 500 a desirable solution. After all, peripherals such as memory expansion and hard drives are cheaper when you buy them as cards. If all you require is IBM PC compatibility, howev-

er, you're better off buying a Tandy, a Commodore Colt, or another PC clone. ▲

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for programming questions

Programmer's Page

for programming tips

Submissions Reviewer

for "On Disk" program submissions

Amiga Art Gallery

for art and animation submissions

User Group Update

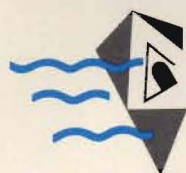
to be included in our regular listing

Amiga Game Machine

For months we've been hearing rumors about the possibility of an Amiga game machine from Commodore. The machine has been described as a **sawed-off 500** with no keyboard or disk drive and a cartridge slot for **games on ROM**. The target price for the machine is **under \$200**, to match the expected price tag of the new 16-bit Nintendo and Sega systems that may appear in the U.S. as early as the end of 1989.

At first the rumors were vague and hinted that the videogame version might come from a third party such as Epyx, licensing Commodore's chip set. But more

Company officials have expressed doubts about the wisdom of slugging it out with Nintendo, even given the huge base of impressive games already available in the Amiga format. They also **worry about the startup costs** associated with a mass-market machine and wonder if a \$200 retail price tag is a realistic one, given the production costs. Should Commodore ever produce an Amiga game machine, it would be an **ironic closing of the circle** since the Amiga was originally conceived of as a super home-video game machine during the height of the last game boom five years ago. Although its



The Ear
by Sheldon Leemon

recently, sources within Commodore itself have acknowledged that **the company has been experimenting** with a low-end configuration.

There had been some speculation that Commodore planned to show the new machine at the **Winter Consumer Electronics Show**, a trade show at which the company had suddenly decided to exhibit after having skipped it a number of times in a row. But because of the **enormous popularity** of its 8-bit system, Nintendo apparently decided not to show its high-end product at CES, and **Commodore apparently followed suit**.

powerful multitasking operating system has since lifted the computer's capabilities far above that original conception, its **astounding graphics and sound** are a legacy of its videogame heritage.

Although a compatible videogame system would **inspire even more Amiga software** development, we hope that if Commodore brings such a machine out, it will be called **anything but an Amiga**. Atari still has credibility problems with its ST because it is much better known as a game company than as a computer company. Commodore doesn't need to create similar confusion.



Amiga Goes Political

Look to your local PBS station this April for "Borders," a political art video. The borders that the program touches upon are the physical, political, and moral borders of modern society. The Amiga plays an integral role in the video.

Among the tools that were used to create the program are *Deluxe Paint II*, *Photon Paint*, and *Aegis Animator*.

The Amiga's versatile graphics promise to give the work a unique style. The show is part of the series "New Television." It was directed and produced by Merrill Aldighieri and Joe Tripician and was written by Robert Anton Wilson.

The Force Is with Brøderbund

The latest release from Brøderbund, *Star Wars*, is based on the Lucasfilm movie and the coin-operated videogame. The game places you in the role of Luke Skywalker. You must maneuver an X-wing fighter through attack waves in an attempt to destroy the Empire's Death Star.

According to Brøderbund, the 3-D view from the cockpit provides images similar to ones seen in the movie.

Star Wars has a suggested retail price of \$39.95.

One of Brøderbund's affiliate labels, Maxis, has also released a new program for the Amiga. *SimCity* allows users to control an entire city or design their own. The program simulates in detail seven major cities of the world. Each city is animated with

New Products by Mickey McLean

moving traffic, construction, planes, and boats. Players must improve the quality of life by taking action against natural disasters, pollution, crime, land values, and traffic. *SimCity* retails for \$44.95.

Brøderbund, 17 Paul Dr., San Rafael, CA 94903-2101

Emulating the Mac



One of the strongest selling points of the Atari ST these days is its ability to run Macintosh software, using Dave Small's Spectre 128 emulator cartridge. Working independently of Small, a **young programmer from New Zealand** named Simon

Douglas has come up with a similar emulator program for the Amiga. ReadySoft, the Toronto firm that released **Dragon's Lair** late last year, plans to market the emulator under the name Amax.

In order to **fend off lawsuits from Apple**, Amax will be a hardware/software combination that requires the user to plug genuine Apple operating system ROM chips into an adapter box before the emulator software will work. The adapter hardware can also be used to hook up an external Macintosh disk drive (Amax can only partially read Mac disks in Amiga drives). Because the Amiga and Macintosh use the same family of microprocessors, compatibility of the Mac emulator should be pretty good, and **Macintosh programs will run at full speed** on the Amiga. Although running Mac software on an Amiga definitely falls into the category of **neat stuff**, don't expect this new capability to have much effect on Amiga sales. The new 128K Apple ROMs that are required to run programs like **HyperCard**, **Adobe Illustrator**, and **PageMaker** are getting scarce. Not only are Atari ST owners buying them for the Spectre 128 emulator, but do-it-yourselfers are using them to make their own "**Hackintosh**" **Mac clones**. Although Amax can run with the cheaper, more plentiful 64K ROMs, it is limited to older versions of the system software and is much less compatible when those ROMs are used. Since **Apple controls the supply** of new 128K chips, the success of Amax may depend on Apple's developing a kinder, gentler attitude toward sharing its toys.

Street Gangs and More



An action-oriented street-fighting game, **Bad Dudes**, has been released by Data East. The game is based on the company's arcade game of the same name.

Players assume the role of a modern-day hero on a mission to rescue the President of the United States from deadly kidnappers. Blade and Striker, two street fighters who are out to preserve good and justice, must fight their way through waves of ninjas, dogs, and other enemies, using weapons such as knives, shurikens, nunchakus, and their fists.

Fast reflexes and the ability to stay calm under pressure are necessary in this two-player game.

Bad Dudes is available for

the Amiga and carries a suggested retail price of \$44.95.

Data East has also announced the release of three other titles in the Amiga format. In addition to **Bad Dudes**, Data East has released **Platoon**, **Robocop**, and **Guerrilla War**.

Translated from the award-winning movie, **Platoon** places players in the middle of the Vietnam War. **Robocop**, also based on a movie, recreates the action on the streets of Detroit. In **Guerrilla War**, players are involved in a hostage rescue during the Civil War. Each title retails for \$44.95.

Data East, 470 Needles Dr., San Jose, CA 95112

The Titanic and Trump Castle

Computer game players can now search the ocean floor for treasure and intrigue. IntraCorp has introduced a new Capstone adventure simulation, **Search for the Titanic**.

The world's most famous shipwreck has been brought to the computer screen with the challenges, dangers, excitement, and realism of scientific underwater exploration. The game was reviewed for accuracy by the staff of the Woods Hole Oceanographic Institution, the organization that first discov-

ered and photographed the **Titanic** wreck. The program contains digitized pictures from the actual photos of the **Titanic**, taken at a depth of more than 12,000 feet.

You begin the game as an inexperienced oceanographer searching for the wreck of the **Titanic**. To build a reputation as an explorer, you must gain points by finding and exploring other lost vessels and earning the resources necessary for a **Titanic** search. Each expedition requires funding, a ship, personnel, and the correct equipment. You must chart the course

and battle the elements as you dive for the more than 75 wrecks.

Search for the Titanic features over 100 navigational maps and charts, 47 ports of call, realistic weather patterns and currents, sonar, magnetometers, underwater cameras, and minisubs.

Once the ship and its treasures have been discovered, you're rewarded with the digitized pictures of the wreck site.

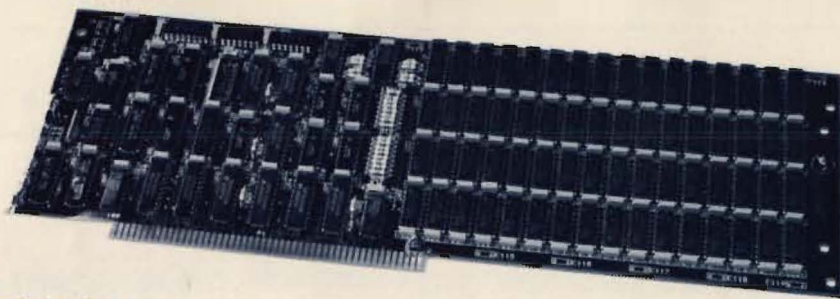
Search for the Titanic has a suggested retail price of \$39.95.

IntraCorp has also in-

troduced another game in its Capstone line, **Trump Castle: The Ultimate Casino Gambling Simulation**. Six of the most popular casino games—blackjack, roulette, craps, keno, video poker, and slot machines—are included in the program. The package also contains a bonus offer worth a minimum of \$300 in coupons good at the Trump Castle Hotel and Casino by the Bay in Atlantic City.

The suggested retail price is \$34.95.

IntraCorp, 14160 SW 139th Ct., Miami, FL 33186



Memory Expansion

New from Progressive Peripherals & Software is the Megaboard 2000, a two-megabyte memory-expansion board for the Amiga 2000. The board provides an additional one or two megabytes

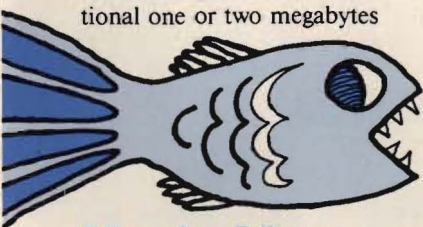
of FAST RAM and occupies a single expansion slot.

Features include full autoconfiguration and compatibility with software built into releases 1.2 or greater of the Amiga operating system. Users can purchase the board unpopulated or with one or two megabytes

of RAM installed.

The Megaboard 2000 package comes complete with software and instructions. The two-megabyte version has a suggested retail price of \$599.95.

Progressive Peripherals & Software, 464 Kalamath St., Denver, CO 80204



Magic Man Hits Computer Courts

Virgin Mastertronic has announced that Earvin "Magic" Johnson, of the world champion L.A. Lakers, will endorse its upcoming basketball game released under the Melbourne House label.

Magic Johnson's Basketball will be a translation of the new arcade game *Magic Johnson's Fast Break*, from Arcadia. Johnson contributed not only his name to the product but also commentary on style and technique during the development process.

The game features seven rounds of two-on-two play, then a final round, where players face Magic himself. Players can execute plays such as the pick 'n' roll and the alley-oop. The game also allows players to slam-dunk and lead the fast break.

A suggested retail price for *Magic Johnson's Basketball* was not available at press time.

Virgin Mastertronic, 711 W. 17th St., Suite G9, Costa Mesa, CA 92627



20,000 Leagues Under the Sea

Jim Sachs is reportedly working with renewed vigor on his years-in-the-

making game, *20,000 Leagues Under the Sea*. Although this game was rumored to have been lost to a virus, the real reasons behind its delay were much more

mundane. These problems have now been straightened out, and Jim is working with Silent Software, whose *Roger Rabbit* game has led to a working relationship with Disney. As a result, the Sachs game will probably feature digitized stills and sound effects from the Disney movie of the same name. Look for possible distribution by Epyx whenever the game is actually finished.

Pro Genlock

Communications Specialties has announced the release of Gen/One, a genlocking encoder for the Amiga.

Features include Super-VHS Y/C, RS-170A outputs, full control over RGB input and video output levels, and a variable control over the computer timing relative to the video. Two comb filters screen out unwanted chroma signals without degrading the luminance bandwidth.

The Gen/One operates in three different modes with two overlay capabilities and with selectable sync and blanking source. A buffered computer RGB output is provided and the incoming video signal can be passed through without being decoded. The encoder has its own contained power supply and does not draw power from the Amiga.

The unit has a suggested retail price of \$895.

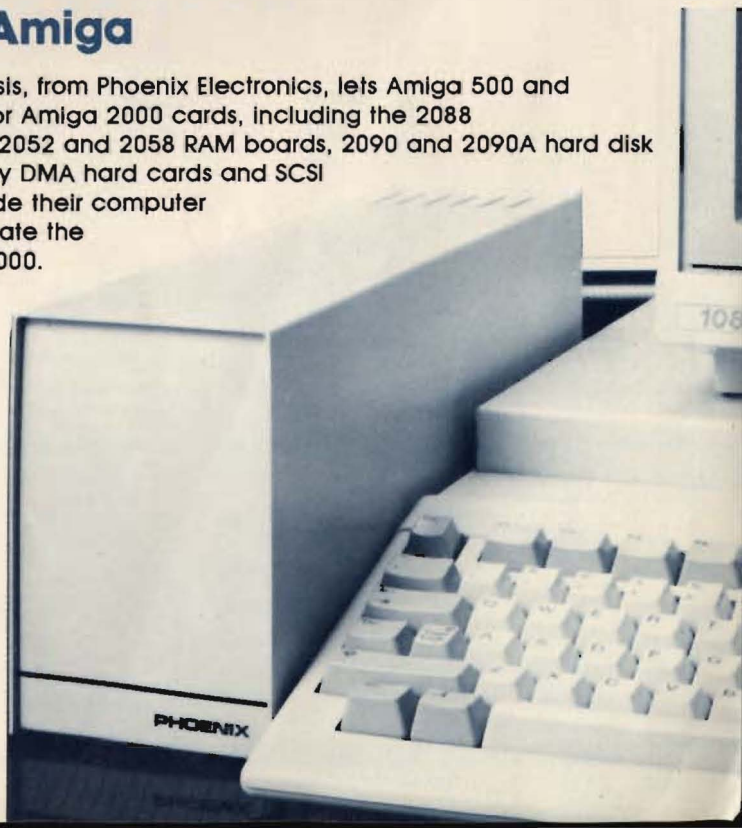
Communications Specialties, 89A Cabot Ct., Hauppauge, NY 11788

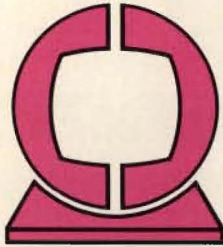
Upgrade Your Amiga

The Phoenix Expansion Chassis, from Phoenix Electronics, lets Amiga 500 and 1000 computers use all major Amiga 2000 cards, including the 2088 Bridgeboard, Commodore's 2052 and 2058 RAM boards, 2090 and 2090A hard disk controllers, and all third-party DMA hard cards and SCSI controllers. Users can upgrade their computer to resemble or nearly duplicate the performance of an Amiga 2000.

Other features include a bus pass-through and a side-mount design. The PEC-2510 (for the 500) and the PEC-2110 (for the 1000) are sold without power supplies. These models retail for \$179.95. The PEC-2520 (for the 500) and the PEC-2120 (for the 1000) include power supplies. They retail for \$253.95.

Phoenix Electronics, P.O. Box 156, Clay Center, KS 67432





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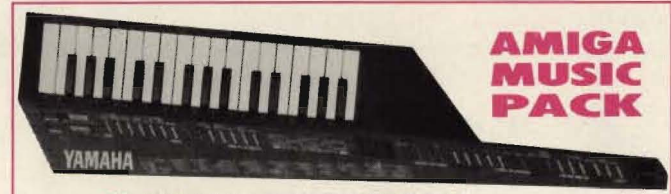
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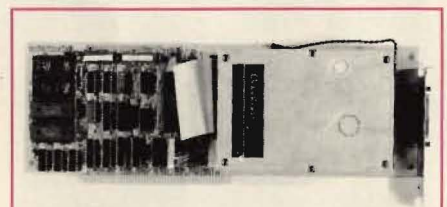
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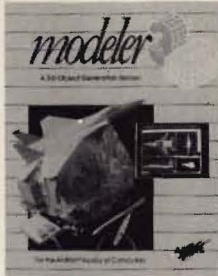
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ABSTRACTIONS

Arlan Levitan

Weekend Dragon Slayer

Back in the winter of 1983, I attended a convention of corporate UNIX system users sponsored by AT & T. The most popular attraction with symposium attendees had nothing to do with UNIX or corporate computing. The hotel was attached to a shopping mall that had an upscale video arcade. Most of the games in the place were of the familiar twitch-and-blast variety, but one game stood out from the crowd. It was completely different and was usually surrounded by a dozen or more adults sporting convention badges. The game was *Dragon's Lair*, an interactive action adventure that let the player assume the alter ego of Dirk the Daring, a chain mail-clad knight who was required to run the gauntlet of two dozen or so sticky situations armed with only a broadsword and quick reflexes. The object of the game was to reach the lair of Singe, a particularly bad-tempered dragon, and free the fair princess Daphne.

Dragon's Lair's look and feel were unique. It was essentially an interactive cartoon. The animation sequences were stored on dual video laser discs in the game kiosk. The real essence of the game consisted of determining, for each tableau presented, what pattern of moves would extricate Dirk from imminent danger. An incorrect move invariably resulted in Dirk's being crushed, chomped, drowned, poisoned, or fried before your eyes.

During the height of the game's popularity, there was talk in several quarters about a home version of the game. The controls were simple enough, consisting of a four-position joystick for movement and a button used to brandish a broadsword. *Dragon's Lair* was prominently featured in demonstrations of a laser video disc player intended solely for interactive home use at the summer Consumer Electronics Show of 1984. While I was impressed, I doubted that many people would shell out a thousand bucks for such a system.

Several other arcade games were developed using video discs. Animator Don Bluth, the creator of *Dragon's Lair*, followed up his monster hit with *Space Ace*, a futuristic space opera with a sense of humor. Sega produced *Cybernaut*, an animated robot adventure, and Bally's *Firefox* actually overlaid computer-generated graphics with

photographic landscape footage on laser. In Japan, Pioneer, the primary booster of video discs, had some mild success with interactive games designed for NEC home computers controlling Pioneer laser players equipped with an RS-232 port. Several years later in the U.S., Michtron Software got hold of a limited quantity of *Dragon's Lair* discs and marketed them with an interface and software that allowed Atari ST owners who had suitable laser players to play. This version still required that you own an

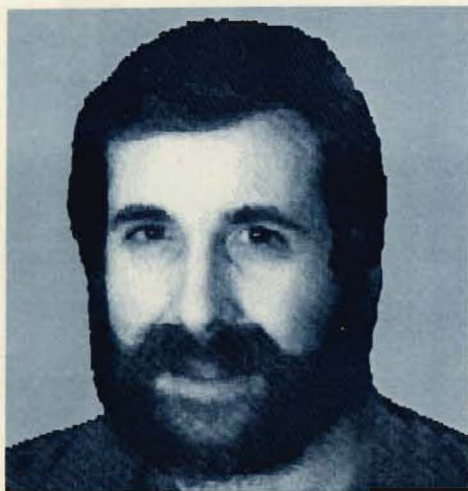
expensive piece of video gear, and play was rather disjointed, with frequent irritating pauses in the middle of each scene. The arcade version actually used two high-performance laser-disc players operating in tandem to accomplish smooth scene transitions at each decision point.

Several more years passed, and *Dragon's Lair* faded from the memory of most arcade mavens. Many popular arcade games linger on in video parlors, but *Dragon's Lair* and the others of its ilk almost vanished entirely. One reason was the complexity of the equipment involved. The laser-disc players were expensive mechanical components, and were much more prone to failure than games housed purely in silicon. When a *Dragon's Lair* machine broke, it would often cost over five hundred dollars to repair it, an outlay that is hard to justify without a steady stream of quarters pouring in. Secondly, *Dragon's Lair* was a lot like a jigsaw puzzle—once you solved it, there was limited motivation to play it again without a crowd of curious onlookers to amaze and entertain.

Early this spring I began to hear rumors that an outfit in Canada was working on an Amiga version of *Dragon's Lair* that would attempt to recreate the look, sound, feel, and play action of the arcade original without using a laser disc. Unlike run-of-the-rumor-mill scuttlebutt, the story kept cropping up with an ever-increasing amount of detail attached to it. While I had dismissed the idea out of hand at first, the more I thought about it, the more I came to believe that if any home computer could do it, the Amiga was the most likely prospect.

My relationship with the Amiga has had its ups and downs. I've owned three Amigas over the course of as

UNIX conventions,
bad-tempered
dragons, secretive
Amiga dealers,
and more!



many years. My initial 1000 was one of the first out of the blocks, purchased so Sheldon Leemon and I could crank out *COMPUTE!'s AmigaDOS Reference Manual* (a wonderful gift for yourself, friends, or pets). Although I was thrilled with the demos and first releases of software, AmigaDOS's sloth, delays in equipment availability (genlock, sidecar, DMA hard drives), and a brief drought in the introduction of new software titles led me to move my Amiga into the disposable-equipment category.

The 1000 eventually found a home with Craig Chamberlain, author of *Sidplayer* and *Enhanced Sidplayer*, two popular music programs for the Commodore 64. My Amiga's song may have been gone, but the memory lingered on. After a couple of months of seller's remorse, I acquired a used 1000 from Tom Halfhill, who had just finished writing *COMPUTE!'s Advanced Amiga BASIC*. The 1000's return engagement was cut short by the purchase of a new home that saw much of my computer equipment and a cherry 1979 Mazda RX7 turned into enough cash for a down payment on our new digs. Eight months afterward, my cash flow had improved enough to restock my arsenal with, among other things, a 500 that has managed to find a permanent resting place in the remarkable simulation of a black hole that serves as my home office.

Shortly after that, Sheldon Leemon returned from winter COMDEX with an honest-to-God demo disk of *Dragon's Lair*. He booted it up on his 2000 as I stared in amazement. This was the real thing! *Dragon's Lair* as I remembered it, replete with nicely done full-figure animation and stereo sound. I was hooked. I may have still harbored some doubts about how Readisoft, the game's distributor, could fit the whole thing on a reasonable number of disks, but I was more than willing to suspend judgment until it arrived. Three weeks later I called the Slipped Disk, my local Amiga dealer.

"*Dragon's Lair* in yet, Dennis?"

"Come and went, buddy. . . . We ordered 50 of 'em and only got 10. Readisoft says they won't be able to ship more for at least another month."

The low, guttural snarl that surged over the phone line in response either struck a chord of sympathy within Dennis or triggered raw fear for his personal safety. "I think the owner hid a copy for himself under the counter. Maybe you can talk him out of it."

I jumped in my car and hustled over to the Slipped Disk in a manner that convinced anyone who witnessed the event that the Detroit Grand Prix was still in progress. I cornered Jeff Moskow, the Disk's affable owner, carefully blocking any exits that he might retreat toward.

"Jeff, I really need a copy of *Dragon's Lair*."

"Sorry, Arlan, we're completely sold out. I wish I had a truckful of 'em. I could sell every one."

I remained undaunted. "I hear tell that you're holding out a copy under the counter, Jeff."

Moskow's eyes narrowed into slits and his face turned an ashen shade of gray. "Who told you that?" he gasped.

"I have my sources. Come on—I won't even ask for my usual pushy journalist discount."

"Tempting, Arlan, but no dice. That copy has my name on it, and I'm not about to give it up. Besides, if any of the other customers saw it, there would be a riot. It's not available at any price today."

I'd known Jeff for a couple of years and was fairly sure that I had something that would appeal to him. "How would you like to be mentioned in one of my columns, Jeff?"

Moskow's resolve melted like an ice cube on top of a Commodore 1541 disk drive. "You'd really do that?"

Five minutes later I left with my coveted treasure carefully hidden under my jacket to prevent Jeff's immediate dismemberment by rabid Slipped Disk patrons.

I spent countless hours over the next two weeks getting through the Amiga version of *Dragon's Lair*, with only an occasional peek at the cheat sheet I downloaded from GENIE. The graphics, sound, and animation make *Dragon's Lair* a tour de force demonstration of the capabilities of the Amiga that must be seen to be appreciated.

Dragon's Lair looks nice, but the enjoyability of its gameplay is far from universal. While I had a ball, spending several hours at a time trying to figure out the timing

and number of joystick jabs and button presses required to advance to the next scene may drive some to distraction. The skimpy two pages of instructions leave a lot to be desired, especially if you're a novice who isn't familiar with the basic style of play. Dirk has only three lives, and, as in the arcade game, there is no way to skip to a desired scene. Once you've mastered it, it takes about 15 minutes to go through the entire game, but only about 7 minutes of that is actual play. Over half of the time is spent loading the next scene from one of the game's six disks. Unless you own a Comspec controller, *Dragon's Lair* cannot be installed on your hard drive.

Should you rush out and buy *Dragon's Lair*? The bottom line is that if you liked *Dragon's Lair* in the arcade, you'll like playing it on the Amiga, which faithfully reproduces the look and play action of the original. Some purists have carped about the fact that the Amiga version contains less than half of the scenes of the original. Even so, Readisoft and the programming staff of Visionary Design Technologies are to be congratulated for managing to compress over 130 megabytes of video and audio information onto 6 disks. Anyone out there want to start lobbying for a 20-disk deluxe version for collectors that includes every scene from the original? ▲

Graphics, sound, and
animation make
Dragon's Lair a tour
de force
demonstration of the
Amiga's capabilities.

ASK ROB PECK

Rob Peck

Subdividing Gadgets



If you have a programming question or problem that you'd like answered, write to Ask Rob Peck, COMPUTE!'s Amiga Resource, P.O. Box 5406, Greensboro, NC 27403. We regret that, due to the volume of mail received, we cannot respond to every question.

This column is for programmers who want to use the Amiga effectively and learn how to show off some of its unique features. By answering your questions, I'll tackle one or more programming problems in each column. Since this is the first installment of "Ask Rob Peck," I've chosen to discuss a useful gadget routine that I recently developed. I invite your questions and suggestions for future topics.

C is the Amiga's system language, so programming examples for this column will almost always be written in C. The programming concepts, however, can be applied to any language.

► *I have an application that requires a rectangular grid of objects, each of which must be individually selectable. My problem is, though I want to use Intuition gadgets, the size of the source code is going to be massive if I define one gadget for each item. Is there a better way?*

Sometimes it's easy to get a little too close to the problem. We're all tempted to use tools that are directly built into the operating system, even if that's not the most efficient solution. With a regular matrix of gadgets as you've described, there is another alternative: Create and handle the gadgets yourself.

The accompanying listing shows a sample program that interfaces with Intuition by using only one gadget to signal the program that an item has been selected. This single gadget is invisible and contains several of our own, program-constructed gadgets.

Any mouse click within the bounds of the real Intuition gadget generates a message that the user has hit a specific gadget (identified by number) or that the user has clicked outside one of our gadgets. When one of the program-generated gadgets is hit, you can use the gadget number to decide what to do, just as most programs take their action cues from the GadgetID.

The example program listed here (and saved as gad.c on the Amiga Resource Disk) allows only one program-

managed gadget to be active at a time. This feature is called mutual exclusion—any gadget activated automatically deactivates all other gadgets in the group.

To make these gadget routines general-purpose, you might have to find a way to indicate active and inactive gadgets (as in Intuition, inactive gadgets can be ghosted out). Or you may wish to have more than one gadget active at a time, or even a Boolean condition for each gadget, activating or deactivating each one with alternate clicks of

the mouse. But of course, the more Intuition features that you try to support with your own, program-controlled gadgets, the closer you get to reinventing the wheel and duplicating code that's built into the Amiga's system ROM.

Here are a few details about the program code provided with this article. (First, an apology to C-language coding purists: The code has been vertically squashed to fit in as little space as possible.) The program creates a rectangular array of gadgets. Those that don't have text are ignored and cannot be selected (a deliberate choice). The program only responds if the user clicks inside the outline of the created gadget. Unlike the outline in Intuition gadgets, the outline is not

part of the active area (hit box) of the gadget.

The function DrawGads places gadgets and fills them with text. DrawBox puts a line around the active area. ShowCursor deselects the old gadget and COMPLEMENTS a new one, complementing the text as well as the color in the box. DumpXY figures out which gadget has been hit and tells ShowCursor the coordinates of the upper left corner of the gadget that's been hit. Finally, HandleEvent tells you what's happened and exits the program if the window's close gadget is clicked.

The program has been checked with Lattice C 5.0 (lc - L gad) and Manx C 3.6a (cc + L gad.c, ln gad.o c32.lib). For future articles, I'll use the latest available version of both compilers.

A compiled version of the demo program may be found on the magazine's accompanying disk. The program is saved as MultiGad and may be double-clicked from the Workbench or run from the CLI. The program opens a window and displays the program-generated gadgets. Click a gadget and the program responds by printing its number. To exit the program, click the window's close box.

Tell me what you want to know about programming the Amiga. I'm here to help. ►

We're all tempted to
use tools that are
directly built into the
operating system,
even if that's not the
most efficient
solution.


```

/* % gad.c */

#include "exec/types.h"
#include "intuition/intuition.h"
#include "exec/memory.h"

char buffer;
ULONG wakeupid, cx, cy, maxw, maxh;
USHORT cl, co, qu, mo, mx, my;
APTR ad; /* address of the gadget which we hit */

char *phrases[] = { "item1","item2","item3","item4",
"item5","item6","item7","item8","item9","my10","my11",
"my12","my13","my14","my15","my16","my17","my18","my19",
"my20","my21","my22","my23","my24","my25","my26","my27",
"my28","my29",0,0,0,0,0,0,0,0 }; /* no text last 10 */

struct Window *w, *OpenWindow();
struct RastPort *rp;
struct IntuiMessage *mg;
struct Message *GetMsg();
struct Library *IntuitionBase, *GfxBase, *OpenLibrary();

#define SAVEMSG (cl=mg->Class;co=mg->Code;qu=mg->Qualifier;\
ad=mg->Address;mx=mg->MouseX;my=mg->MouseY;\
ReplyMsg(mg));

#define MAXCHARS 5 /* how many chars in each box */
#define TOP 52 /* % where to begin from GZZwindow top */
#define LEFT 16 /* where to begin from GZZwin left */
#define CWIDTH 8 /* width of character (using TOPAZ 8) */
#define WWIDTH (MAXCHARS * CWIDTH) /* width of word, 5 char max */
#define HSPACE ((CWIDTH * 2) + WWIDTH) /* horizontal space/gad */
#define HEIGHT 8 /* height of TOPAZ 8 is 8 lines */
#define VSPACE (HEIGHT * 2 - 1) /* vertical space between boxes */
#define MIN(a,b) (a < b ? a : b)

struct Gadgets abbrev_select = { /* % starts relative to GZZ window */
NULL, 12, 47, 568, 68, GADGHHOME, RELVERIFY+GADGIMMEDIATE,
BOOLDGADGET, NULL, NULL, NULL, 0, NULL, 99, NULL };
struct NewWindow nw = {
18, 12, 597, 147, 0, 1, GADGETDOWN+CLOSEWINDOW,
WINDOWDRAG+WINDOWCLOSE+SMART_REFRESH+GIMMEZEROZERO,
abbrev_select, NULL, (UBYTE *) "Multi-Gadget Test",
NULL, NULL, 100, 50, 640, 200, WBENCHSCREEN };

/* % convert win-rel mouse-clicks to main gadget internal x,y */
/* % NOTE: based on a GZZ window!! */
#define GY -17+my-abbrev_select.TopEdge
#define GX -9+mx-abbrev_select.LeftEdge

char *itoa(x)
int x;
{
buffer = (char) (0x30 + x);
return(&buffer);
}

void DrawBox(x, y) /* draw it downward and to the right */
short x, y;
{
SetDrMd(rp, JAM2);
SetAPen(rp, 3);
Move(rp, x-1, y-1);
Draw(rp, x+WWIDTH+1, y-1);
Draw(rp, x+WWIDTH+1, y+HEIGHT+1);
Draw(rp, x-1, y+HEIGHT+1);
Draw(rp, x-1, y);
}

void ShowCursor(x, y) /* Same as drawbox but fill it */
long x, y;
{
SetDrMd(rp, COMPLEMENT);
/* dehighlight old gadget */
RectFill(rp, cx, cy, cx+WWIDTH, cy+HEIGHT);
/* highlight new gadget position */
RectFill(rp, x, y, x+WWIDTH, y+HEIGHT);
cx = x;
cy = y; /* establish a new current position */
}

void DrawGads() /* put text into the gadgets we created */
{
long i, j, n, len;
maxw = 568 / HSPACE; /* max gadget subdivisions across */
maxh = 68 / VSPACE; /* max gadget subdivs high in real gadget */
cy = TOP; /* % start at the top gadget */
n = 0; /* select phrases one at a time */
for(j=0; j<maxh; j++) {
cx = LEFT;
for(i=0; i<maxw; i++) {
SetDrMd(rp, JAM2);
SetAPen(rp, 1);
Move(rp, cx+1, cy+6);
len = strlen(phrases[n]);
Text(rp, phrases[n], MIN(len, MAXCHARS));
DrawBox(cx, cy); /* box around the gadget */
cx += HSPACE;
n += 1;
}
cy += VSPACE;
}
}

void main(argc, argv)
long argc;
char *argv[];
{
int result;
GfxBase = (struct Library *)OpenLibrary("graphics.library", 0);
if (GfxBase == NULL)

```

```

goto cleanup;
IntuitionBase = (struct Library *)OpenLibrary("intuition.library", 0);
if(IntuitionBase == NULL)
    goto cleanup;
w = OpenWindow(&nw); /* open a window */
rp = w->RPort;
DrawGads(); /* draw a defined number of gadgets */
cx = LEFT;

cy = TOP;
SetDrMd(rp, COMPLEMENT);
RectFill(rp, cx, cy, cx+WWIDTH, cy+HEIGHT); /* highlight first */
while(1) {
    WaitPort(w->UserPort);
    mg = (struct IntuiMessage *)GetMsg(w->UserPort);
    while(mg) { /* empties the port before going to sleep again */
        SAVEMSG
        if((result = HandleEvent()) == 0)
            break;
        mg = (struct IntuiMessage *)GetMsg(w->UserPort);
    }
    if(result == 0)
        break;
}
cleanup:
if(w)
    CloseWindow(w);
if(GfxBase)
    CloseLibrary(GfxBase);
if(IntuitionBase)
    CloseLibrary(IntuitionBase);
}

int DumpXY()
{
    long x_index, y_index, word_index;
    long x, y, mm;
    /* NOTE: calculations based on GZZ window! */
    /* convert to coordinates relative to top left of gadget */
    x_index = (GX) /HSPACE;
    y_index = (GY) /VSPACE;
    if(x_index>maxx-1 || y_index>maxh-1 || x_index<0 || y_index<0)
        return(-1);
    /* within the box? */
    if(GX - (x_index * HSPACE) > WWIDTH)
        return(-1);
    if(GY - (y_index * VSPACE) > HEIGHT)
        return(-1);
    x = LEFT+ (x_index * HSPACE);
    y = TOP + (y_index * VSPACE);
    word_index = (y_index * maxx) + x_index;
    mm = 1 + word_index; /* which gadget number was that? */
    if(strlen(phrases[mm-1]) == 0)
        return(-1); /* inactive if no text */
    ShowCursor(x,y); /* only one gadget selectable at a time */
    return(mm); /* tell caller which gadget number was hit */
}

int HandleEvent()
{
    int testcode, num;
    SHORT gadgetid;

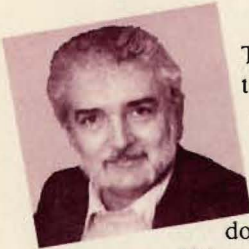
    testcode = 1;
    switch(cl)
    {
        case CLOSEWINDOW:
            return(FALSE);
            break;
        case GADGETDOWN:
            gadgetid = ((struct Gadget *)ad)->GadgetID;
            switch(gadgetid)
            {
                case 99:
                    num = DumpXY(); /* num, if needed */
                    SetDrMd(rp,JAM2);
                    SetAPen(rp,1);
                    Move(rp,20,40);
                    if(num == -1) {
                        Text(rp,"Outside range of active gadgets ",32);
                        break;
                    }
                    else {
                        Text(rp,"You just hit gadget number          ",32);
                        Move(rp,244,40);
                        if(num <= 9) {
                            Text(rp,itoa(num),1);
                        }
                        else if(num >=10 && num <= 19) {
                            Text(rp,itoa(1),1);
                            Text(rp,itoa(num-10),1);
                        }
                        else if(num >=20 && num <= 29) {
                            Text(rp,itoa(2),1);
                            Text(rp,itoa(num-20),1);
                        }
                        else if(num >=30 && num <= 39) {
                            Text(rp,itoa(3),1);
                            Text(rp,itoa(num-30),1);
                        }
                    }
                    break;
                default:
                    break;
            } /* end of gadget switch */
            cl = 0; /* null the event */
        default:
            break;
    } /* end of switch cl */
    return(testcode);
}

```


CLI CLIPS

Jim Butterfield

Making a CLI Disk



There are shortcuts and tricks offered by the CLI that many beginners don't know about. Here are a few.

If you've typed a line that's wrong and you want to cancel what you've typed to keep the screen neat, just hold down the CTRL key and tap X.

If the screen is scrolling by too fast for you, there are two easy ways to slow it down. Pressing the right button of the mouse (the menu button) will freeze the screen until you release the button; simultaneously pressing the Right-Amiga and Right-ALT keys has the same effect. Keep the pointer in the screen area; if it's too high, menus will drop down and interfere with your view.

The second way to freeze the screen is longer-lasting: press any key. The screen will wait until you release it with another key combination. I recommend CTRL-X for resuming the listing. BACK-SPACE works, too, but avoid using RETURN, which will cause extra, unwanted CLI prompts to be printed when the listing has finished.

When you start up (*boot*) your system, wait for the light to go out before you enter the first command. The Amiga multitasks well, but if you start two different file activities on the same disk, you'll get a lot of wasted drive-head movement, with accompanying noise and slowdown.

Keep in mind that CTRL-C will stop many programs, but not all. CTRL-D stops script files that are being executed. This key combination is popular for breaking into startup sequences, but I don't recommend doing that as a general practice. If the startup sequence is not allowed to complete, certain system assignments may not have taken place.

You may have noticed that your Workbench disk was full when it arrived. You might like to add extra material to the disk for the CLI work. But it will be hard to fit it in unless you clean out things you don't want.

Let's talk about making up a disk that will be good for typical CLI work. We'll want to boot with this disk whenever we plan to have a CLI session. By cleaning out unnecessary files, we'll make space for extra programs that might be handy in such a session. The items you remove will depend on the type of work you plan to do.

As always, be sure to make a copy of your Workbench disk when you experiment. Never meddle with your original disks. Copy your Workbench disk and rename the copy as something like *CLI Work Disk*. Now get ready to start

some pruning. Let's see what can go and what must stay.

The standard 1.3 Workbench disk contains a number of drawers (usually called *directories* when we are working in the CLI). Some may be thrown out completely. With other directories, we may clean out the larger unwanted items. The drawers are listed below.

Trashcan. This is a place to put files you no longer want. You don't need a Trashcan but might feel more secure keeping it; it doesn't take up much room.

c. This is the command directory. Purge the commands that you hardly ever use, especially if they are large in size. Remember to keep the commands that are used in your startup sequence.

Prefs. The preferences drawer. Junk it. It's huge, and you'll seldom use it. If you ever need it, you can run it from your original Workbench disk.

System. This is a collection of commands and programs. Some are more useful than others. We'll talk about what you might like to keep and what to junk a little later.

I. This is the overlay library, containing important system programs. If you don't need to use the speech synthesizer, you may eliminate Speak-Handler. If you don't have a hard disk, you will probably want to remove FastFileSystem.

devs. This directory holds information on your input and output channels. If you don't mind giving up speech, drop narrator.device. Within the devs directory, you

will find a few subdirectories. Most of these may be left as is, but you'll need to make one a little larger. The printers drawer should have your printer driver—the one that matches your printer—tucked in there. You'll find the appropriate driver on your Extras disk in devs/printers; copy it to devs/printers of the CLI disk you are building.

s. This is the script directory. Two scripts (Startup-Sequence and StartupII) are needed every time the system boots. Two more are used when a new CLI or shell is started up. The others are likely useful. Keep everything except the hard disk startup sequence, Startup-Sequence.HD.

t. This is a place to store temporary files. Remove it. Your temporary files are better stored in a ramdisk.

fonts. This is the font directory. Remove the entire directory, unless you'll be using an application program that needs fonts besides Topaz.

libs. This directory contains support libraries for the system. If you don't plan to use speech, delete translator.library. If you're sure you won't need to do high-accuracy

Commodore gives you
a Workbench disk
that's packed full.
You're going to have
to clean house.

math work, you can also dump `mathieeedoubtrans.library`.

Empty. There's nothing in this drawer. Its purpose? It gives you something to duplicate if you should need another drawer. Keep it if you plan to do any Workbench work at all. It takes little room.

Utilities. This is a collection of programs of varying usefulness. Keep what you need. More information is given below.

Expansion. Unless you have special devices attached to your Amiga, this one will be empty. It doesn't take up much room, so leave it.

Now we'll discuss stripping the `c`, `System`, and `Utilities` directories.

The two biggest commands in the `c` directory are `Ed` and `Edit`. Dumping them both would recover a whopping 37K of disk space. However, many CLI users do quite a bit of text-file editing; these users wouldn't want to give up both. If you want to drop just one, drop `Edit`. Or you might like to give up extra disk space and replace both of them with `MEMacs`. You'll find this high-powered text editor on the `Extras` disk in the `Tools` drawer.

The next largest command is `List`, but that's so wonderfully useful that, if I were in a pinch, I'd be tempted to give up its companion command, `Dir`. `DiskDoctor` should go. Keep it on another disk.

The biggest file in `System` is `DiskCopy`. Even though it takes more than 18K, you might like to keep it; this program will be needed if you want to copy a disk by dragging one disk icon over another. I like to scrap `Format` to save 13K and to avoid accidentally formatting a disk.

The `Utilities` drawer contains what you might expect—utility programs that perform useful jobs. `Notepad` grabs a whopping 50K; you can usually do quite well without it. The clock is pretty, but you might be happier reclaiming the almost 20K of disk space that it uses.

Remember to remove any `.info` files that go with the files you take out of the `System` and `Utilities` drawers. If the program is gone, there's no point in keeping the picture.

You've created a CLI work disk that's missing many of the standard Workbench files. But just because they're gone from your boot disk doesn't mean you've lost those commands. They may be brought in from any other disk.

Suppose, for example, that you are using a boot disk from which you have removed `DiskDoctor` from the `c` directory. In this case, typing `DiskDoctor df0:` will result in the response *Unknown command DiskDoctor*. Keep in mind that the first word of any command (in this case, *DiskDoctor*) is the name of the program to be loaded; if it's not in the usual place, we can get it by giving its full path location. Slip a disk containing this command (say, your original Workbench disk) into drive `df1:` and type `DF1:c/DISKDOCTOR DF0:` to run the program.

Amiga users (especially CLI users) should learn about devices. The names of devices always end with a colon—

`df0:` and `ram:` are examples. You may have noticed that there are two kinds of devices. There are the real ones, such as a disk drive (`df0:`, for example) or a port (`par:`). In contrast, *logical* devices don't directly correspond to hardware. For example, *Data:* might be a disk called by that name, and *FONTs:* might refer to a directory on your boot disk. Although these devices belong to different classes, the system handles them all in a consistent way.

It's not hard to run through a catalog of real devices. These include floppy disks (`df0:`, `df1:`, `df2:`, `df3:`), hard disks (usually `dh0:`), and serial and parallel ports (`ser:` and `par:`). Less tangible but still perceived as physical devices are the ramdisks (`ram:` and `rad:`), printer (`pri:`) and console windows (`con:`, `newcon:`, and `raw:`). And one physical device corresponds to nothing (`nil:`).

Other devices come into existence as a logical process. When you place a disk into a drive and reference `df0:`, the system quickly converts this to the disk's name (say, *Workbench:*). Most logical device names are *assigned* to some physical device or directory. You may reassign them by using the `Assign` command.

Suppose you have a disk containing a marvelous set of fonts. There's no space for them all on your boot disk; it might seem that you won't be able to use these fonts. No problem. Just assign the logical device *Fonts:* to the proper place on the new disk, and, when a font is needed, the disk will be called for. For example, assuming these fonts are in a drawer called *Fonts* on the new disk, insert the extra disk in `df1:` and type `ASSIGN FONTS: DF1:FONTs`. Now you may take out the extra disk. When the system

needs a new font, it will call for that disk by name. Note that the system is not fooled if another disk is later placed into drive 1.

Many major logical devices are preassigned to drawers with matching names. *Fonts:*, of course, tells the system where to get new fonts if they are needed. *Devs:* says how to reach various devices. *C* is the place the system looks for CLI commands. The *I:* device contains important overlay programs to do system tasks. The *libs:* device holds important support libraries. The *s:* device is where the system will look for script files. Less visible but available in `ram:` for 1.3 systems are *clips:*, for clipboards; *pipe:*, for controlled pipeline message passing; *env:*, for environment variables; and *t:*, for temporary files.

It's interesting to note that many of these special-purpose directories are searched after the current directory has failed to turn up the right information. If you type `EXECUTE ZONK`, the system searches the current directory for a script called *Zonk*. If it doesn't find it there, it will then look in *s:*, which is usually assigned to the *s* directory. The *c* directory is at the end (usually) of a lengthy path which starts with resident programs and proceeds through the ramdisk, the current directory, and perhaps the *System* and *Utilities* drawers. ▲

You've removed
commands from your
boot disk, but that
doesn't mean they're
gone for good.

PROGRAMMER'S PAGE

Rhett Anderson and Dale McBane

Eight-Color Workbench

Blue, orange, white, and black. Amiga owners know these colors—the default Workbench colors—all too well. By using the Preferences tool, you can change these colors to alter the appearance of the Workbench, but you're still limited to four colors.

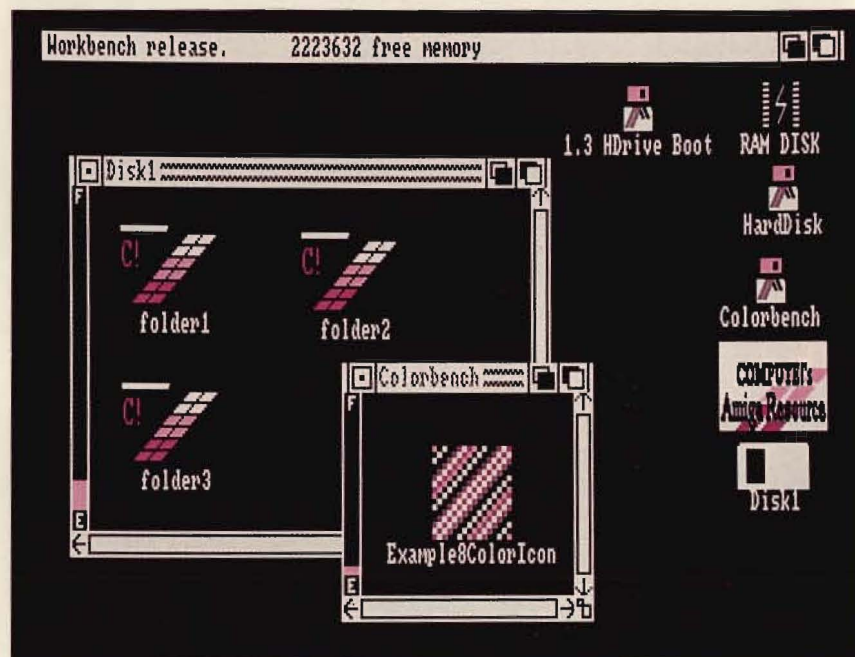
"Eight-Color Workbench" lets you change that. You can now have eight-color icons for disks, folders, and programs. Eight-Color Workbench is a matched set of two programs—"Colorbench" and "Normalbench." The first program changes the Workbench from a two-bitplane, four-color screen to a three-bitplane, eight-color screen. The second restores the Workbench screen to its normal configuration. The programs run from the CLI.

If you wish to have an eight-color screen automatically when you boot up, use a text editor (like ED or Micro-Emacs) to insert the command COLORBENCH into the file s/startup-sequence (see the startup sequence on COMPUTE!'s *Amiga Resource Disk* for an example).

Don't think you can get away with all that extra color without paying a price, though. An eight-color Workbench uses slightly more memory than a normal four-color Workbench does. The memory and disk space used by the icons are also slightly inflated. However, the overhead is minimal. You'll probably only want to shut down Eight-Color Workbench when you're operating near the limit of your RAM.

Using the Programs

Eight-Color Workbench was originally written in *Benchmark Modula-2*. We have converted it to compile under *Lattice C*. An assembly language version is also included on this issue's companion disk (the listings are too long for inclusion in this magazine). Listings 1 and 2 are the Modula-2 code, and 3 and 4 are the C code. The listings are included for interested programmers. You don't need to under-



stand them in order to use the programs.

If you have the *Amiga Resource Disk* for this issue, you'll find Colorbench and Normalbench in the C directory of that disk.

To take full advantage of Eight-Color Workbench, you'll need eight-color icons. We've created a few for the *Amiga Resource Disk*. To create them, we used the program "IFF to Icon" from the November 1987 issue of *COMPUTE!*. A limited number of back issues are available from COMPUTE! Single-Copy Sales, P.O. Box 5188, Greensboro, NC 27403. There are similar programs in the public domain.

Colors 0-3 can be changed from Preferences. If you don't like the default colors provided by the Workbench for color registers 4-7, you can use the program SET4567 (found in the c directory of the *Resource Disk*) to set these colors to match the palette used by COMPUTE!'s *Amiga Resource Disk*.

"Programmer's Page" wants your hints

and tips. Send all submissions to *Programmer's Page*, COMPUTE!'s *Amiga Resource*, P.O. Box 5406, Greensboro, North Carolina 27403. We'll pay \$25-\$50 for each tip we publish. We also welcome single-topic articles, with appropriately higher pay, for this column.

SPECS

Colorbench (Assembly Version)

PROGRAM SIZE: 420 bytes
SUPPORT FILES: None
MINIMUM CONFIGURATION:
256K RAM
AmigaDOS 1.2
ENVIRONMENT
CLI
RUN COLORBENCH

Normalbench (Assembly Version)

PROGRAM SIZE: 376 bytes
SUPPORT FILES: None
MINIMUM CONFIGURATION:
256K RAM
AmigaDOS 1.2
ENVIRONMENT
CLI
RUN NORMALBENCH

Colorbench—Modula-2

```
MODULE Colorbench;

FROM Intuition IMPORT OpenWorkBench,
  ScreenPtr, RemakeDisplay;
FROM Graphics IMPORT BitMapPtr;
FROM Rasters IMPORT AllocRaster;
FROM SYSTEM IMPORT BYTE;
FROM Blit IMPORT BltClear, BltClearFlagsSet;

CONST
  NormalBltFlags = BltClearFlagsSet(0);

VAR
  Scr: ScreenPtr;
  bm : BitMapPtr;
  i : CARDINAL;

BEGIN
  Scr := OpenWorkBench();
  WITH Scr^ DO
    bm := RastPort.BitMap;
    WITH bm^ DO
      IF CARDINAL(Depth)=2 THEN
        Planes[2] := AllocRaster(Width,Height);
        BltClear(Planes[2],Width DIV 8 * Height,
          NormalBltFlags);
        Depth := BYTE(3);
      END;
    END;
  END;
  RemakeDisplay;
END Colorbench.
```

Normalbench—Modula-2

```
MODULE Normalbench;

FROM Intuition IMPORT OpenWorkBench,
  ScreenPtr, RemakeDisplay;
FROM Graphics IMPORT BitMapPtr;
FROM Rasters IMPORT FreeRaster;
FROM SYSTEM IMPORT BYTE;

VAR
  Scr: ScreenPtr;
  bm : BitMapPtr;

BEGIN
  Scr := OpenWorkBench();
  WITH Scr^ DO
    bm := RastPort.BitMap;
    WITH bm^ DO
      IF CARDINAL(Depth)=3 THEN
        FreeRaster(Planes[2],Width,Height);
        Depth := BYTE(2);
      END;
    END;
  END;
  RemakeDisplay;
END Normalbench.
```

Colorbench—C

```
#include <intuition/intuition.h>

struct Screen *Scr;
struct BitMap *bm;
struct IntuitionBase *IntuitionBase;
struct GfxBase *GfxBase;

#define WIDTH Scr->Width
#define HEIGHT Scr->Height
#define DEPTH bm->Depth
```

```
void main()
{
  if((IntuitionBase = (struct IntuitionBase *)
    OpenLibrary("intuition.library", 32)) ==
    NULL)
    exit(100);

  if((GfxBase = (struct GfxBase *)
    OpenLibrary("graphics.library", 32)) ==
    NULL)
    exit(200);

  Scr = (struct Screen *)OpenWorkBench();
  if(Scr == NULL)
    exit(300);

  bm = Scr->RastPort.BitMap;

  if(DEPTH == 2)
  {
    bm->Planes[2] = (PLANEPTR)
      AllocRaster(WIDTH, HEIGHT);
    BltClear(bm->Planes[2], WIDTH / 8 *
      HEIGHT, 0);
    DEPTH = 3;
    RemakeDisplay();
  }

  CloseLibrary(GfxBase);
  CloseLibrary(IntuitionBase);
}

/* end of Colorbench.c */
```

Normalbench—C

```
#include <intuition/intuition.h>

struct Screen *Scr;
struct BitMap *bm;
struct IntuitionBase *IntuitionBase;
struct GfxBase *GfxBase;

#define WIDTH Scr->Width
#define HEIGHT Scr->Height
#define DEPTH bm->Depth

void main()
{
  if((IntuitionBase = (struct IntuitionBase *)
    OpenLibrary("intuition.library", 32)) ==
    NULL)
    exit(100);

  if((GfxBase = (struct GfxBase *)
    OpenLibrary("graphics.library", 32)) ==
    NULL)
    exit(200);

  Scr = (struct Screen *)OpenWorkBench();
  if(Scr == NULL)
    exit(300);

  bm = Scr->RastPort.BitMap;

  if(DEPTH == 3)
  {
    FreeRaster(bm->Planes[2], WIDTH, HEIGHT);
    DEPTH = 2;
    RemakeDisplay();
  }

  CloseLibrary(GfxBase);
  CloseLibrary(IntuitionBase);
}

/* end of Normalbench.c */
```




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NX-1000

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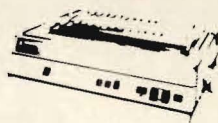


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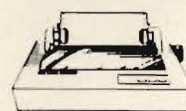


Announcing the Panasonic KX-P1180, an affordable 9-pin personal printer with abundant features and solid performance. Featured on the 1180 is the EZ-Set operator panel that lets you control the most commonly accessed printer functions right from the front panel. The 1180 also has advanced features, such as an adjustable push pull tractor feed and multiple paper paths.

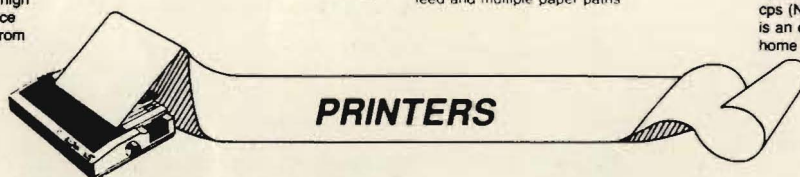
CITIZEN

180-D

\$159⁹⁵



You can always rely on the Citizen 180-D. From its price/performance value, to a print speed of 180 cps (draft) or 29 cps (NLQ) the Citizen 180-D is an excellent printer for the home or small business.



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Start with an Amiga, add a well-chosen peripheral or two, and then fire up the system with the hottest software available. The result? The Ultimate Amiga.

THE ULTIMATE AMIGA

Steven Anzovin

Computer owners, like devotees of other technological marvels, spend hours daydreaming about the ultimate machine. Car buffs might yearn for a Countach or Silver Ghost; pilots may wish for just one spin in an F-16 or STS Atlantis. What do Amiga users dream about?

The Amiga is one versatile animal, highly adaptable to any situation that requires high performance. Here are suggestions for putting together four ultimate Amiga systems—one each for desktop video, business productivity, music, and color desktop publishing. And we really mean *ultimate*; no expense has been spared in the quest for the very best Amiga systems in each category.

The Ultimate Desktop Video System

There are so many exciting desktop video tools for the Amiga that any number of "ultimate" systems could be assembled, depending on just what capabilities you need for your productions. But any ultimate DTV system has to start with an Amiga 2500 with 3 megs of RAM and Commodore's fast 40-meg hard drive with the 2090A autobooting hard disk controller. DTV power users know that for three-dimensional modeling, ray tracing, and animation, a 68020/68881-based system is a virtual necessity. With a slower 68000 system, you could wait days, even weeks, for the machine to render a second or two of fully ray-traced animation. The Commodore 1084S



Video Titrer from Aegis

will do for the computer display.

For video input and output, you'll want two devices.

AMIGA BUYER'S GUIDE TO VIDEO DIGITIZERS

Video digitizers capture video signals from an outside source, such as a VCR or television, and convert the signals so they can be used by the Amiga in pictures, animation, and illustrations.

Digi-View Gold

\$199.95
Captures 21 bits per pixel (2.1 million colors) in memory for 100,000 apparent colors onscreen; includes capture and manipulation software for color and sharpness control, full overscan, Extra Half-Brite, and line-art mode; resolution modes from 320 × 200 to 768 × 480; enhanced HAM; advanced dithering routines; IFF-compatible. For Amiga 500, 2000, and 1000 with standard gender changer.

NewTek
115 W. Crane St.
Topeka, KS 66603
(913) 354-1146

Frame Grabber

\$499.95
Captures color images in 1/60 second; saves images in IFF format or as RGB images; includes editor to filter, modify, change brightness and contrast, change palette colors, filter image noise, and sharpen edge details; 320 × 400 color resolution with overscan in 640 × 400 black-and-white. For Amiga 500, 1000, 2000.

Progressive Peripherals & Software
464 Kalamath St.
Denver, CO 80204
(617) 444-5224

LIVE!

\$295.00
A realtime video frame grabber; produces images in black-and-white, 32-color, and 4096-color HAM modes; mouse-controlled; features posterization, fades, color keying, and strobes; overscan mode; includes an RCA jack for connecting to other devices; plugs into the expansion port. For the Amiga 1000.

LIVE!500

\$399.00
Same as LIVE! but plugs into the expansion port on the left side of the Amiga 500; includes separate power supply. For the Amiga 500.

LIVE!2000

\$450.00
All the features of LIVE! plus dual video-source switching; BNC connectors on all inputs; 640 resolution and optimization mode for hi-res black-and-white cameras; tiling; and mirroring. Internal card. For the Amiga 2000.

A-Squared Distributions
6114 LaSalle Ave.
Suite 326
Oakland, CA 94611
(415) 339-0339

Perfect Vision

\$249.95
Realtime digitizer; accepts input from color or black-and-white VCR or video camera; displays in 4096 colors or 16 gray scales; stores images as IFF files; supports 320 × 200 and 320 × 400 HAM and 16-color modes; includes color filter wheel. For the Amiga 500, 1000, and 2000.

SunRize Industries
3801 Old College Rd.
Bryan, TX 77801

VD-1

\$1,000.00
Digitizes an NTSC picture from any source; 24-bit frame buffer; 400-line overscan HAM; includes the paint program *Diamond*; lifetime warranty. For Amiga 500, 2000, and 1000 with standard gender changer.

Impulse
6870 Shingle Creek Pkwy.
Suite 112
Minneapolis, MN 55430
(612) 566-0221

NewTek's Digi-View Gold video digitizer comes complete with the Panasonic WV-1410 monochrome CCTV camera, an assortment of wide-angle and close-up lenses, a Digi-Droid to rotate the color-filter wheel, and the CS-1L copy stand. The Digi-View setup allows you to capture any external image for manipulation with Amiga software; the close-up lenses let you take pictures of text, small photos, and the like.

Magni Systems' 4004 genlock boards and controller are at the top of the genlock heap as far as video signal quality is concerned. The Magni consists of two Zorro plug-in cards: One card interfaces with the Amiga RGB graphics system; the other contains a broadcast encoder with internal black-burst and sync generators, a genlock, and its own system clock. An external controller box provides sliders for fading video in and out. Broadcast composite output is provided by the Magni as well.

Your DTV software should include *Deluxe Paint III* for graphics and two-dimensional animation, *Photon Paint* for creating HAM images, *Butcher* for image processing, *Sculpt-Animate 4-D* for three-dimensional modeling and animation, and *Aegis' VideoTitrer* and *Pro Video Plus* for titling and slide shows.

With such high-quality video being created in your Amiga, you really should match it with topnotch external video components. How about two Sony 3/4-inch VO-5850 VCRs (one feeding video into the Amiga and one recording the Amiga video output), a Sony RM 450 editing console, and two PVM 1271Q color video monitors?

WHERE TO BUY IT

Desktop Video System

Amiga 2500 \$4,695.00
Amiga 1084S Monitor \$399.95
Commodore Business Machines
1200 Wilson Dr.
West Chester, PA 19380

Butcher 2.0 \$37.00
Eagle Tree Software
P.O. Box 164
Hopewell, VA 23860

Deluxe Paint III \$129.95
Electronic Arts
1820 Gateway Dr.
San Mateo, CA 94404

Digi-View Gold \$199.95
Digi-Droid \$69.95
Panasonic WV-1410 camera \$279.95
CS-1L Copy Stand \$74.95
NewTek
115 W. Crane St.
Topeka, KS 66603

Magni 4004 Video Graphics System \$1,695.00
(\$300.00 for the controller box only)
Magni Systems
9500 SW Gemini Dr.
Beaverton, OR 97005

Photon Paint \$99.95
Microllusions
17408 Chatsworth St.
Granada Hills, CA 91344

Pro Video Plus \$299.95
JDK Images
15075 SW Koll Pkwy.
Suite G
Beaverton, OR 97006

Sculpt-Animate 4D \$499.95
Byte-by-Byte
Arboretum Plaza II
Suite 150
9442 Capital of Texas
Highway N
Austin, TX 78759

Video Titrer \$149.95
Aegis Development
2210 Wilshire Blvd.
Suite 277
Santa Monica, CA 90405

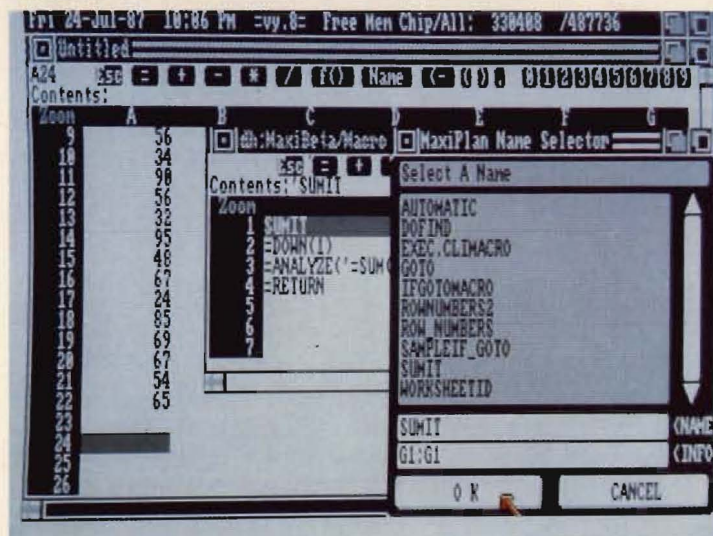
are some mighty hot products out there that make the Amiga a highly capable corporate workstation.

An unadorned Amiga

2500 is not powerful enough to satisfy the power user in this category. For starters, you'll also want a full 9 megabytes of memory for

heavy-duty multitasking. The 8-Up! RAM board, from Microbotics, has sockets for eight 1-megabyte chips, although you'll only need six. With RAM prices fluctuating as they are, your best bet is to shop around and buy them on the open market. An additional hard drive, such as the 120-meg unit sold by Supra, can supplement your internal 40-meg drive. If 160 megabytes of mass storage isn't enough, you can always daisy-chain SCSI and ST-506 devices from your 2090A hard disk controller to your heart's content. Fill one of the IBM slots on your A2500 with Commodore's A2286 AT-compatible Bridgeboard so that you can run IBM software. Useful peripherals include a Supra 2400-baud modem, an HP LaserJet II printer, and a DEST scanner from C Ltd.

Topnotch software for this productivity system would include *WordPerfect* for word processing; two products from Oxxi, *A-Talk III* communications software and the *MaxiPlan Plus* spreadsheet (which is fully as useful as *Lotus 1-2-3* and even reads *Lotus .WKS* files); *Superbase Professional*, the

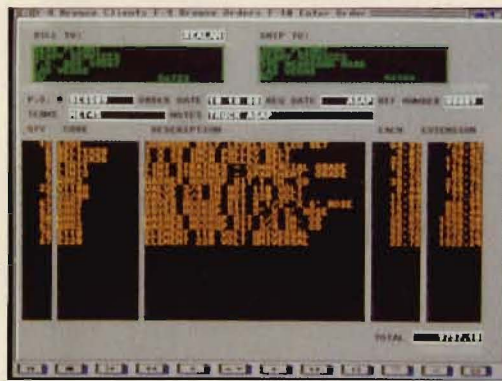


MaxiPlan Plus from Oxxi

The Ultimate Business Productivity System

You may not think of the Amiga as a business power user's playground, but there

most powerful Amiga data-base manager; *B.E.S.T. Business Management*, a full-featured business-accounting program; *Project Planner*, from Lionheart, for PERT and CPM project management; and *X-CAD*, a high-end computer-aided-design package from Taurus Software. *Gizmoz*, from Digital Creations, will take care of your basic desk-accessory needs.



Superbase Professional 3 from Precision

AMIGA BUYER'S GUIDE TO TELECOMMUNICATIONS SOFTWARE

Telecommunications is the lifeline of the Amiga. Your modem is your doorway into the Amiga community. The programs listed here enable you to access online services, send or receive data, or challenge your online opponent to a battle of chess over the wires.

Telecommunications Programs

A-Talk III Communications Program

Oxxi
\$99.00
1MB recommended
Supports X-Modem, -CRC, and -Checksum; Y-Modem, -1K, and -Batch; Z-Modem; WX-Modem; and Kermit protocols. Emulates 4010, 4014, VT100, VT52, H19, ANSI, and TTY terminals. Supports baud rates up to 19,200 bps. Includes a script language, autodial, and a telephone directory. Offers setmaps for foreign character sets, resizable and scrolling buffer, voice option, ARexx support, over 50 commands, multitasking spooler, IFF-graphics export, voice option, recording feature, and online help.

Diga!

Aegis Development
\$79.95
Requires 512K and Kickstart 1.2
Supports CompuServe B, DoubleTalk, X-Modem and -CRC, and Y-Modem and -CRC protocols. Emulates VT52, VT100, TTY, Tektronix 4014, and ANSI terminals. Supports baud rates up to 19,200 bps. Includes script language, autodial, and a telephone directory. Offers macro keys, password protection, and Aegis' DoubleTalk file-transfer capability for chat mode.

Dr. Term Professional

Progressive Peripherals and Software
\$99.95
Supports Kermit, CompuServe B, X-Modem, Y-Modem, and WX-Modem protocols. Emulates VT52, VT100, TTY, and ANSI terminals. Supports baud rates up to 19,500 bps. Includes script language, autodial, and telephone directory. Offers pull-down menus, answer-back capabilities, 300-entry phone book, and command language for programming 40 macros.

Online! Platinum Edition

Micro-Systems Software
\$99.95
Supports X-Modem and -CRC, WX-Modem, Quick B, HVP, CIS-B, and Kermit protocols. Emulates VT52, VT100, VT102, TTY, and Tektronix terminals. Supports baud rates up to 19,200 bps. Includes script language, telephone directory, and autodial. Offers pull-down menus, ten definable macro keys, seven translation tables, and multitasking capabilities; transfers data and chat simultaneously.

VTXON-Line

MichTron
\$79.95
Supports X-Modem and -1K, Y-Modem, CompuServe B, and Kermit protocols. Emulates VT100 and 4014 terminals. Supports baud rates from 300 to 9600 bps. Includes a script language, autodial, and a telephone directory. Offers CLI-compatible capture buffer, two-window conferencing, recording feature, and online help. Program is mouse-, keyboard-, or menu-driven.

Modem Games

RPG-BBS

Mercury Software
\$59.95
RPG-BBS combines a role-playing game and a bulletin board system. The BBS features message areas, voting booths, and electronic mail. In the role-playing game, each registered player becomes a warrior on a quest for gold and glory, fighting other online warriors and monsters. Game options include towns with shops for buying and selling weapons and food, a gambling casino, a tournament for fighting monsters and warriors, a training spa, and the village bank, where gold is stored. Each warrior can advance through the levels of difficulty to become the ultimate warrior, and groups of users can form teams.

TeleEpic

Software Terminal
\$39.95
In this modern war game, players are armed with axes, swords, daggers, and arrows as they lead bands of heroes against their mortal foe. A medieval version of the telecommunications war games.

TeleGames

Software Terminal
\$34.95
Two players can play backgammon, checkers, or chess via modem. Game boards are displayed in two or three dimensions. Challengers can send and receive messages through the chat line while

they play. The program includes a save-game option and a file-folder feature for recording other players' names, phone numbers, and baud rates. *TeleGames* supports baud rates from 300 to 9600 bps and will not disconnect until instructed to do so. It can also be played without modems.

TeleWar

Software Terminal
\$39.95
Two players compete in a war strategy game by modem or at one computer. The game features three superbitemaps, 12 scenarios of battlefields, digitized sound effects, and color graphics. Each player must position his or her artillery, vehicles, and other weapons while defending against attack. The object is to capture the opponent's headquarters. Additional map disks are available.

TeleWar II

Software Terminal
\$39.95
A follow-up to *TeleWar*, this war strategy game takes place in a rocky canyon, jungle ruins, and the Archipelagos. It can be played on separate machines by modem or on one computer.

Publishers and Addresses of Telecommunications Software

Aegis Development
2210 Wilshire Blvd.
Suite 277
Santa Monica, CA 90403

Mercury Software
P.O. Box 83
Wilton, CO 80897

MichTron
576 S. Telegraph Rd.
Pontiac, MI 48053

Micro-Systems Software
12798 W. Forest Hill Blvd.
Suite 202
West Palm Beach, FL 33414

Oxxi
3428 Falcon Ave.
Long Beach, CA 90807

Progressive Peripherals and Software
464 Kalamath St.
Denver, CO 80204

Software Terminal
3014 Alta Mere Dr.
Highway 183 S
Fort Worth, TX 76116

AMIGA BUYER'S GUIDE TO MUSIC PROGRAMS

Making music on the Amiga can be as simple as tapping a few keys or as complex as building a symphony, note by note. Here are some programs to help you create and design original music compositions with your Amiga.

Adrum

\$79.95

Haitec Resources

Four-voice drum machine and rhythm maker.

Amiga Keyboard Controlled Sequencer (KCS)

\$249.00

Dr. T's Music Software

Sequencer with three modes—track, open, and song—for editing and saving up to 16 sequences and songs.

AudioMaster

\$59.95

Aegis Development

Digital sound-sampling and -editing program to manipulate samples, mix sounds, alter waveforms, and save sounds as instruments.

Deluxe Music Construction Set

\$99.95

Electronic Arts

A music-development program that displays notes on a staff or keyboard as they are played.

Dynamic Drums

\$79.95

New Wave Software

Uses realtime or step-time programming to turn the Amiga into a drum machine.

Dynamic Studio

\$199.95

New Wave Software

A MIDI sequencer that has a built-in drum machine and can play back instruments translated with *Sound Oasis*, also from New Wave.

HotLicks

\$49.95

Infinity Software

Creates new compositions or edits prearranged pieces using editing tools and built-in rhythm guides. Music is played back through Jukebox and Jam modes.

Instant Music

\$49.95

Electronic Arts

Music is graphically displayed in red, green, and blue color bars as it is played. Includes a synthesizer feature and 40 songs.

M for the Amiga

\$200.00

Intelligent Music

A realtime, interactive, and graphically controlled music composition program.

MIDI Magic

\$149.95

Brown-Wagh Publishing

A MIDI sequencer featuring multichannel simultaneous recording, multiple time signatures, and realtime, modular, and step modes.

MIDI Recording Studio

\$69.00

Dr. T's Music Software

A simpler version of Dr. T's *Keyboard Controlled Sequencer*, *Studio* uses eight tracks and two modes—play/record and edit.

MidiVU

\$29.00

Diemer Development

Music utility program for recording realtime tracks from a MIDI source.

The Music Studio

\$79.95

Mediagenic

Music compositions can be created or existing pieces can be edited by modifying the tempo, duration, volume, attack, sustain, release, and decay options.

Sonix

\$79.95

Aegis Development

A music editor that displays each note as it is entered. Allows up to 16 MIDI devices.

Sound Lab

\$295.00

Blank Software

A visual editing program to modify waveforms and voice parameters created with the ENSONIQ Mirage digital sampling keyboard.

Synthia

\$99.99

The Other Guys

Digital synthesizer that can create or modify digital IFF instruments. Includes additive, plucked string, interpolative, percussion, and subtractive synthesis.

Publishers and Addresses of Music Programs

Aegis Development
2115 Pico Blvd.
Santa Monica, CA 90405
(213) 392-9972

Blank Software
1477 Folsom
San Francisco, CA 94103
(415) 863-9224

Brown-Wagh Publishing
16795 Lark Ave.
Suite 210
Los Gatos, CA 95030
(408) 395-3838

Diemer Development
12814 Landale St.
Studio City, CA 91604
(818) 762-0804

Dr. T's Music Software
220 Boylston St.
Suite 306
Chestnut Hill, MA 02167
(617) 244-6954

Electronic Arts
1820 Gateway Dr.
San Mateo, CA 94404
(415) 571-7171

Haitec Resources
208 Carrollton Park
Suite 1207
Carrollton, TX 75006
(214) 241-8030

Infinity Software
1144 65th St.
Suite C
Emeryville, CA 94608
(415) 420-1551

Intelligent Music
116 N. Lake Ave.
Albany, NY 12206
(518) 434-4110

Mediagenic
3885 Bohannon Dr.
Menlo Park, CA 94025
(415) 329-0800

New Wave Software
P.O. Box 438
St. Clair Shores, MI 48080
(313) 771-4465

The Other Guys
P.O. Box H
Logan, UT 84321
(800) 942-9402

WHERE TO BUY IT

Business-Productivity System

Amiga 2500 \$4,695.00
Amiga A2286 Bridgeboard
(price unavailable)
Amiga 1084S Monitor
\$399.95

Commodore Business
Machines
1200 Wilson Dr.
West Chester, PA 19380

A-Talk III \$99.00
MaxiPlan Plus \$199.00
Oxxi
P.O. Box 90309
Long Beach, CA 90809

B.E.S.T. Business
Management \$395.00
B.E.S.T.
11525 SW Durham Rd.
Bldg. D
Tigard, OR 97224

DEST Scanner \$1,699.00
C. Ltd.
723 E. Skinner
Wichita, KS 67211

8-Up! \$199.95
Microbotics
811 Alpha Dr.
Richardson, TX 75081

Gizmoz \$69.95
Digital Creations
2865 Sunrise Blvd.
Suite 103
Rancho Cordova, CA 95670

LaserJet II Printer \$1,799.00
Hewlett-Packard
19310 Pruneridge Ave.
Cupertino, CA 93014

Project Planner \$145.00
Lionheart
P.O. Box 379
Alburt, VT 05440

Superbase Professional
\$349.95
Precision Software
8404 Sterling St.
Suite A
Irving, TX 75063

SupraDrive 120MB
\$1,995.00
SupraModem 2400AM
\$179.95
Supra
1133 Commercial Way
Albany, OR 97321

The Ultimate Music System

An Amiga musician setting up the ultimate music system might consider going with an Amiga 500 rather than a 2500. They have the same musical capabilities, but the 500 is easier to pack and carry on the road. Much music software still doesn't support the faster clock speed of a 68020, anyway. You'll need to upgrade the basic 500 to one megabyte of memory and add an external floppy drive or hard disk. Beyond that, the primary hardware requirements are a MIDI interface, a keyboard or other MIDI instrument, a sound sampler, and a good stereo system.

AMIGA BUYER'S GUIDE TO LASER PRINTERS

Laser printers enable you to print near-typeset-quality reports, newsletters, memos, and other documents generated with desktop publishing and word processing programs. The laser printers listed here emulate the Hewlett-Packard LaserJet printers, and some support PostScript files. The print speed and the number of resident fonts are also listed.

F1000A

\$2,895
Kyocera Unison
79 fonts and 3 templates
Single-bin feed
Not PostScript-compatible; uses built-in Prescribe control language
Prints 10 pages per minute

F2010

\$4,695
Kyocera Unison
79 fonts and 3 templates
Dual-bin feed
Not PostScript-compatible; uses built-in Prescribe control language
Prints 10 pages per minute

F3010

\$8,395
Kyocera Unison
79 fonts and 3 templates
Dual-bin feed
Not PostScript-compatible; uses built-in Prescribe control language
Prints 18 pages per minute

JX-9300

\$2,195
Sharp Electronics
Courier and line-printer fonts standard
Additional fonts available through software downloading and font cards
Not PostScript-compatible
Prints 6 pages per minute

KissPlus with Mod 20

\$2,990
Laser Connection
21 resident fonts
Not PostScript-compatible
Prints 8 pages per minute

KissPlus with Mod 30

\$3,790
Laser Connection
21 resident fonts
Not PostScript-compatible
Prints 8 pages per minute

LaserJet Series II

\$2,695
Hewlett-Packard
6 internal fonts
Additional fonts available separately
JetScript kit available separately for \$2,795 for PostScript compatibility
Prints 8 pages per minute

LaserJet IID

\$4,295
Hewlett-Packard
Two paper trays and twice the paper capacity of the LaserJet Series II
24 internal fonts
Additional fonts available separately
JetScript kit available separately for \$2,795 for PostScript compatibility
Prints 8 pages per minute

Laserline 6

\$2,145
Okidata
15 standard fonts
Not PostScript-compatible; uses built-in Laser-Control translator language
Prints 6 pages per minute

LaserPrinter8

\$2,799
Star Micronics
4 resident fonts
7 font cartridges available separately
Not PostScript-compatible
Prints 8 pages per minute

Laserstar 6

\$2,699
AEG Olympia
9 resident fonts
Not PostScript-compatible; includes OlyScript page-description enhancement
Prints 6 pages per minute

LP-76

\$1,995
Acer Technologies
6 fonts, 23 symbol sets
Not PostScript-compatible
Prints 6 pages per minute

A superior MIDI interface is the MIDI-1, from Creative Microsystems. It has three selectable out/through ports, MIDI in, sync out, pass-through, and software. An internal version is available for the 2500. Picking the

ultimate keyboard is more difficult; you might choose a Kurzweil or a Fairlight, but either would definitely overshadow the Amiga part of the system. I'd settle for a Yamaha DX-11 sampling keyboard. For recording sam-

WHERE TO BUY IT

Music System

Amiga 500 \$799.00
Amiga 1084S Monitor \$399.95
Amiga 501 RAM Expansion Card \$199.95
Amiga 1010 Disk Drive \$299.95
Commodore Business Machines
1200 Wilson Dr.
West Chester, PA 19380

The Copyist III \$399.95
Editor-Librarian \$149.95
KCS \$249.00
Dr. T's
220 Boylston St.
Suite 206
Chestnut Hill, MA 02167

Dynamic Drums \$79.95
New Wave Software
P.O. Box 438
St. Clair Shores, MI 48080

MIDI-1 \$79.95
Creative Microsystems
10110 SW Nimbus, #B-1
Portland, OR 97223

MidiVU \$29.00
Diemer Development
12814 Landale St.
Studio City, CA 91604

Pro*Sound Designer
\$159.95
Precision
8404 Sterling St.
Suite A
Irving, TX 75063



Pro*Sound Designer from Precision

PageLaser12

\$3,799
Toshiba
3 resident fonts
9 font cartridges available separately
PostScript-compatible
Prints 12 pages per minute

PC Laser 6000

\$2,495
Ricoh
4 resident fonts
11 font cartridges available separately
Not PostScript-compatible
Prints 6 pages per minute

PC Laser 6000/EX

\$1,895
Ricoh
Controller boards for printer emulation and PostScript compatibility available from third-party manufacturers beginning at about \$400 each. Fonts are dependent on the type of board purchased. A controller board must be purchased to use the printer.
Prints 6 pages per minute

PC Laser 6000/PS

\$4,495
Ricoh
35 resident fonts
Additional font cartridges available separately
PostScript-compatible
Prints 6 pages per minute

PS 810

\$5,495
Laser Connection
35 PostScript fonts
PostScript-compatible
Prints 8 pages per minute

PS 820

\$6,495
Laser Connection
Two paper trays
35 PostScript fonts
PostScript-compatible
Prints 8 pages per minute

PS 1500

\$9,995
QMS
19 fonts
Additional font cartridges available
PostScript-compatible
Prints 15 pages per minute

SmartWriter 150

\$6,995
QMS
19 fonts
Additional font cartridges available
Not PostScript-compatible
Prints 15 pages per minute

TurboPS/300

\$5,495
NewGen Systems
Print resolution of 300 dpi
35 standard fonts
PostScript-compatible
Prints 8 pages per minute

TurboPS/400

\$6,495
NewGen Systems
Print resolution of 400 dpi
35 standard fonts
PostScript-compatible
Prints 8 pages per minute

Laser Printer Manufacturers

Acer Technologies
401 Charcot Ave.
San Jose, CA 95131
(408) 922-0333

AEG Olympia
3140 Rt. 22
Box 22
Somerville, NJ 08876-0022
(201) 231-8300

Hewlett-Packard Company
Inquiries
19310 Pruneridge Ave.
Cupertino, CA 95014
(800) 752-0900

Kyocera Unison
1321 Harbor Bay Pkwy.
Alameda, CA 94501
(415) 748-6680

Laser Connection
7852 Schilling Park W
Mobile, AL 36608
(205) 633-7223

NewGen Systems
17580 New Hope St.
Fountain Valley, CA 92708
(714) 641-8600

Okidata
532 Fellowship Rd.
Mount Laurel, NJ 08054
(609) 235-2600

QMS
One Magnum Pass
Mobile, AL 36618
(205) 633-4300

Ricoh
3001 Orchard Pkwy.
San Jose, CA 95134
(408) 432-8800

Sharp Electronics
Sharp Plaza
Mahwah, NJ 07430-2135
(201) 529-9500

Star Micronics
200 Park Ave.
Suite 2510
New York, NY 10166
(212) 986-6770

Toshiba America
Information Systems
Division
9740 Irvine Blvd.
Irvine, CA 92718
(714) 583-3000

ples directly via the Amiga, *Pro*Sound Designer* is a serviceable choice; it handles four sounds simultaneously, with a frequency response of 1-32 kHz.

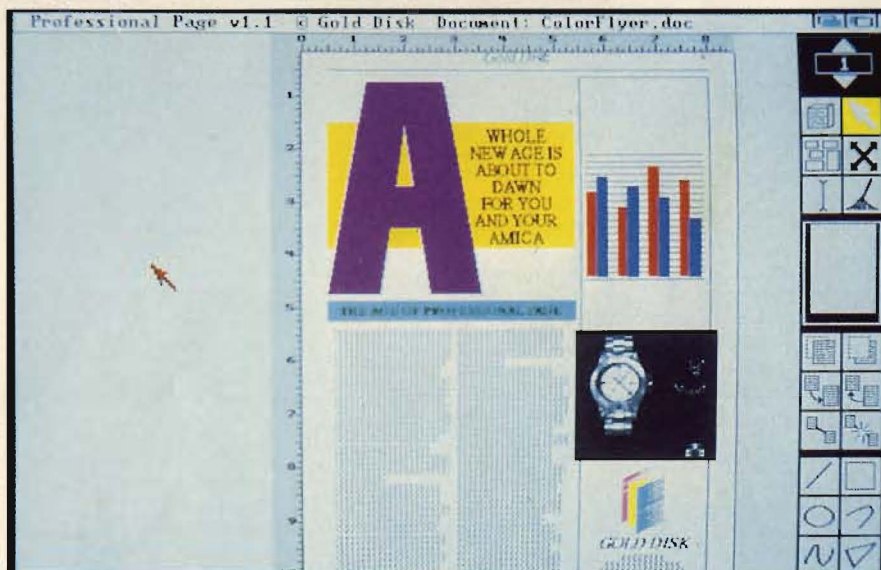
While there are many excellent music software packages for the Amiga, the modular MIDI music software system from Dr. T's is considered by many musicians to be the most comprehensive and professional. (Dr. T's software is also the most complex—power has its price.) You'll need a sequencer/master editor; a KCS (Keyboard-Controlled Sequencer), which can handle up to 48 tracks; a patch editor/librarian for the DX-11 keyboard; and *The Copyist III*, a note-editor printing utility for sheet music (the only Amiga software that gives you PostScript-formatted scores using Adobe's Sonata font). Dr. T's offers disks of additional sounds and voices for a variety of keyboards.

New Wave's *Dynamic Drums* is the best drum synthesizer for the Amiga, offering 100 drum and percussion samples, onscreen pattern editing, and full MIDI

compatibility. A neat little utility is *MidiVU*, a program that records one realtime track from any MIDI source so that you can cook whenever the inspiration hits.

The Ultimate Color Desktop Publishing System

Color desktop publishing is a fast-growing area for the Amiga. While Commodore



Professional Page from Gold Disk

has a ways to go to catch up with Apple in desktop publishing overall, the Amiga has already achieved parity in color DTP.

Again, any DTP power user would want to build a system around the most powerful Amiga, the A2500. The A2500's three megs of RAM should be enough for most DTP tasks, but the mass-storage needs of desktop publishers can best be met by a massive external hard drive such as the Supra drive mentioned above. For a flicker-free high-resolution color screen, you need Microway's flickerFixer and a multi-synchronous monitor such as the Sony MultiScan.

For color scanning, ASDG's new Professional ScanLab package, containing an IEEE interface card and software, should be matched with the Sharp JX-450 color scanner. A cool \$7,990 makes it possible for you to scan 11 × 17 inch originals into your Amiga with 300 dots-per-inch resolution and up to 16 million colors (monochrome, 256-gray-scale, 8-color, and HAM images are also pos-



sible). PostScript support should be available by the time you read this.

To print those wonderful scans in glorious color, a top-notch color printer is a necessity; the Xerox 4020 color inkjet gives good results. You'll also want a good PostScript laser printer such as the QMS-PS810.

The Amiga word processor of choice is still

Photon Paint from Microway

WordPerfect; no other word processor is as powerful. Gold Disk's *Professional Page* is the leading Amiga DTP software package, offering

among its many features true four-color-separation capabilities. When it comes to creating graphics, you can make do with *Express Paint 3.0*, currently the only Amiga graphics program that supports PostScript, as well as *Deluxe Paint III* and *Photon Paint*. The indispensable *Butcher* gives you more control over IFF-image processing than do the DTP or paint packages. In case you ever need additional fonts, you'll have 20 disks to choose from in the *Masterpiece Professional Font Collection*.

WHERE TO BUY IT

Color Desktop Publishing System

Amiga 2500 \$4,695.00
Commodore Business Machines
1200 Wilson Dr.
West Chester, PA 19380

Butcher 2.0 \$37.00
Eagle Tree Software
P.O. Box 164
Hopewell, VA 23860

Deluxe Paint III \$129.95
Electronic Arts
1820 Gateway Dr.
San Mateo, CA 94404

Express Paint 3.0 \$139.95
Brown-Wagh Publishing
16795 Lark Ave.
#2110
Los Gatos, CA 95030

flickerFixer \$595.00
MicroWay
P.O. Box 79
Kingston, MA 02364

4020 Color Inkjet Printer
\$1,495.00
Xerox
Xerox Sq.
5th Floor
100 Clinton Ave.
Rochester, NY 14644

Masterpiece Professional Font Collection \$199.00
AROCK Computer Software
1306 E. Sunshine
Springfield, MO 65804

Photon Paint \$99.95
Microway
17408 Chatsworth St.
Granada Hills, CA 91344

Professional Page \$395.00
Gold Disk
2179 Dunwin Dr. #6
Mississauga, Ontario
Canada L5L 1X2
(416) 828-0913

Professional ScanLab
JX-450 Color Scanner
\$6,995.00
ASDG
925 Stewart St.
Madison, WI 53713

QMS-PS810 Laser Printer
\$5,495.00
The Laser Connection
P.O. Box 850296
Mobile, AL 36685

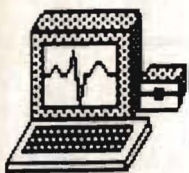
Sony Multiscan Monitor CPD
1302 \$995.00
Sony Corp. of America
Computer Peripherals
Products Division
Sony Dr.
Park Ridge, NJ 07656

WordPerfect \$395.00
WordPerfect
288 W. Center St.
Orem, UT 84057

Other Ultimates

It's possible, of course, to assemble an ultimate Amiga system in other areas—a system for computer-aided design, for example, or an ultimate game system. But whatever kind of computing you do, an ultimate system built around the Amiga can match or exceed the capabilities of similar systems on other platforms, and, in some cases, it can take you in high style to places no other computer can go. ▲

Steven Anzovin, a freelance writer, editor, graphic artist, and videographer, writes the "Amiga Specific" column for *COMPUTE!* magazine. He is the author of two *COMPUTE!* books on the Amiga, *Using Deluxe Paint, 2nd Edition*, and *Amiga Desktop Video*.



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Don't let our low costs fool you! You've never seen anything this good on desktop computer. Not an IF-THEN or choose A,B,C-type program, Cardiac Arrest! is a mathematically-based simulator. You interpret the history, on-screen EKG, lab data, and vital signs, then give treatment orders in plain English.

Antic: "Impressive and amazingly complete. Information packed manual."

Am. J. Emerg. Med.: "A godsend for ACLS training."

ST World: "Both highly educational and fun. Remarkably easy to use."

Computer News for Physicians: "This program series is an excellent value."

Cardiac Arrest! is almost as fun to use as it is educational. There are varying degrees of difficulty, with over 45 patients — and none is ever the same twice. You can actually go "beyond ACLS" with hypothermia, hypocalcemia, hyperkalemia, and more. Yet the manual is so complete and well-organized that non-medical people use the simulator to "play doctor."

Our other medical teaching software is excellent, and priced within reach of those who need to use it.

| | |
|-----------------------|-------|
| ACLS Teaching Series* | \$109 |
| Cardiac Arrest! | \$69 |
| ACLS Protocols | \$29 |
| EKG Teaching | \$29 |
| CardioQuiz | \$19 |
| Blood Gases | \$24 |

*The four-disk ACLS Teaching Series includes Cardiac Arrest!, ACLS Protocols, EKG Teaching, and CardioQuiz at 34% savings.

Mad Scientist Software

2063 North 820 West, Pleasant Grove, UT 84062

Visa/MC orders call 801-785-3028

1988 Antic
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"Outstanding Product"

DIGITAL DYNAMICS -

Power Packed Programs for your AMIGA

SNIP - Digital Signal Processing

\$495.50

Developed in 1986 for medical and space research, power and ease of use have earned SNIP an enthusiastic reception in a broad range of scientific and engineering endeavours.

- Graph, analyse and manipulate time series data.
- Input data from ACDA, Twin-X or sound samplers.
- ASCII import and binary MSDOS conversion.
- FFP format, display 20 channels, 2 Million plus points.
- Over 80 functions plus Custom interface with source code.
- FFT based filtering (tested up to 60,000 points).

Ami-X10 - BSR based home control software

\$59.50

Replace electrical timers with the inexpensive X-10 system and discover the power and simplicity of computerized control.

- Access to all X-10 features and code combinations.
- May be disconnected once X-10 is programmed.
- 256 appliance codes, 16 appliances per event, 128 events.
- Monitor timed events and display appliance status.
- Review, sort or edit stored events.
- 'Freeze' or 'Unfreeze' stored events for occasional use.
- Set 'solar' events relative to sunrise or sunset.
- Rain/Shine switch for sprinkler control.
- Includes CLI based program with batch capabilities.

The Tax Strategist - 1988 Tax preparation

\$89.00

- Federal form 1040
- Schedules A, B, C, D, E & SE
- Forms 2441 & 2106
- Plus worksheets and Cash disbursement module.

With CA State Tax

\$119.00

The Tax Strategist, Professional Version also available

DIGITAL DYNAMICS, 739 Navy Street, Santa Monica, CA 90405

Tel: 213-396-9771

See what an Amiga can do!

Print PostScript files on your Preferences printer!

This image was imported into Professional Page and printed using **PrintScript**, the PostScript interpreter for the Amiga. The Pixelations logo was designed using PostScript commands, and added to the page



using a text editor. **PrintScript's** Tempora and Alpine fonts are compatible with the Times and Helvetica fonts provided by PostScript. **PrintScript** gives you the power of PostScript for \$89!

Pixelations

Pixelations

P. O. Box 547

Northboro, MA 01532

PrintScript

\$ 89

version 1.0

BRIWALL

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OUTSIDE USA CALL 1-215-683-5433

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Charge Orders

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Customer Service

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In Business!
We Know How
To Service
Our Customers!

BOOKS

| | |
|--------------------------------|-------|
| 1001 Things to do with Amiga | \$ 11 |
| AMIGA C for Beginners + | 15 |
| Advanced Amiga BASIC Book | 15 |
| Machine Lang Prog Gde/Compute | 17 |
| Amiga BASIC Inside&Out Book + | 20 |
| Amiga DOS Inside&Out Book + | 17 |
| Amiga DOS Manual | 20 |
| Amiga DOS QUICK Ref Manual | 12 |
| Amiga DOS Reference Manual | 19 |
| Amiga DiskDrives Inside&Out + | 24 |
| Amiga Machine Language Book | 17 |
| Amiga Programmer's Guide | 15 |
| Amiga Program's Handbk Vol1 | 20 |
| Amiga Program's Handbk Vol2 | 20 |
| Amiga System Program's Guide | 27 |
| Amiga Tips & Tricks Book | 17 |
| Amiga for Beginners | 15 |
| ROM Ka-n Ref Inclds & Auto* | 27 |
| ROM Kern Exec & Lib & Devices* | 28 |
| Hardware Manual* | 18 |
| Elementary Amiga BASIC Book | 13 |
| Inside Amiga Graphics | 15 |
| Inside the Amiga With C | 21 |
| Kickstart Guide to Amiga | 19 |
| + Disks for Books | 12 |

GENERAL BUSINESS

| | |
|----------------------------|-------|
| Acquisition v1.3 | \$189 |
| Analyze 2.0 | 69 |
| Becker Text | 99 |
| Citydesk v 2.0 | 129 |
| Critic's Choice | 169 |
| Data Retrieve | 52 |
| Data Retrieve Professional | 199 |
| Easy Ledger* | 199 |
| Excellence | 169 |
| Family Tree (Your) | 35 |
| Flow | 65 |
| Haicalc | 39 |
| KFS Accountant-Amiga | 195 |
| Keepin Track | 45 |
| Kindwords | 69 |
| Logistix | 69 |
| Magellian | 139 |
| MaxiPlan Plus | 125 |
| MaxiPlan 500 | 95 |
| Microfiche Filer | 69 |
| Microfiche Filer Plus | 125 |
| Microlawyer | 39 |
| Money Mentor 2.0 | 69 |
| Nimbus Accounting | 89 |
| Organize | 49 |
| Pen Pal* | 99 |
| P.H.A.S.A.R. | 69 |
| Page Setter | 90 |
| Page Stream | 135 |
| Prowrite v 2.0 | 75 |
| Postscript for Prowrite | 32 |
| Professional Pages 1.1 | 249 |
| Publisher Plus | 64 |
| Reason | 249 |
| Scribble | 55 |
| Security Analyst | 65 |
| Shakespeare | 149 |
| Softwood File II SG | 69 |
| Softwood Write & File | 69 |
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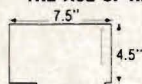
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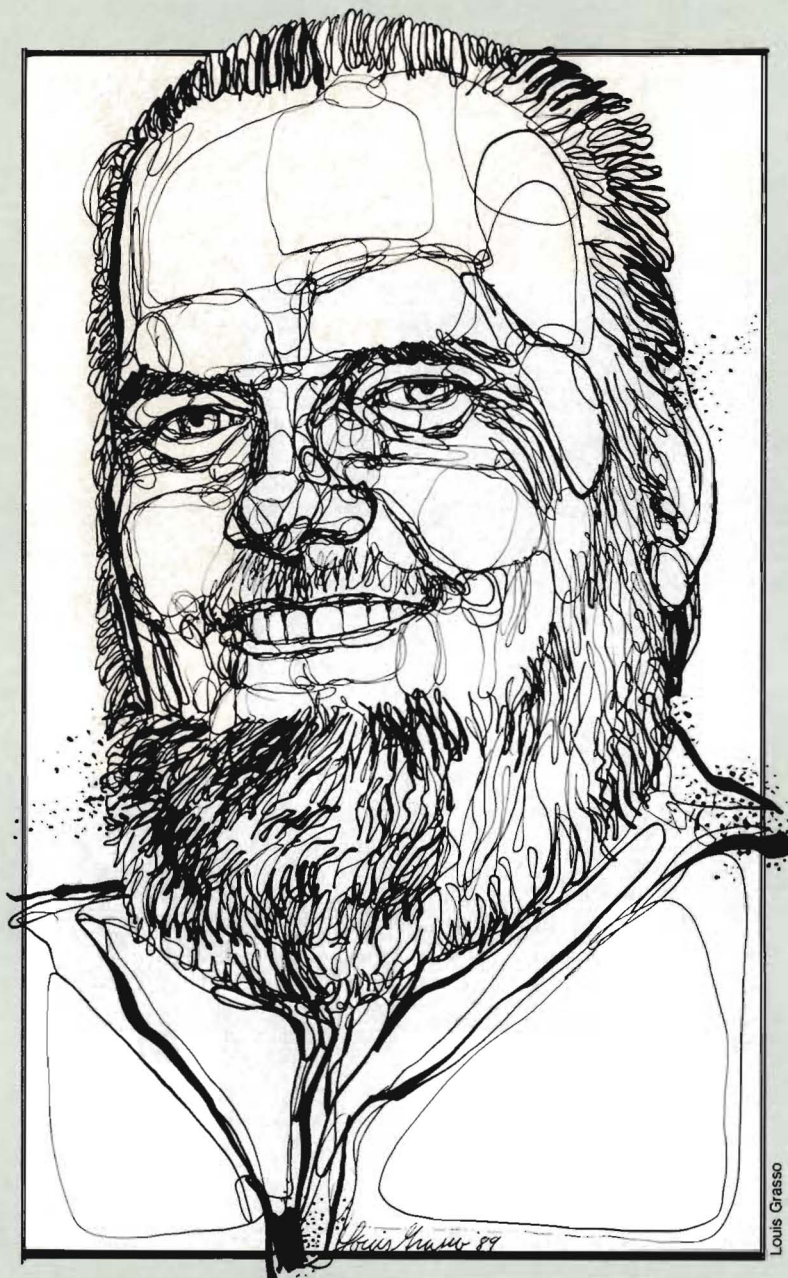
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Louis Grasso

Multitasking Miner

*A Conversation
with the
Father of the Amiga*

Keith Ferrell

The Amiga was created by a talented team of hardware, software, and marketing experts. But of them all, and by them all, Jay Miner is most frequently singled out as the heart of the team. We found out why.

Jay Miner has gentle genius eyes, calm sharp eyes that somehow see farther than other people's. Or at least, see differently.

Even as he looks at you, he's looking beyond you. He multitasks: While giving careful, measured answers to journalists' questions, Miner also seems to be thinking of other, weightier matters. A conversation can touch 20 points in as many minutes. There's nothing rude in this. It's just Jay, his own CPU whirring along private paths, personal operating system juggling past and present, ideas and dreams.

He's special, although, modestly, he'd deny it. But he is. How could he not be? In so many ways, Jay Miner is the man behind the Amiga.

Miner denies that, too. The Amiga was a team effort and it shows. Here, hardware and software work a partnership perhaps more perfect than in any other micro. Nobody creates that alone. "A lot of the credit belongs to the software guys, who did a really good executive system—multitasking, pull-down multiple screens, a lot of colors. But what helps even more is the good operating

system that developers like to use. Ours is more consistent; memory and operating system understand each other—they work together. No other computer has that." Teamwork.

A large team. "By the time Commodore bought Amiga in '83, there were about 30 people involved," he says. All of them contributed; each was important.

Dad

But even good-sized teams have hearts. Ask David Morse, head of the company and leader of the team; or R. J. Mical and Dave Needle, who worked on the software and hardware; or any of the others involved. They answer in unison.

R. J. Mical: "Jay is called 'The Father of the Amiga,' and rightly so, because it was his inspiration and his designs that are at the heart of the Amiga itself."

Miner designed the chips, the circuitry at the center of the machine. "We wanted to extend the capabilities of the personal computer," David Morse notes. "And Jay figured all of it out—how to do it, how to put it in silicon. From a technical standpoint, there's no question that Jay is clearly the father of the Amiga."

Dave Needle agrees. "The thing I credit him with most is his unbelievable wisdom about what you could stick into the silicon. Plus, he's a nice guy. Yeah, Jay's the father of the Amiga."

Parenthood, even of a computer, isn't easy. Miner went into the project aware of the odds against its success. In the face of what he calls the "IBM/Apple steamroller," the opportunities for establishing a new platform are slim at best. But there are some.

For Amiga, the opportunity was games. The project came together at the height of the mid-eighties' videogame boom, a fact that for better or worse shaped much of the Amiga's nature. It was a market Miner understood: Before Amiga, he designed the chips for Atari's 2600 cartridge machine. The 2600 essentially became a private mint, with

Atari coining cash faster than it could be counted.

Game Computer?

Miner wanted to build a computer. "After the 2600 I went on to do the 400/800 series." Technology continued to evolve. Miner wanted to build a great computer. "I wanted to do a 68000 at Atari," he says. "I thought that was the next generation, the 6802." Atari wasn't interested. "They wanted to milk the 400/800 first. A lot of us left Atari at that time."

For the next three years, Miner designed custom chips for the biomedical industry. More than Amiga hearts beat with Miner's work: "I did pacemaker chips to be implanted to detect and counteract bad heart rhythms."

Enter the Amiga.

Atari's money machine had not yet lost steam, a fact not overlooked by Amiga's backers and management.

ured in Miner's agreement with Morse. When Miner came to work, so did Michi. A certain symbiosis sang between man and dog, to the point that Dave Needle insists that Michi may deserve more credit for the Amiga than does Miner.

"The dog sat in on meetings and barked at the right time. The dog is the inventor of the Amiga, actually. The dog did the design work." Needle grows insistent. "Jay sat at his drafting board, Michi underneath it. Jay would draw a gate, then look down at Michi. Michi would growl, and Jay would erase the gate. Jay would draw another gate, Michi would pant approvingly, Jay would keep the gate in."

Needle—no dog lover—doesn't mind that Michi's contribution to the Amiga goes unappreciated. "Those of us in the building knew that Michi had done most of the design. But giving dogs

"It was Jay's inspiration and his designs that are at the heart of the Amiga."

—R. J. Mical

"We were going to take our share of Atari's booming videogame business."

Miner still wanted to build a sophisticated computer, but Amiga's money was marked for games. "Our backers and Dave Morse and R. J. wanted a videogame," Miner recalls. The memory amuses him. "The best I could do was make a videogame machine that was expandable into a real computer, which is what finally happened."

It wasn't easy, but it wasn't dull, either.

Dog Story

For one thing, there was an unsung member of the team: Jay's dog, Michi. Michi fig-

credit for that sort of stuff is not right. So it's OK with me that Jay gets the credit."

For a while it was hard to figure what sort of machine that credit would represent. Despite his commitment to building a full-fledged computer, Miner had long since achieved a wry accommodation to marketplace realities. If they wanted games, he would build a computer that played games. Games, after all, had helped bring PCs home. "The fact that there was business software let people buy a home machine and take it off their taxes while they flew *Flight Simulator*."

So Miner pumped for business capabilities on the

Amiga. "That was why I wanted to have some business software—so people could write it off, yet have a good machine for education and games for their kids."

Beginnings and Endings

Complicating all of the effort was a dangerous shortage of funds. Despite the group's knowledge that they were engaged in something special, there was also a growing awareness that only limited

Amiga was starting to fly. The computer got built, and built right, but the marketing ball got dropped and has only lately been picked up again. Miner left to pursue other interests, but kept a somewhat jaundiced parental eye on the Amiga's progress.

Has too much time passed? Is it too late for the Amiga to become a major factor in the personal computer market?

"I alternate between

"Jay is unbelievably wise about what you can stick into the silicon. Plus, he's a nice guy."

—Dave Needle

time and money were available to make the dream come true. "We got the Amiga out," Miner recalls, "but we did it by working 24 hours a day."

But even heroic efforts were not enough to protect Amiga's independence. Facing a desperate financial situation, the company was sold to Commodore. Miner remained on the team, although there were battles.

"At one point Commodore wanted to take out the expansion port," he recalls. "I fought them tooth and nail on that one. I put my job on the line. But I had to have an expansion port, and Commodore finally said OK."

Win one, lose one. Miner wanted a detached keyboard, to send a message that the Amiga was a *computer*. "People saw a small built-in keyboard and said, 'That's a videogame.' They saw an IBM-style box and said, 'Oh, that's a *computer*.' I wanted to build on that perception." The finished 500 shows who won.

Finally, Commodore itself faced a severe financial crunch and, mistakenly, Miner feels, tightened the purse strings just as the

optimism and pessimism," Miner says. "When I'm at a [computer] show, I feel optimistic. But when I get on the street and tell people I designed the Amiga, they say, 'What's an Amiga?'"

It's odd to hear bitterness in his voice, but it's there. "One person out of a thousand knows what Amiga is. I think that's a big failure on Commodore's part. They could have changed that with the right PR and marketing. Now, it's almost too late."

Again, though, Miner's fundamental brightness intrudes: "The more I see, though, the more optimistic I'm feeling."

The Future Is Now

Could it be done again? Could a new computer be introduced by a new company today?

"It takes an awful lot of money. The marketing steamroller, IBM and Apple's marketing and PR clout, are hard to beat. In that sense it takes a big corporation or a lot of money—the same thing." Nor is the computer itself the cost center. "Engineering is cheap compared to what it costs to get name recognition. Enough name recognition to have a chance

of reaching the market on a big enough scale to compete would take \$40 or \$50 million. To get *started*."

He sighs. But only for a second before brightening. "But if somebody with a lot of money came along, there still is an opening there for a good machine to compete with IBM or Apple."

The nature of such a machine preoccupies Miner, although he's had little time of late to make his ideas a reality. Miner has had a rough few years since he left Commodore. In the prime of life, he found himself spending much of that time on his back, desperately ill. His kidneys were failing, for reasons unknown. "I spent six months hooked up to a dialysis machine. My sister volunteered to donate a kidney." The transplant took place in mid-1988, and within a few months Miner was on his feet again.

In his fifties now, Miner remains youthful in spirit, ready to continue his lifelong process of hard study, eager to undertake new challenges, followed by the even more difficult application of what he's learned to what he wants to build.

Nor has he stopped watching the microcomputer industry, in whose growth he's played so large a part. And he's got some opinions about the state of the industry.

Tomorrow

Where do the opportunities lie today?

"I think there's a huge opportunity in High Definition television compatibility. Especially with a machine like the Amiga that's designed to mesh with one of the High Definition standards, in terms of both the horizontal line rate and bandwidth—the number of pixels per line, in other words. I think there's a big opportunity there for a company to look at what's going to be big two or three years from now."

Obviously, High Definition television is aimed at the consumer market. Is there a home market for computers, and is that market solely

interested in entertainment?

"I like to call it a *home* market rather than an *entertainment* market. I think of products like flight simulators—how much you can learn from them."

The idea of simulations appeals to him, and he's off again: "Not just *flight* simulators. Simulations of all kinds can be so educational. Learn how to drive a bulldozer. Learn how to repair telephone lines." The idea captures him. "Job training at home! Is that a game or a simulation? Sailing! You could make a really good graphic sailboat on a machine like Amiga."

A world of products waiting to be developed: Miner keeps those eyes of his on the future, and wishes the rest of the industry would do the same.

Don't Look Back

"Computer manufacturers, more than any other industry, put too much emphasis on being backwards-compatible," he says. "It's dangerous, because the industry changes so fast. You can never have as good a product when you have to be backwards-compatible. It holds up the development of new products."

There's a paradox at work, and Miner understands it. "You can't change every couple of years. But every five years or so, you're going to be *forced* to change by new competition."

What he's asking for is a juggling act, one he knows that few companies are willing to attempt. "You've got to have a certain amount of backwards compatibility, but you also have to keep your eyes on the future. You have to say, 'When am I going to create a machine that's created from the ground up, and created *right*?'"

The future weighs on Miner, and he (and Michi) may be planning to play a part in its creation.

"Now that I've got my health back, I'll be looking for another job. Maybe another startup. Maybe. . ."

Keep your ear to the ground. Jay Miner's ready to go back to work. ▲

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Zapshot!



Using Canon's Hot New Video Technology with the Amiga

C'mon, admit it. You were probably attracted to the Amiga not for its sound and music or its multitasking abilities, but for its amazing graphics. You may have been snared by the glitzy effects of commercial programs, or maybe your Amiga dealer simply ran a demo collection of HAM images to get your attention.

In any case, once the quality of the Amiga screen image is compared with ordinary computers, the choice becomes easy. And with the proliferation of graphics programs like *Deluxe Paint*, *Photon Paint*, and *Deluxe PhotoLab*, even the least artistic among us can produce strikingly beautiful images. Those with more talent can truly make an Amiga screen come to life.

**Canon's Zapshot
opens up a new world
for the Amiga graphics
aficionado.**

Frank Savarese

Now Canon, best known for its 35mm cameras and personal copiers, has introduced an amazing new product that seems a perfect fit for the Amiga. It's called Zapshot—or, more formally, the Canon RC-250 High Band Still Video Camera—and it's the first of a new generation of still cameras that don't use film. Images are recorded electronically on a two-inch floppy disk. Zapshot images are available for immediate playback with a standard NTSC video signal. Just plug it into your monitor or your television (if it has a direct composite input) and—ZAP!—your family pictures are on the screen. Plug it into a video digitizer and—ZAP!—the images go directly into your Amiga. In full color, of course.

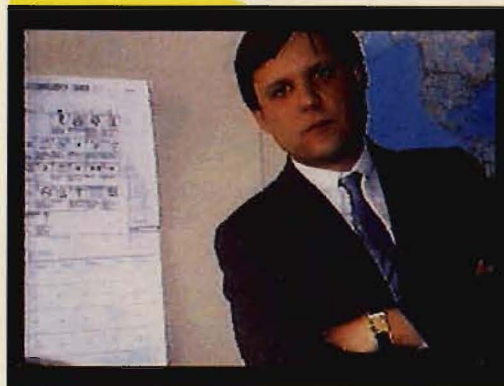
Zapshot!

Think of the possibilities: You could shoot pictures of city skyscrapers or mountain lakes—everything from gurus in Tibet to girls in bikinis on the beach at Waikiki. Zapshot is as easy to carry and use as a snapshot camera, only more fun. Return home, connect the camera to your digitizer, and you can download images from around the world into IFF files for your future enjoyment. Call them up any time into paint programs to resize them, redraw them, and work magic with color. Print WANTED posters of your boss. Embellish your own programs with colorful and realistic screens. And combine photographic-style images with text in desktop publishing programs.

Despite their ability to freeze-frame, video cameras were never meant to be used for still photography. The prospect of using a conventional 35mm camera to make high-quality still images can be stifling: taking the pictures, waiting for the film to be processed, waiting for individual prints to be enlarged, and then scanning or shooting them into a digitizer with a video camera. So let's look at the Canon Zapshot.

Fifty Images on a Disk

The Zapshot is lightweight, compact, and fully automatic. Measuring 4 × 6 inches (roughly the size of a paperback book), it's shaped to feel good in the hand and fit nicely into a large pocket. Its



a disk, either one at a time or at three frames per second in the continuous shooting mode. Since the disks are not light-sensitive, they can be removed and swapped at any time. So, if you insert a disk that's been partially used, for instance, the LCD display will count down from 50 to 16 and then you'll be ready to shoot.

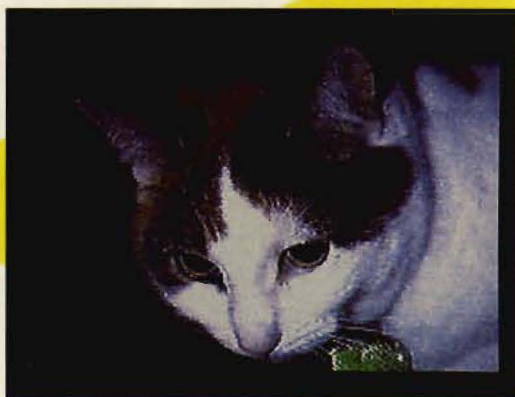
Shaped like a pair of hi-tech binoculars, Zapshot can be brought to the eye and easily held with one hand, though I prefer the steadiness of two. The viewfinder is bright, clear, and uncluttered. Just aim at your subject and press the large yellow shutter button; a barely audible "clunk"—not really a "click"—and a tactile sensation in your index finger let you know you've recorded an image. Exposure and white balance are completely automatic, there's a built-in flash, and the 11mm f2.8 Canon lens (equivalent to a 60mm lens on a 35mm camera) keeps everything in sharp focus from just over three feet to infinity. If you want to shoot close-ups, there's a MACRO setting on the lens that gives you razor-sharp images of objects just 12 inches away. A special

rechargeable lead-acid battery will yield up to 800 shots on a charge when shooting in daylight without flash. Zapshots that I made under a wide variety of conditions were terrific—especially when viewed on a large-screen monitor. Despite the Zapshot's clean lines and simple exterior, there's a lot of innovative and complex technology inside. A single example: Canon's advanced high-resolution CCD image-sensor serves double duty, actually measuring the light level striking it *during the exposure* and making adjustments via a feedback circuit.

Self-Contained Playback

The Zapshot features a self-contained playback system: Simply connect the camera to your digitizer and you're in business. The supplied cable has a Zapshot-specific connector on one end and a standard RCA plug on the other. Coil it and keep it in your pocket as you travel and you can use any TV monitor to review the images you've recorded. This is significant—the one or two competitive products require additional attachments for playback.

Let's put some images into our Amiga. Depending on your budget, the type of



If you've seen digitizers demonstrated, you may, at first, wonder what all the fuss is about. Consider that most digitizers you've seen were probably getting their picture from a stationary source, such as a picture in a book or from a video camera connected by an umbilical cord. This obviously limits mobility. True, you can take a video camcorder out into the field and make tape for playback into the digitizer, but individual frames of moving video images tend to blur.

few controls are easy to understand and conveniently grouped on the camera top.

Press the single button on the camera front and the door pops open to reveal the disk-loading port. Slide in a blank disk, set the main control to REC (record or shooting mode) and a small liquid crystal display comes to life, counting down from 50 to 1 to let you know you are ready to make a picture on track 1—the equivalent of the first frame on a roll of film. You can shoot 50 pictures on

Zapshot!



ground of a picture; then add characters or objects you've created in the foreground.

- For a business presentation, combine a picture of inventory piled high with a graph showing market share,



sales, and so on.

- Import an image into a CAD program—maybe a building under construction—and play architect.
- Test your ideas for new package designs featuring product pictures.

The Zapshot with an Amiga has a simple appeal as well: It's a neat, new way to shoot, store, and show family pictures. Canon is backing this new product in a big way, calling it "Photography for the Video Generation."

graphics you're interested in, and whether your output has to meet professional standards, there are several digitizers to choose from—with more on the way. I have access to Progressive Peripheral's FrameGrabber and find it more than adequate for my needs.

Once the cable from the Zapshot is connected to the FrameGrabber, insert a recorded disk into the camera and move the main control to PLAY. Again, the LCD display will count down to 1, but this time, after perhaps a second's delay, the image on track 1 will appear on your monitor. Two small yellow buttons just below the LCD window labeled <REV and FWD> allow you to advance frames in either direction to review the images on the disk. After you have the appropriate software loaded in the computer and have selected screen size or resolution parameters, activate the digitizer when you get to a frame you want to store. That's all there is to it.

Within seconds, you've downloaded the image.

Once stored in computer memory, you can easily erase the images from the Zapshot disk. In fact, any individual track or the entire disk can be erased and reused again and again.

Cost vs. Performance

Electronics dealers from all over the U.S. and visitors from around the world were introduced to Zapshot at the Winter Consumer Electronics Show held this past January in Las Vegas. It was our first opportunity for a hands-on demonstration, and we took Zapshots for ourselves. We were impressed with the product's size, shape, user-friendly design, and high resolution. But price will make it the hot item in 1989. The Canon Zapshot will probably be available through authorized Canon camera and video dealers this spring, priced in the \$800-\$900 range.

Zapshot picture quality is impressive, especially when

displayed on a TV monitor. However, in order to get 50 images on a disk, Zapshot records in the field mode, which limits the quality of the digitized image to medium-resolution parameters with the FrameGrabber. Canon has been marketing advanced still video cameras for industrial and broadcast television use with up to 600,000-pixel CCDs and price tags in the \$5,000 range. These still video cameras record in the frame mode—composed of two fields—to produce ultra-high-resolution images for those who won't settle for less. But the quality of the digitized Zapshot images is still very good—remarkable for under \$1,000—and it's certainly suitable for a wide variety of applications. Here are a few:

- Zap your car, your boat, your house into a paint program and explore new color schemes. Try adding a new wing to your home.
- Shoot a beautiful landscape and put it into the back-

ON THE HORIZON

Winter CES brought three new video cameras. Besides the Canon Zapshot, Sony showed its Mavica MVC-C1 compact still video camera, which requires a companion unit, the MAP-T1 for playback. Olympus showed a working sample of a comparable product that also requires a separate device for playback, but it did not appear ready for sale.

Additional manufacturers are sure to enter the fray shortly. Watch *COMPUTE!'s Amiga Resource* for more news.

Frank Savarese, a senior vice president of a New York advertising agency, is an Amiga and video aficionado.

EXPANDING THE 500

Arlan Levitan

The Amiga 500 is widely recognized as being an outstanding value, offering all of the visual and auditory impact of its forebears, the Amiga 1000 and the upscale Amiga 2000, at a bargain price. Ask any salesperson what distinguishes the 500 from the 2000 and you'll more likely than not have the superior expandability of the 2000 posited as the big difference between the two machines.

While some compromises in the upgradability of entry-level systems are inevitable, there are far fewer than you might expect in the A500. Since the 500's standard parallel, serial, and video ports are virtually identical to those found on its brethren, it's hardly surprising that almost all of the printers, modems, and monitors supported by the 2000 and 1000 work just as well with the 500. What may be surprising to some is the wide variety of memory and data-storage devices that are available to complement the 500.

More Power to You

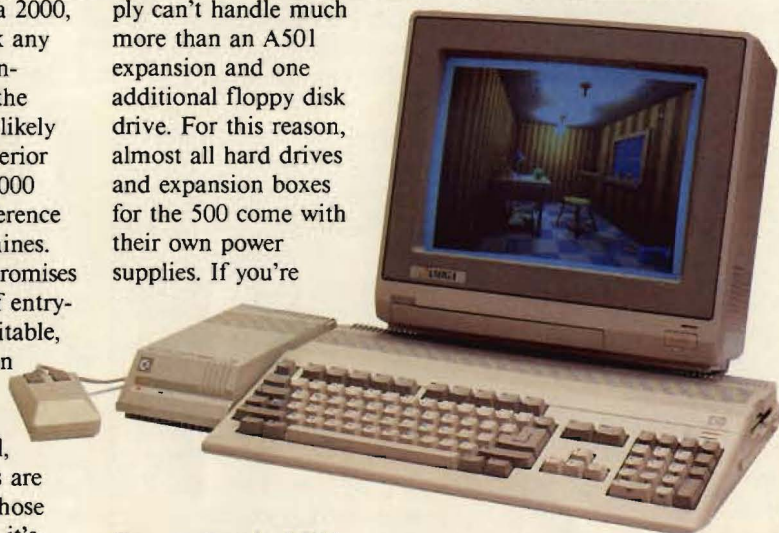
First, a caveat is in order while we're talking about adding accessories to the 500: The Amiga 500's power supply can't handle much more than an A501 expansion and one additional floppy disk drive. For this reason, almost all hard drives and expansion boxes for the 500 come with their own power supplies. If you're

more robust unit such as that marketed by Phoenix Electronics. Phoenix's 500-compatible power supply (\$99.95) can handle just

as clams with a mere 512K of main memory, some recent titles, most notably *Dungeon-Master* and *Dragon's Lair*, require a megabyte of memory. Many graphics-intensive programs of the desktop publishing, animation, and computer-aided design (CAD) ilk need at least a megabyte of elbow room and will gladly gobble up whatever additional RAM you throw at them.

The Amiga's operating system handily includes an easy-to-use ramdisk that can be used to speed up operations that make repetitive use of disk-based routines. Unfortunately, any memory used for a ramdisk is temporarily unavailable for use by application programs. Adding additional memory to your 500 can let you make use of the ramdisk feature and still have enough memory left to run your favorite programs.

Many Amiga owners upgrade their system's memory to take advantage of the Amiga's multitasking talents.



Commodore's A590
20-megabyte hard drive/RAM expansion unit

considering adding internal memory expansion to take your 500 beyond a megabyte or going beyond a total of two floppy disk drives, consider deep-sixing your 500's power supply in favor of a

more robust unit such as that marketed by Phoenix Electronics. Phoenix's 500-compatible power supply (\$99.95) can handle just

Memory Upgrades

While most entertainment software packages are happy

The ability to run multiple programs simultaneously was carefully integrated into the Amiga's original design. Generally speaking, the greater the number of programs or tasks that are run at the same time, the greater the total memory requirement.

Most users will find Commodore's A501 expansion card (\$199.95) to be a cost-effective and convenient way to double the 512K of memory in a standard Amiga 500 to a full megabyte of RAM. Installing the A501 in the 500's underside expansion compartment requires no tools.

Third-party boards that are compatible with the A501 were commonly available when the 500 was introduced. But, as Commodore held the price of the A501 down and the cost of RAM chips skyrocketed in 1988, other manufacturers were hard-pressed to produce their products at a competitive price. Today, most A501 compatibles are sold as bare boards; be sure to add the price of whatever memory is required when you're considering overall cost. The Commodore unit also includes a battery-backed clock/calendar—possibly an extra-cost option on a third-party board.

What's In and What's Out

Amiga 500 memory-expansion units that go beyond a megabyte of RAM, like belly buttons, come in two basic varieties: *outies* and *innies*—they either go outside or inside the computer console. The latter, while reasonable in cost, is not for the faint of heart because it typically involves disassembling the 500 and installing a piggyback board on the 500's main circuit board. Both Progressive Peripherals and Spirit Technology offer nonpopulated internal memory-expansion boards. Progressive's EXP-1000 and EXP-8000 can add an additional one and eight

megabytes, respectively, to your system. Spirit's SIN 500-2 accommodates up to two megabytes of chips, in 512K increments. Unless you're at ease cruising around the innards of electronic equipment, installation of such devices is best left to a qualified dealer.

As for the outies, Microbotics' Starboard2/500 (\$399) attaches to the 500's expansion bus (located under a plastic hatch on the left side of the system) and has a maximum capacity of two megabytes of additional RAM. Prospective purchasers should take note that some early models of the Starboard2/500 are incompatible with Commodore's A501 memory card. In the world of Amiga expansion, it's not uncommon for two manufacturers' products to have trouble talking to each other. Always double-check with the manufacturer or your dealer to ensure that any new purchase is fully compatible with your system. When you're dealing with hardware that attaches to the 500's expansion bus, it's also a good idea to stick with devices that provide a *pass-through* for the 500's expansion bus, allowing other items that use the bus to be added.

Expansion Boxes

The 500's expansion bus may also be used to add the

capability of using expansion cards designed for the Amiga 500's big brother, the Amiga 2000. This includes (but certainly is not limited to) products such as reasonably priced RAM cards. Expansion Technology's ToolBox (\$190–\$260) and Pacific Peripherals' SubSystem 500 (\$249) are external cages for the 500 that can hold two standard Amiga 2000 expansion cards. The SubSystem 500 is also available with an integrated 3½-inch floppy disk drive for an additional \$150.

Comp-U-Save sells three expansion boxes for the 500: a two-slot, a three-slot, and a six-slot expansion box. The six-slot Comp-U-Save Expander comes as a do-it-yourself kit—parts include board, box, and power supply—and provides three Amiga slots and three IBM slots. Prices for these products range between \$175 and \$520.

Disk Storage Expansion

Amigaphiles who make frequent use of their 500s will often make additional disk storage their first equipment upgrade. Adding a second floppy disk drive to your 500 eliminates much of the disk shuffle that owners of single-drive systems are forced to put up with. The Commodore 1010 is a perfectly serviceable unit, but at

\$299.95 it's hardly a "best buy," and its short interface cable sometimes makes placement of the drive less than convenient.

California Access, Flexible Data, Megatronics, Oceanic America, and Future Systems make 1010-compatible drives that list for well under \$200.00 and sport significantly longer cables. Most third-party floppy drives are also much smaller than the Commodore unit, and several have circuitry that eliminates the harmless but annoying click-click sound made by others (including the 1010) when a disk is not inserted. Flexible Data peddles the FData-20 as well (\$299.95), a dual-drive system with its own integrated power supply.

Hard Times Ahead?

Adding an external hard disk drive to your 500 makes storing and accessing large quantities of data a breeze. A 20-megabyte hard drive holds more than 22 disks worth of information. Prices start as low as \$599.95 for a 20-megabyte unit from Progressive Peripherals. Supra's external drives for the 500 range from 20 to 120 megabytes of storage. A500 owners who crave high performance covet the Q40 and Q80 models of Great Valley Products' 500 HD/RAM subsystem. The Q-series machines are based on ultrafast Quantum hard disk mechanisms and are priced accordingly. All GVP 500 HD/RAM systems also can be optionally equipped with up to 2 megabytes of main-storage RAM expansion for the 500.

Amiga 500 hardware mavens on a budget can buy an Escort disk-expansion subsystem without a drive mechanism from Expansion Technologies for \$335.95, as well as complete 32- and 48-megabyte Escort subsystems. Many hard drive systems that are compatible with release 1.3 of the Workbench allow you to start up your 500 di-



Master-3A floppy disk drive from Oceanic America

rectly from the hard drive, and they can take advantage of the improved performance of 1.3's Fast File System (FFS).

Not available at this time, but slated for release later this year, is Commodore's A590 20-megabyte hard drive/RAM-expansion unit. The A590 attaches to the left side of the Amiga 500 via the computer's expansion bus and provides a SCSI interface for adding hard drives, CD-ROMs, or optical disks. An optional 2 megabytes of RAM for the 500 can be installed in the A590. The A590 comes with its own external power supply.

Hot Rod 500?

While we don't know of any 68020 or 68030 accelerator boards designed for the 500,



Microbotics' Starboard2/500 2-megabyte external RAM expansion unit

Creative MicroSystems' Processor Accelerator (\$199.95) is a plug-in internal board that allows you to double the clock speed of your system's 68000 CPU chip, from 7.16 to 14.32 MHz. The board also has a socket for an optional 68881 math copro-

cessor running at 12.5 or 16 MHz.

We Could Make Beautiful Music Together

You don't have to spend an arm and a leg to enhance your Amiga 500 rapture factor. Are you listening to your

Amiga through a single speaker? Adding a pair of self-powered speakers such as Yamaha's DM-01s or feeding the 500's sound outputs into your stereo can literally open your ears to the prodigious audio impact of any Amiga. If you're of a musical bent, you can add an inexpensive MIDI interface, keyboard, and software combination to your system for under \$300.

That's a Wrap!

When it comes to expandability, the Amiga 500 need not take a back seat to any of today's popular microcomputers. It may not come equipped with a fistful of empty slots, but given the will and enough desktop real estate, it can be pressed into service to fill the computational requirements of even the most demanding user.

Where to Buy It

Accelerator Board

The Processor Accelerator \$199.95
Creative MicroSystems
10110 SW Nimbus #B1
Portland, OR 97223
(503) 684-9300

Expansion Boxes

Two-slot expansion box \$174.99
(complete system)
Three-slot expansion box \$249.99
(complete system)

Comp-U-Save Expander six-slot expansion box and power supply \$119.99

Comp-U-Save Expander six-slot expansion board \$399.99

Comp-U-Save
410 Maple Ave.
Westbury, NY 11590
(516) 997-6707

ToolBox two-slot expansion boxes

EEC-2510 (with 1-amp power supply) \$189.95

EEC-2520 (with 3-amp power supply) \$259.95

Expansion Technologies
46127 Landing Pkwy.
Fremont, CA 94538
(415) 656-2890

SubSystem 500 two-slot expansion box \$249.95

Pacific Peripherals
P.O. Box 14575
Fremont, CA 94539
(415) 651-1905

Floppy Disk Drives

CA-880 3½-inch disk drive \$229.95
California Access
780 Montague Park Expwy. #403
San Jose, CA 95131
(408) 435-1445

1010 3½-inch disk drive \$299.95

Commodore
1200 Wilson Dr.,
West Chester, PA 19380
(215) 431-9100

FData-10 3½-inch disk drive \$149.95

FData-20 3½-inch disk drive \$299.95

Flexible Data Systems
10503 Forest Ln. 148
Dallas, TX 75243
(800) 562-3539

FS-80A 3½-inch disk drive \$199.95

Future Systems
21634 Lassen
Chatsworth, CA 91311
(818) 407-1647

Air Drive 3½-inch disk drive \$199.95

Megatronics
P.O. Box 3660
Logan, UT 84321
(800) 232-6342

Master-3A 3½-inch disk drive \$159.95

Oceanic America
P.O. Box 70587
Eugene, OR
(503) 741-1222

Hard Drives

A590 20MB hard drive (not available at this time)
Commodore
1200 Wilson Dr.
West Chester, PA 19380
(215) 431-9100

Escort 32MB hard drive \$799.95

Escort 48MB hard drive \$899.95

Escort chassis without drive mechanism \$335.95

Expansion Technologies
46127 Landing Pkwy.
Fremont, CA 94538
(415) 656-2890

Impact A500 20HD/RAM Subsystem \$795.95 (0K RAM)

Impact A500 30HD/RAM Subsystem \$895.95 (0K RAM)

Impact A500 45HD/RAM Subsystem \$1,095.95 (0K RAM)

Impact A500 40Q/RAM Subsystem \$1,195.95 (turbo drive with 0K RAM)

Impact A500 80Q/RAM Subsystem \$1,655.95 (turbo drive with 0K RAM)

Great Valley Products
Plank Ave.
Paoli, PA 19301
(215) 889-9411

20MB external hard drive \$599.95

Progressive Peripherals & Software
464 Kalamath St.
Denver, CO 80204
(303) 825-4144

20MB hard drive \$799.95

30MB hard drive \$945.95

60MB hard drive \$1,495.95

120MB hard drive \$1,995.95

Supra
1133 Commercial Way
Albany, OR 97321
(800) 727-8772

Memory Expansion

A501 512K internal memory expansion (with clock) \$199.95
Commodore
1200 Wilson Dr.
West Chester, PA 19380
(215) 431-9100

Starboard2/500 512K-2MB external memory expansion \$399.95

Microbotics
811 Alpha Dr.
Richardson, TX 75081
(214) 437-5330

EXP-1000 1MB internal memory expansion \$299.95 (0K RAM)

EXP-8000 8MB internal memory expansion (call for price)

Progressive Peripherals & Software
464 Kalamath St.
Denver, CO 80204
(303) 825-4144

IN-500 0.5-1.5MB internal memory expansion \$149.95 (0K RAM)

SIN 500-2 0.5-2.0MB internal memory expansion \$299.95 (0K RAM)

(optional external power supply available)

Spirit Technology
220 W. 2950 S
Salt Lake City, UT 84115
(801) 485-4233

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Phoenix Electronics
P.O. Box 156
Clay Center, KS 67432
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ST-251N 40 MEG 519 DEL
ST-277N 60 MEG 689 DEL
ST-296N 80 MEG 929 DEL

these kits include IVS Trumcard SCSI hard drive ctrl, cable, software and delivery in the contiguous USA. This is not an assembly kit! It is a package.

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these hard cards are for an Amiga-2000 with a bridgecard. These drives will take up 1.5 IBM slots on the Amiga 2000 motherboard

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JUST FOR FUN

Shay Addams

Multiplayer Games

My all-time favorite computer game remains *M.U.L.E.*, which is most fun when several people (up to four) are playing. Multiplayer games, which for the purposes of this column will be defined as those in which more than two people interact, have never been popular—at least with software publishers—and even today remain a rarity. To find out why, and what makes two of the most innovative multiplayer games innovative enough to be deemed so by this veteran game player, I rang up two of the industry's most talented game designers: Jon Freeman and Reichart Von Wolfsheild.

Jon Freeman

Jon Freeman, of Freefall Associates, is coauthor of one of the first computer role-playing games, *Temple of Apshai*, as well as the more recent *Archon*, *Adept*, and *Rainbow Road*.

Addams: I understand *Rainbow Road* is unusual because it's a three-player role-playing game.

Freeman: It's actually a three-player fantasy role-playing game in which one or two of the roles can be played by the computer. It began as a cross between some of the things we did in *Archon*, *Murder on the Zinderneuf*, and *Temple of Apshai*. That's not how it was designed; that's just one of a multitude of ways I can look at it.

Addams: Why did you decide to incorporate the multiplayer aspect?

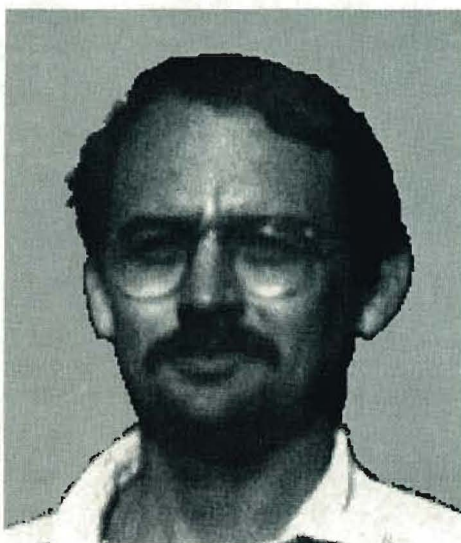
Freeman: Several things. I have always liked multiplayer games. *Archon*, for example, was originally designed as a two-player game. Part of what we wanted to do was a game that several people could play, because that's the best kind of game. But we wanted to make it possible for one person to play, since that's the way most computer games are played, and, more to the point, that's the kind that gets bought.

Most people seem afraid to buy multiplayer games, apparently because they think they won't be able to talk other people into playing. I think it's more of a perception than a reality. We also wanted to do a role-playing game that was possible to play even if you're not already thoroughly immersed in the role-playing culture. Most role-playing games require slogging through manuals that are

typically not very well written and assume you've played *Dungeons and Dragons* since the day you were born. If you haven't, you have no idea in the world what they're talking about. We made *Rainbow Road* so that someone who hasn't played anything more complicated than *Archon* can literally pick it up and start playing without any more recourse to the manual. Basically [you play] by trial and error, and example—either by playing it with someone who has played it before or by going out in a group of computer-controlled characters.

I believe in playing
games with people,
not with computers.

Reichart Von Wolfsheild



Addams: And what are the roles of the characters?

Freeman: It's a group of three people who can be different kinds of Mages, Knights, and Champions. We give you a choice of 31 characters who are already equipped with weapons and other items, but you aren't obligated or even encouraged to stick with the three you start with. All of them are constantly on call, so you can go back into your home castle and reform the group. Different ones are suited for different things, and certain items can be used, or used best, by specific characters, so we expect a lot of character interchange in the course of the game.

Addams: How does this actually work with three people playing?

Freeman: If three people are playing, one is on the keyboard and the others use joysticks. And everyone is doing things at the same time—not like traditional role-playing games, in which you take your turn and then I take mine. It's basically realtime role-playing for several

people. While you're asking a question, the person you've run into may be asking you a question. Or another player could be fighting a monster while I'm talking to a different being.

Addams: If you're talking to a creature, could I walk over and kill it at the same time?

Freeman: Yes. Of course, seeing you coming at it with your sword out, the monster might strike you first or run away. And in this game, the people with you may agree with your actions, but they may not. They might be talking peace while you want to attack. ▸

Addams: Is there anything about the Amiga that makes it particularly suitable for multiplayer games?

Freeman: It's fairly easy, though not nearly as easy as we thought it was going to be, to animate large numbers of objects simultaneously because the Amiga provides aids for this kind of thing. We can have encounters of up to four monsters against four players (some Mages can call in beings to help), all running around independently. Plus there are missiles flying, swords striking, and all that sort of stuff. And we use scrolling graphics for the landscape, so the animation requirements are fairly heavy. The obvious advantage is that the Amiga has two joystick ports, which is how we came up with a maximum of three people. With an Apple or an IBM, that's not standard equipment.

Addams: There haven't been many multiplayer computer games. Do you expect to see more in the future?

Freeman: I hope we see more, and I suspect we will. There are three different paths. The one we took involves multiplayer games that one person can play and that require artificial intelligence and/or personality [for the computer-controlled characters], so you're getting that experience when playing with just one character. Another approach is games like Dan Bunten's *Modem Wars*, in which you use a modem to play against other people, though that, too, is designed so one person can play by himself. And I think that as more and more people get modems, that avenue becomes more practicable.

The third angle, which also uses modems, is networking games, in which you play with people on networks like CompuServe or GEnie—people who are scattered around the country. That becomes more attractive financially to get involved with, because you have a number of people who are willing to spend large amounts of money to play these games. As the word spreads and more people get modems, that's going to spread. It can be a lot of fun, and it has its own unique attraction: The ability to play a game with people all around the world has an intrinsic appeal. There's a sense of wonder at being able to talk to, play with, and interact with someone in England.

Reichart Von Wolfsheild

Reichart Von Wolfsheild, who heads up Silent Software and Legend Software (best known for *Firepower*, a tank vs. tank game that can be played over modems), also designed the computer game *Who Framed Roger Rabbit*.

Addams: What was your role on *Firepower*?

Von Wolfsheild: I designed it. I also did the artwork with *Deluxe Paint*. I designed *Firepower* as a two-player game with a one-player option. I added the modem capability because when I was playing computer games and not designing them, back in 1975, there weren't many games that could be played between two people. By the time the

Commodore 64 was introduced, around 1982, more multiplayer games became available for it, but the bottom line was that computers were really separating people. And I didn't like this, so I started working on a two-player space game for the Commodore 64. Then the Amiga came along, which absolutely blew my socks off. I got one of the first ones, played with it, learned the machine very well, and started hiring programmers.

Addams: Why do you think there have been so few multiplayer games?

Von Wolfsheild: Because programmers write games for themselves. I write mine for people. I believe in playing games with people, not with computers.

Addams: Do you think that the people who've been programming games for so long have gotten into this mind-set of designing games to be played against the computer rather than against other people?

Von Wolfsheild: Exactly. I just want the computer to be a pawn in my entertainment. I feel the computer can open a great deal of diversification in entertainment, and I don't believe it has to be a game that pits us against something electronic. I prefer to use the computer as an environmental control system and let it create worlds for me to enjoy with other people. I enjoy the company of people and the intelligence they can bring to the table, not the intelligence the computer has. It's simply a machine, and I view it as such.

Addams: We're beginning to see more multiplayer computer games.

Why do you think this is so, and do you expect this trend to grow?

Von Wolfsheild: Oh yeah, it will definitely increase, especially with machines like the Amiga out now. As modems and telecommunications increase, we'll see a lot more of that. When I put the modem feature in *Firepower*, everyone was saying, *How many modems are really out there?* Well, a lot of people are playing it over the modem.

Addams: Is there anything about the Amiga that makes it particularly suitable for multiplayer games?

Von Wolfsheild: It's the best machine in the industry, period. It's easy to use, powerful, and the blitter makes graphics updates easier to deal with. The multitasking environment lends itself well to multiplayer games; for something like *Firepower*, it can be updating the screen while it's dealing with modem protocol systems. It plays over the modem at exactly the same speed as if two people were playing each other on the same computer. We love the Amiga here. We have 25 of them in-house.

Addams: Are you planning more multiplayer games with the modem capability?

Von Wolfsheild: Without a doubt. ▲

Playing a game with
people all around the
world has an intrinsic
appeal.

Jon Freeman

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The Art of Chess

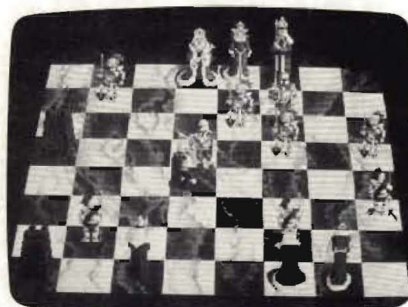
Anco Software
\$4.95

This computerized chess game includes a library of opening moves, special end-game techniques, optional board coordinates, intuitive graphics, tournament-style chess clocks, and mouse control. Players can click on a piece to show the legal moves or click on a square to show how it is defended. An onscreen performance meter displays the player's skill level, and the skill level and play style can be adjusted. A player can play the computer or another challenger, watch the computer play itself, or set up a problem for analysis. Games can be replayed, and with a time-travel control, any number of plays can be rescinded. Help is available through voice or text commentary or cuing, the hint option, and a manual. The board can be dragged for a 3-D view, and custom chess pieces can be created using *Deluxe Paint*.

Battle Chess

Interplay
Distributed by Mediagenic
\$49.95

Battle Chess combines a chess-logic system with color animation and graphics to make the classic game of chess come alive. Each piece has its own method of attacking a foe, completing the move in 3-D animation. The game features ten levels of play, a library of 30,000 opening moves, digitized sound effects, and modern capabilities to link players. Players can play each other, play the computer, or watch the computer play itself.



Battle Chess, from Interplay

Bridge 5.0

Artworx
\$4.95

One person can play a complete game of contract bridge—from bidding to playing the hand—with this game. The human plays with the computer against two computer opponents. The program is based on the Stayman and Blackwood conventions, and it can review each bid, keep score, and inform the user of any illegal moves. Hands can be replayed or stored. For ages 15 and up.

The Chessmaster 2000

Software Toolworks
Distributed by Electronic Arts
\$44.95

This complete chess program helps teach strategies of the game as well as plays chess. It features a teach mode in which the program shows all possible legal moves, a hint mode to suggest possible moves, two-player mode in which the computer referees, and a watch-the-computer-think mode. *Chessmaster 2000* allows users to replay a game while the program analyzes the moves, or the computer can play itself while the user watches. There are over 71,000 moves, an onscreen chess

clock, 12 levels of play, and both joystick and mouse control. The chess board is displayed in three dimensions. The package includes a library of classic games, a tutorial booklet, and discount membership in the U.S. Chess Federation.

Crossword Creator

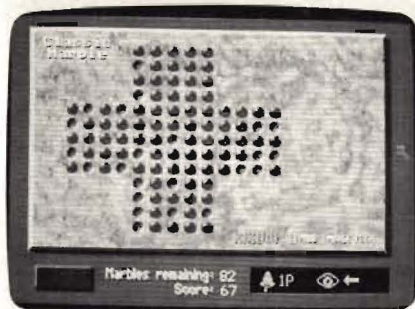
Polyglot Software
dot-matrix printer optional
49.95

Crossword puzzles can be generated with *Crossword Creator* using the pattern-matching dictionary, which contains more than 40,000 words. Completed puzzles can be printed or saved as IFF files. *Crossword Creator* uses either an interlaced or a non-interlaced screen, and it supports custom fonts.

Dominoes

Polyglot Software
512K
24.95

Dominoes is the computerized version of the traditional domino game for children and adults. It contains 3-D graphics.



Kikugi, from Image Tech

GO for the Amiga

Infinit Software
512K
39.95

GO for the Amiga is based on a strategy game invented in China 4000 years ago. Players can vary conditions to set up different problems and scenarios to make the game ever changing. With up to 361 positions on the board, the patterns and possibilities are nearly infinite. Scenarios and games can be saved and then be fully annotated, documented, and replayed. Users can choose from five different modes of play.

Kikugi

Image Tech
39.95

Based on an ancient Chinese game of strategy, *Kikugi* consists of 15 boards in patterns of varying degrees of difficulty. Each board contains holes filled with marbles. The object is to jump the marbles so that only one is left at the end of the game. Game features include a backup option, preview of moves, saving and loading games, and watching the computer play.

Quintette

Miles Computing
39.95

Derived from an ancient Chinese game, *Quintette* tests the strategies players use against each other. The object of the game is to align five stones in a row or to capture five pairs of the opponent's stones. It can be played in pairs, in teams, or against the computer.

Scrabble

Electronic Arts
32.95

A 12,000- to 29,000-word Scrabble dictionary is the judge in this electronic version of the board game Scrabble. One player can play the computer, or up to four players can play each other.

Shanghai

Activision
35.95

This game is based on the original game played by the Chinese, mah-jongg. Colored tiles are stacked on each other and must be matched and removed according to the characters painted on each piece. There are solitaire and multiple-player options.

Solitaire Royale

Spectrum HoloByte
512K
29.95

Eight solitaire card games are included in this package—Pyramid, Golf, Corners, Reno, Klondike, 3 Shuffles and a Draw, Canfield, and Calculation. Players can choose from ten different card backs and five card faces. The computer deals the cards randomly, unless the player chooses otherwise. With the tour feature, players play all eight games in succession. Players can also compete in a tournament, in which each player receives the same shuffle and the scores for the top five deals are totaled. Individual games or the tour can be played in the tournament. Games may be saved to disk. Three games for children are also included.

Super Puzzle

Signs Etc. by D. Knox
512K
19.95

Super Puzzle contains 90 jigsaw-type puzzles on different subjects for preschool-through adult-level users. There are 18 pictures to solve, each with five difficulty levels ranging from 4 pieces to 256 pieces. At the lower levels, digitized sound provides the instructions, and, when a puzzle is completed, it offers an explanation of the picture. The program is based on the principles of behavioral psychology. Reports show elapsed time, number of correct moves, and the number of tries.

Super Puzzle Data Disk

Signs Etc. by D. Knox
Super Puzzle
15.00

Both disks in the *Super Puzzle Data Disk* package provide additional puzzles to use with *Super Puzzle*. The first data disk contains 18 nursery rhyme pictures. The second disk contains pictures of animals and famous places.

Telegames

Software Terminal
512K, modem
34.95

Two players can connect their computers via a modem and this program to play backgammon, checkers, or chess. The game boards appear on the screen in 2-D or 3-D display, and digitized sound effects accompany the play. During play, challengers can also send and receive messages through the chat line. The program has a save-game option so that a game may be saved and then resumed at a later date. The file-folder feature lets users record other players' names, phone numbers, and baud rates for future access. *Telegames* can handle baud rates from 300 to 9600 bps, and the game will not disconnect until instructed to do so. With the no-modem setting, two players can play on the same computer in the conventional manner.

Uncle D's ConSOUNDtration

AlohaFonts
minimum of 512K
39.95

Children ages 4 and up can improve their memory skills while they play this game of concentration. There are four levels of difficulty covering three main categories—ABC's, numbers, and pictures. The player chooses a box on one side of the screen, and the digitized sound pronounces the letter, number, or name of the item shown in the box. The child then must choose the corresponding letter, number, or picture in a box on the other side of the screen. One or two students can play the game, and reading skills are not necessary. Additional data disks are available.

Uncle D's ConSOUNDtration Data Disks

AlohaFonts
Uncle D's ConSOUNDtration
24.95 each

Four data disks are available to use with *Uncle D's ConSOUNDtration*. Disk 1 contains additional pictures and sounds to use with the master program plus maps of the 50 states and signs such as STOP and YIELD. Disks 2, 3, and 4 offer additional ABC, number, and picture games. Disk 2 is in Spanish, Disk 3 is in French, and Disk 4 is in German. Each disk is available for \$24.95. >

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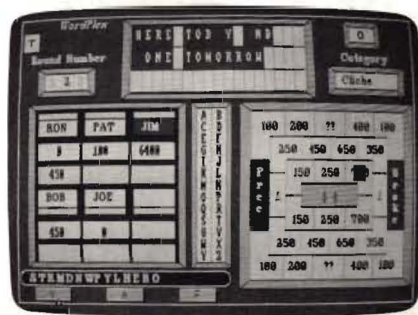
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WordPlex

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512K
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One to six players can take turns spinning a wheel and guessing the missing letters to complete trivia phrases. Three scored rounds make up each game. Over 300 phrases in nine categories are provided, or customized phrase lists can be added. Additional data disks are available.



WordPlex, from PAR Software

WordPlex Data Disk, Volume 1

PAR Software
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This package contains three data disks to use with WordPlex. The disks contain over 1000 trivia phrases covering the Bible, America, and nature.

Gambling and Lottery Programs

Black Jack Academy

MicroIllusions
Distributed by Mediagenic
39.95

This game is designed to teach both novices and experienced players blackjack. Up to five players can compete using table rules from Las Vegas, Reno, and Atlantic City, or the user's own specific table rules. Online help is available for different play options, including the optimal play for the current hand. Features include color selectability, game save and retrieve, and different play strategies.

Craps Academy

MicroIllusions
Distributed by Mediagenic
39.95

A follow-up to *Black Jack Academy*, *Craps Academy* can help players learn to play casino-style craps. Pop-up help screens explain the layout of the table and how to place bets. The game also teaches strategies, betting systems, money management,

house percentages, payoffs, and optimal bet sizes. Players can choose the house rules of casinos from Las Vegas to Atlantic City.

Professional Lottery System

Digital Concepts
Distributed by Apache Technologies
512K
29.95

The *Professional Lottery System* uses a database to generate numbers for three- and four-digit and lotto-type state lotteries. It can also produce graphs, hot and cold deviations, frequency distribution of the numbers, and ten different wheeling systems.

Trump Castle

Intracorp
39.95

Trump Castle is a computer version of the casino action found in the Trump Castle Casino in Atlantic City. It contains six different games—blackjack, roulette, craps, keno, video poker, and nine slot machines. Each package also includes a certificate for \$250 worth of coupons to use at the Trump Castle hotel and casino.

Vegas Craps

California Dreams
Logical Design Works
39.95

Players can place their bets and roll the dice in this recreation of Las Vegas-style craps. The program helps players learn the rules of the game. The bets, odds, and payoffs are the same as in Las Vegas.

Vegas Gambler

California Dreams
Logical Design Works
39.95

This package for at-home gamblers includes Slot Machine, Blackjack, Poker, and Roulette. Each game features color graphics and sound, including the clink of money falling out of the machines. The games use the same bets, rules, and payoffs as in Las Vegas.

Video Vegas

Baudville
34.95

Video Vegas is a four-games-in-one package that simulates casino games in Las Vegas. The games include Blackjack, Draw Poker, Slot Machine, and Keno. The Blackjack game includes a card-counting feature.



Video Vegas, from Baudville

Text and Role- Playing

Arazok's Tomb

Aegis Development
49.95

An ace reporter searches the forests of Scotland for Daphne, who is trapped in Caer Arazok's tomb. The player must find out where the tomb is and then battle enemies to reach it and free Daphne. Graphics, sound, animation, and speech are combined in this role-playing, text-adventure game.

Ballyhoo

Infocom
14.95

The game is set at the circus as the player tries to find the abducted daughter of the circus boss. As the player searches, he or she explores the world of the circus by walking the tightrope and watching clowns.

Beyond Zork

Infocom
Distributed by Mediagenic
49.95

Beyond Zork combines interactive fiction with a character-building role-playing game. The game is not a sequel to *The Zork Trilogy* but is a new chapter set in the Zorkian universe. The user creates his or her own character, choosing different levels of six attributes, which increase with experience. Windows display the character's attributes, location, and inventory. Players choose the screen option—either with the onscreen map and window display or with a standard text-only screen. Programmable function keys allow single-keystroke commands. On most machines, a mouse will enable players to move from room to room and an undo command allows the user to back up one move.

Bureaucracy

Infocom
14.95

The object of this game is to get the bank to acknowledge a change-of-address form. While trying to complete this seemingly simple task, the player becomes entangled in a series of bureaucratic mishaps taking place in a variety of locales—from the feeding trough of a greedy llama to the lofty branches of a tree deep in the Zalagasan jungle. The player must solve puzzles to outsmart the bureaucrats.

The Crimson Crown

Polarware Software
29.95

In this follow-up to the game *Transylvania*, the player returns to Transylvania with Princess Sabrina and Prince Erik to recover the crimson crown which has been stolen by the vampire. Danger awaits all in the forest and its underworld. Action is depicted in graphics and text, and commands are given in English sentences. It is not necessary to have played *Transylvania*. >

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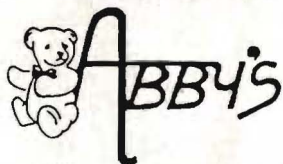
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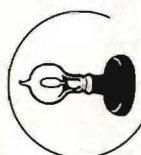
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Cutthroats

Infocom
14.95

As an expert diver, the player agrees to help salvage the sunken treasure from one of four shipwrecks off Hardscrabble Island. The secrets, and obstacles, to finding the treasure lie with a gang of cutthroats.

Enchanter

Infocom
14.95

The player becomes a novice magician sent into single-handed combat with a dark and fierce power, the Evil Warlock, who controls the kingdom. The player must defeat the Warlock by using spells acquired along the way. This game is the first in the Enchanter Trilogy.

The Financial Time Machine

First Row Software Publishing
39.95

Players find themselves in the 1930s with more than \$25,000 in this stock market simulation game. After playing the market during the Depression, players can enter a time machine and invest in the market during another decade. Four separate stock portfolios can be used to compare strategies. Players can choose from six different information screens.

Global Commander

DataSoft
joystick
39.95

The player becomes a global leader whose responsibility is to monitor and regulate the world's nuclear superpowers. The object of the game is to establish close working relationships with the individual countries; to promote good relations between each country; and to make sure that economic and military balance is maintained. Countries will contact the leader for advice and permission for actions. It is also the commander's responsibility to monitor satellite intelligence reports and the radio airwaves. The player also controls SDI satellites, troop placements, and spy networks that keep tabs on each superpower.

Hollywood Hijinx

Infocom
14.95

The player's Uncle Buddy Burbank and Aunt Hildegard have passed away, but have left a Malibu mansion, filled with Hollywood memorabilia. To inherit the house and its contents, the player must find ten wacky treasures hidden throughout the house and the grounds.

The Honeymooners

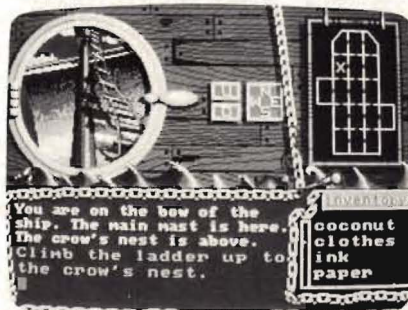
First Row Software Publishing
39.95

Based on the television series "The Honeymooners," which starred Jackie Gleason, this interactive role-playing game continues that comic tradition.

Infidel

Infocom
9.95

The game is set in the desert of Egypt near the banks of the River Nile. The player must find the buried entrance to the last great pyramid and, once inside, seize priceless treasures.



The Island of Lost Hope, from Digital Concepts

The Island of Lost Hope

Digital Concepts
Distributed by Apache Technologies
512K
39.95

After being cast away and left to die by renegade cutthroats, the player must make it to the Island of Lost Hope and find the Lost Treasure of the Forgotten Souls. Faith and strategy can help the player avoid a multitude of perils.

Leather Goddesses of Phobos

Infocom
14.95

Leather Goddesses of Phobos is a spoof of 1930s pulp fiction and features both a male and female playing mode. The story begins in Ohio with a regular patron of Joe's Bar being kidnapped by minions of the Leather Goddesses of Phobos, who are plotting to take over Earth. If the player escapes, he or she will begin an interesting journey through the solar system. Materials must be collected by the player in order to defeat the Leather Goddesses and save Earth. There are three levels of play—tame, suggestive, and lewd.

A Mind Forever Voyaging

Infocom
512K
14.95

The player, as the world's first conscious intelligent computer, is given the task of traveling into a simulation in the year 2031.

Moonmist

Infocom
14.95

A ghost roams Tresyllian Castle on the misty coast of Cornwall, England. The ghost is discounted as legend until the player's friend Tamara is threatened by the White Lady. After arriving at the castle, the player encounters a strange cast of characters and must solve a mystery and find hidden treasures. The game has four variations, each with a different antagonist.

Oo-Topos

Polarware Software
29.95

The player's mission is to deliver a serum to Earth in time to save the planet from total annihilation. However, along the way the hero is taken prisoner on the planetoid Oo-Topos. The player uses English commands to guide the adventure, and the computer describes the action and locations with both text and graphics. *Oo-Topos* contains a vocabulary of over 1000 words and more than 100 graphics. A ship's manual and computer readout is also included.

The Pawn

Rainbird
24.95

An interactive-text adventure, this game takes place in the fantasy world of Kerovnia. There are a variety of plots and subplots in the tale, each with an assortment of objectives. A database provides information on the attributes, properties, and positions of all the characters and objects.



Ports of Call, from Aegis Development

Ports of Call

Aegis Development
512K
49.95

Players become owner and captain of a cargo ship that has no regular schedule, but takes on freight wherever it can be found. This economic and strategic simulation game requires players to become financial wizards and to learn how to expertly maneuver the freighter. Programmers of this game researched ports around the world. >



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Hardware of the month.

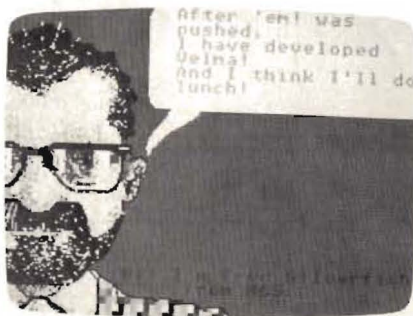
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Prime Time, from First Row Software Publishing

Prime Time

First Row Software Publishing
\$9.95

Players assume the role of TV network boss in this game that spoofs the television industry. Gameplay consists of planning a program schedule, canceling shows, buying shows, and doing lunch. The game takes advantage of the Amiga's graphics, and digitized speech. The game package includes a program board, a TV contract, and a TV "Wise" Guide.



Reel Fish'N, from Interstel

Reel Fish'N

Interstel
Distributed by Electronic Arts
\$44.95

As a small-business owner, the player must determine how many days each week he or she can leave the store behind and escape to the lakes to fish. The object is to make as much money as possible while still saving time to relax.

Return to Atlantis

Electronic Arts
\$49.95

This adventure takes place deep in the ocean where the player can search for the lost civilization of Atlantis, explore shipwrecks, rescue stranded mariners, and protect the ocean ecology. Using questions and answers to communicate, the player tries to glean clues and information from the assortment of characters. There are 14 scenarios with increasing levels of difficulty, and the player, either a male or female diver, is aided by two robots.

Romantic Encounters at the Dome

MicroIllusions
Distributed by Mediagenic
\$39.95

Players assume the role of guest in a futuristic singles club where parties, dancing, love testing, and various types of people can be found. This interactive-text adventure allows players to live out their fantasies while experimenting with people and situations. The adventure was written by a screenwriter and a psychologist and contains explicit adult situations.

Seastalker

Infocom
\$9.95

Seastalker is designed for newcomers to the Infocom line of interactive fiction. The player assumes the role of a scientist whose latest invention is a Scimitar, a two-person submarine. An urgent message arrives that the Aquadome is being attacked by a sea monster. The scientist and his assistant board the Scimitar and try to save the Aquadome.

Sherlock: The Riddle of the Crown Jewels

Infocom
Distributed by Mediagenic
\$39.95

The player assumes the role of Watson, Sherlock Holmes' associate, to solve the case of the missing crown jewels. The jewels were stolen from the Tower of London and must be found before the Queen's Jubilee in 48 hours; however, the clues are all in riddles. As Watson follows the suspect Moriarty, the player can learn about Victorian Britain in this interactive-fiction game. This version includes sound.

Sorcerer

Infocom
\$14.95

In this second game of the Enchanter Trilogy, the player has advanced to the Circle of Enchanters. Challenges in this game include rescuing the player's mentor Belboz and defeating the evil demon Jeearr.

Spellbreaker

Infocom
\$14.95

In the final game of the Enchanter Trilogy, the player is the leader of the Circle of Enchanters and is the most powerful magician in the land. However, the magic is failing, and the player must save the kingdom before the magic powers fade.

Starcross

Infocom
\$9.95

The player journeys through space, meeting various interstellar beings and finding an alien spaceship that spins so rapidly that it produces an artificial gravity. While exploring it, something discovers the player. The object of the game is to unravel the mystery of the spaceship.

Suspect

Infocom
\$14.95

The player attends a masquerade ball and mingles with the top society and business personalities. The evening goes well until the player is framed for murder. Observation, deduction, and interrogation must be used to come up with proof of innocence.

Suspended

Infocom
\$9.95

The player is in charge of a computer complex 20 miles below the surface of the planet. The computers control the weather, food production, and the transportation system on the planet's surface. The player must control robots to keep the computers running, but each robot is limited in its abilities.

Transylvania

Polarware Software
\$29.95

The adventurer uses English commands to conduct the search for Princess Sabrina, lost in the forests of Transylvania. This interactive-text game features puzzles, text, and graphics.

Trinity

Infocom
\$12K
\$14.95

The last day of the player's vacation in London also turns out to be the first day of World War III. An H-bomb is about to vaporize the city, and the player must escape to a secret universe. Players can explore this universe and learn to control its inexorable power.

Twilight's Ransom

Paragon Software
Distributed by Microprose
\$39.95

Maria Chavez has been kidnapped and is being held for ransom. The player must find out why she has been abducted, where she is, and how to save her. During the hunt, the player meets a variety of hustlers and night people on the streets of Liberty City. The game includes more than 175 locations in the city to explore, and there is a picture disk with more than 20 illustrated scenes. The package contains clues that can help solve the mystery, a picture disk, and documentation.

Universe III:

The Traveller's Return

Omnitrend Software
\$12K
\$49.95

The player assumes the role of a traveler who is sent to earth as an emissary from another world in this animated role-playing adventure game. Play in the one-player mode is controlled by a mouse-/keyboard-based parser. Players must talk with, trade with, and sometimes fight dozens of non-player characters.

Wishbringer

Infocom
14.95

As mail clerk in a small town, the player must deliver a ransom note for a kidnapped cat. This takes the player to the outskirts of town and on a series of adventures to Wishbringer, a stone possessing magic powers.

The Witness

Infocom
9.95

In *The Witness*, a man named Freeman Linder has received threatening phone calls and letters. Mr. Linder hires the player as a detective, but before Mr. Linder can tell all he knows, he is murdered right before the player's eyes. As the witness, the player must figure out who committed the crime, how, and why.



Wizard Wars, from Paragon Software

Wizard Wars

Paragon Software
Distributed by MicroProse
39.95

Wizards, elves, warriors, and other fantasy characters populate this game in which the player travels through three dimensions in an attempt to defeat the evil Wizard Aldorin. As Temeres, the player must learn up to 30 spells, mix potions, solve riddles, and defeat a wide variety of creatures—from dragons and elves to hellhounds and skeleton warriors—in battle. The journey takes place in a 3-D maze of the mind, body, and an area beyond space. There are over 50 characters in the story, accented by sound effects and scrolling graphics. The package also includes props to use with the story, a spell book, and a user's manual.

Zork I

Infocom
14.95

The player travels to the ruins of an ancient empire far underground to search for the treasures of Zork. *Zork I* is designed for beginning adventure-game players.

Zork II

Infocom
14.95

In this follow-up to *Zork I*, the player journeys to the long-hidden region of the empire dominated by the Wizard of Frobozz.

Exiled years before, the Wizard is a force that needs to be reckoned with, materializing at odd moments to cast spells. Explorations include a maze of oddly angled rooms and the garden of the unicorn.

Zork III

Infocom
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In the third of the Zork series, the Dungeon Master draws the player deep into the Great Underground Empire where nothing is as it seems. In order to complete the story,

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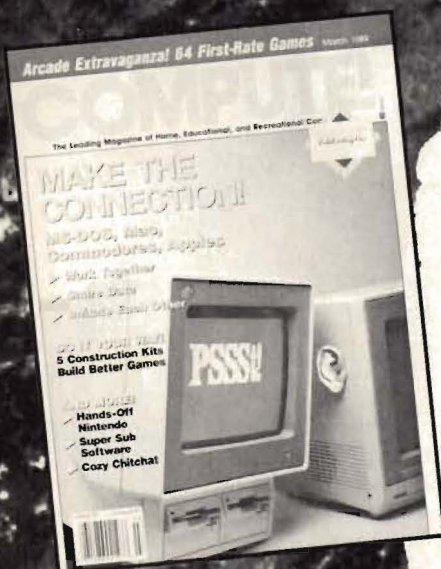
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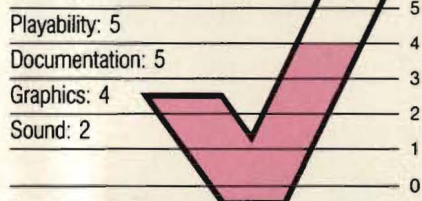
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Distant Armies: A Playing History of Chess

Eagle Tree Software
P.O. Box 164
Hopewell, VA 23860
(804) 452-0623
\$44.95



This, folks, is one fascinating package.

Yes, it's a chess package. But even if you don't like computerized chess games, bear with me for a bit. This is much more than the normal chess program. And if you like chess games on your computer, this one will show you that it really hasn't all been done before.

Distant Armies simulates not just chess, but ten different historical varieties of chess. Now, anyone who knows anything about chess knows that it is a very old game, but few people know just how old it is or what it was like when it first appeared. Chess in the Western world is so formalized now that the question of its origins—or of whether other versions exist—rarely gets asked.

And by different versions, I don't just mean slightly different rules. Sure, the castling rule has a couple of subtle variations, and rules such as *en passant* and announcing a queen check vary according to location and acceptance.

Distant Armies doesn't care much about these minor differences; instead, it demonstrates the game's historical and geographical variations.

Distant Armies takes its history from—and acknowledges—H. J. R. Murray's huge 1913 study, *A History of Chess*. The program allows you to play the game as it existed in ten different time periods and ten different locations. The disk provides all the documentation you need, including the history of the individual games, their rules, and their prominent strategies. The onscreen documentation is unusually informative and well written and is indicative of the degree of detail and care that has gone into this product.

The game opens with a map of the world. Beneath the map are listed the ten versions of chess you can play: Chaturanga, Burmese, Chinese, Shatranj, Byzantine, Mediaeval, Courier, Turkish, Decimal, and Los Alamos. Click any one of them, and a flashing red asterisk shows where in the world that game was or is played. At the same time, the bottom left corner of the map shows the date and a more precise location for the version.

Chaturanga, for example, is from northwest India, having originated about 600 A.D. Chinese chess began around 800 A.D. and continues today. Shatranj was popular in Islam between 600 and 1700 A.D., while Los Alamos was invented in New Mexico in 1956.

Once you've chosen your game, the appropriate board and pieces appear on the screen. Chaturanga, for instance, displays a grayish board, eight squares by eight squares, with two armies of varying brown shades. Several of the squares are distinguished by having an X through them.

The Information menu gives you

the history and rules of the game. Both are fascinating. The word *chaturanga*, we are told, means *four-limbed*, and "was first used to describe ancient Indian armies that were considered four-limbed for having corps of horses,

**Thoroughly researched
and beautifully presented,
Distant Armies is a
perfect example of a
package that both teaches
and delights.**

elephants, chariots, and foot soldiers." The history goes on to explain that all four limbs are represented in the game, and the *rajah* and his minister are included to provide command. Furthermore, the power of each piece depended on its relative power in the real army. All in all, the history of Chaturanga fills eight readable screens, with considerable discussion given to the changes in movement rules for the elephants.

The next step is to learn the rules, available once again from the Information menu. Here we learn that you can win by checkmating the *rajah* or by executing a move known as *Bare King*, which means capturing all enemy pieces except the *rajah*. *Pedati* (pawns) move one square forward, capturing on a diagonal (like our pawns). *Ratha* have the rules of today's rooks, while *asva* are identical to today's knights. The *gaja* (elephant) is the forerunner of today's bishop, but this piece moves only two squares diagonally, jumping over anything in the intervening square. There is no queen equivalent, but the *mantri* (counselor) moves one square diagonally. The *rajah* moves and captures like today's king.

Once you know the rules, the game can begin. The Board menu

gives you the choice of two- or three-dimensional boards (3-D is always better), a reverse view of the board, an arrow pointer rather than a hand pointer, sound or no sound, and a complete color palette for changing the colors of the armies.

From the Play menu, meanwhile, you can choose to play against the computer or another player, or to have

Los Alamos chess was invented in New Mexico in 1956.

the computer play both sides. Here, too, you can set the difficulty of your computer opponent (ten levels), set up a position, or show the captured pieces. The Move menu lets you take back moves or have the computer suggest moves, while the Project menu lets you save games, label games, print moves, and load games. It also includes a memory check, a feature all Amiga programs should incorporate.

I've shown you the richness of Chaturanga. Perhaps the best way to demonstrate the variety contained in *Distant Armies* is to list the unique features of each of the other versions. Each of the games has a board that regularizes movement, and all represent a battle between two equal armies. Beyond that, though, there are several differences.

Burmese. A pawn is called a *ne*; a chariot, a *yattah*. The horse is the *myin*; the lieutenant, the *sit-ke*; and the great king, the *mingyi*. The moves are the same as in Chaturanga, with the exception that in this version the *sin* (elephant) moves one square forward, or vertically. Much more significantly, the Burmese game begins with the board only partially set up. The first several moves consist of each player placing a piece on the board within a range of specified locations. This means that the standard openings so popular in Western chess are not really popular, although there are preferred moves during this setup sequence. Because of this unusual setup option, the game takes a good while to get used to. *Distant Armies* includes two preset arrangements.

Chinese. Chinese chess contains a

palace and a river. The river separates the two halves of the 8×8 -square board. The pieces are far more restricted in movement than in other forms of chess, with some—the king and guards—unable to leave the 3×3 -square palace. Furthermore, movement is along the edges of the square, as in the game *go*, not within the square, as in Western chess. Elephants and foot soldiers resemble those used in Chaturanga, while the *pao* (rook) moves like a rook but captures intervening pieces by moving over them. Chariots move like rooks. The river can be crossed, and foot soldiers gain movement capabilities upon doing so.

Shatranj. The Islamic game was the first to contain the terms *check*

both sides, with one group moving clockwise and the other, counterclockwise. Diagonal movement takes several games to visualize properly, because of the board's roundness. Other than this strange perspective, the game is identical to Shatranj. But the perspective makes things extremely interesting.

Mediaeval. This Western European version includes the first instance of double-step pawn movement. The replacement of horses and elephants with knights and bishops simply reflected the Western European society of the period. Three versions are included: French, Spanish, and English. Rooks are named *ruckhs*; bishops, *aufins*; and queens, *fers*; and kings are in-



and *checkmate*, known here as *shah* and *shah mat* (the shah is the king). The term *ruk* (rook) also appeared here, but it applied to the chariot, not the castle. Interestingly, the pieces do not resemble actual army pieces, because of the Islamic restriction on representing living forms in art. Pieces are the *baidaq* (pawn), *rukhh* (rook in this version), *faras* (knight), *fil* (elephant), *firzan* (minister), and *shah* (king). Gameplay is very similar to that of Chaturanga.

Byzantine. This is the strangest version of all. The board is round rather than square, with the rooks able to move all the way around the board along a file. Pawns flank the army on

cluded among the pieces. *Aufins* are still restricted to movement of two diagonal squares, and *fers* to one diagonal square. The all-powerful modern queen is still nowhere in sight, although in the French version the piece is called *regina*, which means *queen*.

Courier. *Courier* chess comes from Germany and is played on a 12×8 -square board. The introduction of the larger board permitted the use of more pieces, so four pawns, two couriers, a *mann*, and a *fool* were added. The courier, which could move any number of squares diagonally, is therefore the direct ancestor of the modern bishop. In fact, the couriers became the most powerful pieces on

the large board. In the fifteenth century, the fer became the queen, and (as the history notes suggest) the invention of the printing press probably stabilized the rules once and for all. The large board of Courier chess, like the round board of Byzantine chess, forces a complete rethinking of strategy, so this game takes a considerable amount of practice to master.

Turkish. If you want a true challenge, try stopping—and, for that matter, using—the Turkish queen (*firzan*). Inspired by the powerful modern queen of late Courier chess, the Turks added to her power, allowing not only all the modern moves, but the moves of the knight as well. The *fil* in this game moves like the modern bishop,

The on-disk history of chess uses hypertext to guide you.

with most of the other pieces moving the same as in today's game. Fortunately for chess, the Turkish queen soon disappeared, but fortunately for us, *Distant Armies* leaves it in. This is an incredibly powerful piece that has to be experienced to be believed. Try it; you'll hate her.

Decimal. This late-eighteenth-century Islamic game uses a 10 × 10-square board and several powerful pieces. The modern bishop and queen exist, as do the *zurafa*, *dabbab*, and *wazir*. The *zurafa* combines queen and knight, like the Turkish queen. The *dabbab* combines rook with knight, while the *wazir* merges bishop with knight. Strangely, these pieces make the game almost random because almost no square is defensible and almost no moves are predictable. The position of pieces is also strange, at least in one version, which furthers the confusion. An interesting game, but not very satisfying.

Los Alamos. This is probably the first chess game written for a computer and, as such, it nicely forges the link between the history of chess and *Distant Armies* itself. Because of the slowness of early computers, the designers reduced the board to six squares by six squares and eliminated two pawns and the bishops from both

sides. Playing this game isn't particularly interesting, except to show you its role as a precursor to the excellent programs now available on the personal computer. What is interesting is just how far computerized chess—and computers themselves—has come.

As if all this weren't enough, the designers of *Distant Armies* have included even more than the games themselves. The online rules for each game are accompanied by a picture of the board. Each on-disk game history is, in fact, an essay up to ten screens in length, often including illustrations and always containing footnotes. Also available from the Information menu is a 30-screen overview of chess history, complete with colored maps, quotations about chess, and a series of terms shown in blue letters, which you can click on, hypertext-style, to discover their meaning.

Still not finished, the designers added a detailed guide to the *Distant Armies* program, a full glossary of terms, and an impressive essay about sources, with an accompanying bibliography.

In fact, the rating given the program reflects only one shortcoming: its use of sound. Essentially, the game doesn't use sound; but, then, neither does chess, which is, after all, a stately and reflective game.

In short, *Distant Armies* is a study of chess history in the way that Chris Crawford's *Balance of Power* is a study

of world politics. You learn by doing. *Distant Armies* is thoroughly researched and beautifully presented, a perfect example of a package that both teaches and delights. This is masterful stuff, and to pass it over would be to cheat yourself terribly. Buy it—and play it often.

—Neil Randall

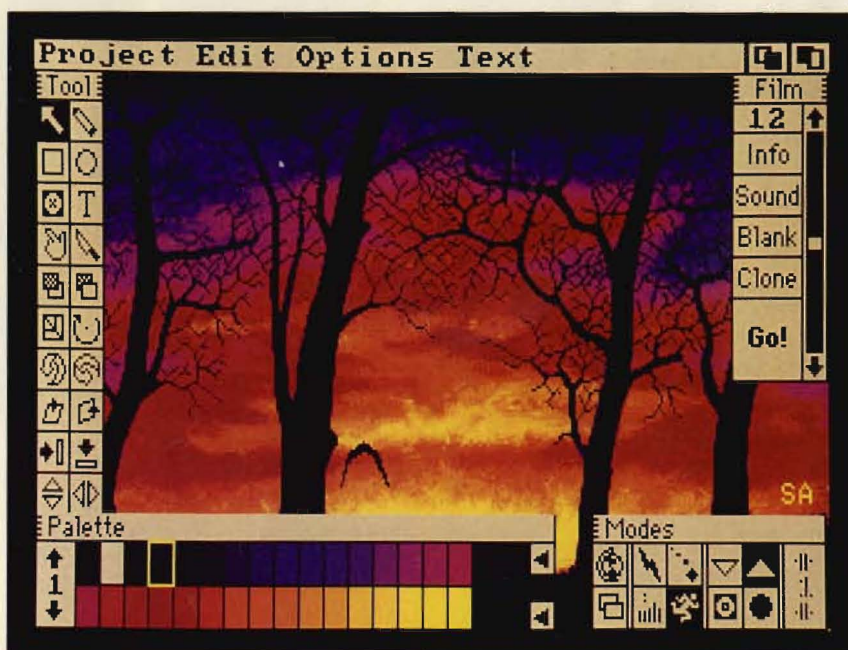
Fantavision

Broderbund
17 Paul Dr.
San Rafael, CA 94903
\$59.95

| | |
|------------------|---|
| Functionality: 4 | 5 |
| Documentation: 5 | 4 |
| Usability: 4 | 3 |
| Features: 4 | 2 |
| | 1 |
| | 0 |

You can make movies on the Amiga with *Fantavision*. That's good news for Amiga artists, who have generally been limited to working with still pictures. More good news: Despite a recent flood of animation programs, *Fantavision* is a strong enough program to survive.

When you load *Fantavision*, you see a screen layout just slightly more complex than that of *Deluxe Paint*. As



in *Deluxe Paint*, there are several small icons that represent modes and operations. The icons are grouped into windows by function. The tools window holds the pencil, knife, circle, text, and other image-creation tools. The modes window controls special effects. The palette window lets you assign and manipulate colors. The film window lets you control animation.

Windows are movable, allowing you to work in the areas that they normally occupy, but I found it best to leave them near their homes. The less thinking I have to do while working, the better.

Fantavision includes several demo movies on the disk. Load them into *Fantavision* and you can see just how powerful the package is. Click on the

GO! icon to play an animation: Each of them is long and smooth, consisting of what looks like hundreds of frames. But when you look at the individual frames, you'll discover the secret of *Fantavision*—you need design only a few frames; *Fantavision* does the work of interpolating intermediate frames. This interpolation is known as *tweening* (from *in-between-ing*).

Fantavision lets you be the master animator—the program is your apprentice.

Tweening is very important. It lets you work the way a cartoonist does. A master animator draws the key frames of a cartoon. It's up to the apprentices to create the in-between frames. With *Fantavision*, you are the master animator and the program is the apprentice. Tweening saves memory, too. Only the key frames need to be in memory; *Fantavision* (or the *Fantavision* player program) creates the others on the fly. With power like this, you can create animations on par with *Dragon's Lair*.

Sound is an important part of any cartoon, and *Fantavision's* designers know this. They let you include digitized sounds in your own animations, with sounds keyed to individual frames.

Sound control is powerful in this program. You control the volume and special effects such as echoes. Although you may be able to find appropriate sounds on the *Fantavision* disk (or in the public domain), you'll probably need a hardware sound digitizer to take advantage of this critical feature.

There are really two types of objects in *Fantavision*: line-drawn and bitmap. Most of *Fantavision's* tools center around the line-drawn objects. These are easily constructed and manipulated. The first thing I did with *Fantavision* was draw a face, which consisted of several objects, each a different color—head, eyes, mouth, nose, hair. I cloned the face to the second frame and stretched it into a wolf's face. I played the animation—instant werewolf. The ears stretched smoothly, teeth protruded, the hair became shaggy and dark. The whole process, from

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idea to animation, took not much more than a minute.

The other type of object, a bitmap, consists of a rectangular area of pixels. Since it is made up of pixels instead of lines, it cannot be tweened. However, it can be moved smoothly from one area of the screen to another. You can create bitmaps in *Fantavision*, but it's usually best to import them from a paint program.

You don't really need to be an artist to get good results with *Fantavision*, but you do need to have a good eye for motion. The rotation, turning, leaning, and squash tools are great aids for animation, but it will take a while before you can simulate real-world physics with these tools.

Fantavision includes useful shortcuts for dealing with your movies. For example, you can click on a small globe icon to make global changes that affect an object in *each and every frame of the film*.

Once you've become familiar with the interface, you can use *Fantavision*'s keyboard equivalents to perform virtually all of the program's functions—an important feature for experts.

The documentation for the program is excellent. "Quick Reference" and "Troubleshooting" sections round out an intelligently written and carefully edited manual. The Quick-Start Card let me create my werewolf face without even opening the manual.

I did have one problem with the program. It seems to read the mouse differently from the way the system reads the mouse. Although I can move the mouse pointer smoothly and surely in the Workbench environment, I have severe trouble when I try to move the mouse left or up in *Fantavision*. The pointer skips, jumps, and often just gets stuck.

To be fair, I've had this problem with a few paint programs—and, too, my overused mouse is not in peak shape. I hope to switch soon to an optical mouse to solve these problems for good.

If you have a dealer nearby, try out *Fantavision*. Run the demos to see just how spectacular Amiga animation can be. You probably won't leave without taking *Fantavision* with you.

—Rhett Anderson

Falcon

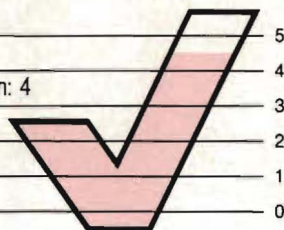
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Playability: 4

Documentation: 4

Graphics: 5

Sound: 5



Not long ago, in reviewing a flight simulator for the IBM PC, I made a rash statement: I said it was the best combat flight simulator ever produced for that computer. At the time, the statement was as true as could be; but within a space of two months that simulator was eclipsed by another.

So in the case of *Falcon* for the Amiga, there will be no rash statements, no overuse of superlatives. My simple advice to you is this: If you like combat flight simulators, rush right out and buy *Falcon* (pay any price), and prepare to be amazed.

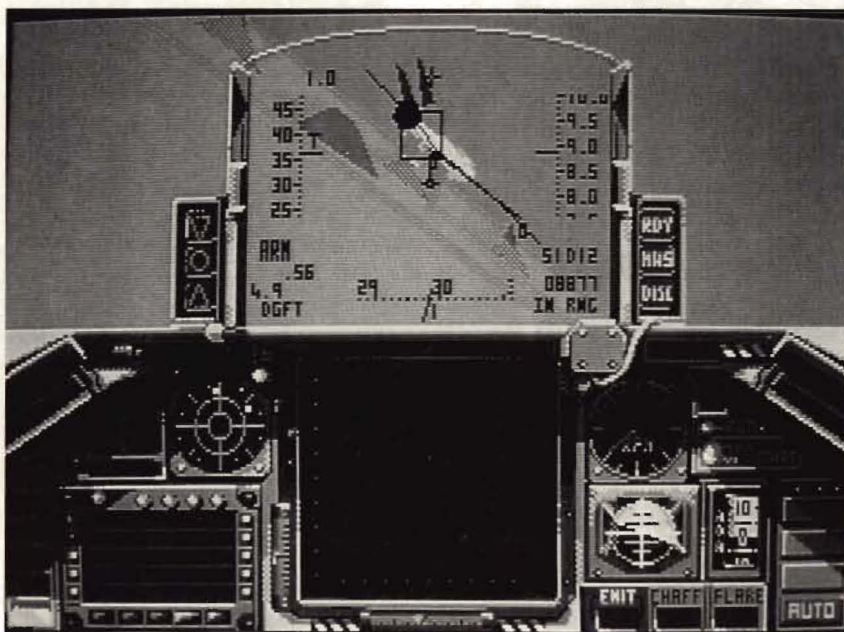
made several improvements that resulted in the PC/AT version, which supported both EGA graphics and the Innovation sound board. As good as these efforts were, *Falcon* had still not reached its full potential.

(In the meantime, potential fulfilled or not, the tables were turned. For some time, home computer flight simulators have striven to emulate real flight simulators. The early versions of *Falcon* were so good that a real, low-cost, stand-alone flight simulator is being based on the game.)

Buy Falcon—at any price—and prepare to be amazed.

All this, of course, is preamble. I'd like to say that *Falcon* reaches its full potential on the Amiga—but I know that, as soon as I do, it will be further improved or enhanced. Apparently there are no absolutes.

When you first boot the program, your screen fills with the *Falcon* logo—something of a classic. With one



Falcon is new only to the Amiga. It first appeared on the Macintosh and then on the PC, and in 1988 it won several "Best" awards from the Software Publishers' Association. Undaunted by the high praise, Spectrum

megabyte of RAM in place, you should turn up the volume on your monitor while *Falcon* runs through its repertoire of sound effects. It sounds good: The programmers have much of which to be proud.

Next you go to the Pilot Roster, where you can log on; after that is a screen on which you can choose the rank (level of difficulty) at which to fly. Pick a mission and specify the

Missions can be air-to-air, air-to-ground, or a combination of both. When arming your plane for anything above the training level, you'll want to select the right weapons for the job. A

MiG for you. My hedging method is to fly manually until the HUD picks up the target and then engage Auto-pilot to maintain a lock while I blast the MiG to shreds.

Both sounds and sights of such explosions are very satisfying. Lance a MiG with an Aim-9 or pull in close and hammer it with cannon fire: In either event the result will be a rolling cloud of smoke and debris. Go after a ground target with Maverick missiles, and then pull straight up and flip to a rear view: If your timing is right, you'll see the explosion or, at least, the crater or structural damage you've caused.

That rear view is one of several views from the cockpit (left, right, and

For some time, military aircraft have used a woman's recorded voice to warn of trouble. If you delay your takeoff, you'll hear this voice. It's one of the nicest surprises in the game.



number of MiGs (up to three) present in your airspace at any given time.

The lowest level, as a lieutenant flying the Milk Run, is a training routine. You won't run out of weapons and you can't crash, but you can begin scoring points and saving your score to disk.

Invoke the pull-down menus and you'll find you can control the sound, the scenery, and the size of the MiGs and that you can elect to control your fighter by mouse, joystick, or keyboard. Changing the size of the enemy is something new with this version, and it means you can have enemies appear in scale size or double scale size. For those who prefer drama to realism, double scale provides you with an up-close and personal look at your opponents.

Start the engines, roll down the runway, and wait just a bit before you try to lift into the air. For some time, military aircraft have used a woman's recorded voice to warn of trouble—a female voice being so out of context in a combat environment that it will snap a pilot to attention. If you delay your takeoff, you'll actually hear this voice warning of trouble. It is one of the nicest surprises in the game.

very good section of the manual describes the capabilities of each weapon, while a tactics section tells you how they are best used.

Once you're in the air, *Falcon* faces its first real test. Any flight simulator is judged on the speed with which it updates or redraws the screen. Earlier versions of *Falcon* hedged this by sparsely populating the ground and concentrating on updating the heads-up display (HUD). No such tricks are necessary now and both ground and HUD are updated so quickly that the experience seems real.

This business of screen updating is important because it relates directly to the feeling of moving at a high rate of speed—and speed is one of the reasons we buy jet combat simulators. In this instance I compared the aileron roll speed of *Falcon* with out-the-cockpit films of the Navy's Blue Angels. The computerized F-16 will roll more quickly than a real A-4.

If you are new to flight simulators (and old hands are hereby warned that *Falcon* may humiliate you) you can hedge a bit by using Autopilot. If no MiGs are in sight, Autopilot will take you to their turf. When MiGs are present, the same routine will track a

forward are the others). There are also views from outside the aircraft, from the vantage points of control tower or tracking plane. In either of these latter views, there is a very smooth and seamless zoom/unzoom feature to bring you closer to your craft.

The HUD display and the control panel of *Falcon* are as realistic as any you've ever seen. Not long after I'd flown the PC version, I had occasion to view the real thing and was amazed at the similarities. The HUD displays speed, altitude, bearing, and the sights for whatever weapon is active.

The control panel has as its heart a radar screen that can be toggled to show a satellite map in full color. Surrounding this are instruments for power, flaps, brakes, stores of flares and chaff, and so on. Select left or right views and you'll see that you have a realistic extension of the control panel: There is the pilot's arm as well as

more instruments, such as a compass, yaw/pitch indicator, and fuel gauge; and on the other side, a bank of caution lights detailing any damage suffered.

Performance, too, is close to the real thing, becoming even more realistic as you advance in rank. By the time you've reached (or elected) the rank of colonel, you'll have a normal engine subject to stalling; limited armament with full weight and drag influence; limited fuel; landing gear and nose wheel requirements for takeoffs and landings; and the possibility of redout or blackout in high-G maneuvers.

Since a landing is required at the end of a successful mission, you'll want to try to progress slowly through the ranks until you're sure of your control. You can eject from the craft, but you'd better have a good reason for doing so.

A black box flight recorder can be used to replay parts of your mission, including encounters with MiGs. It's also possible to use a 1200-baud

Hayes-compatible modem or a direct-cable hookup to share airspace with another Amiga or with an Atari ST.

Perhaps because of rapid improvements, the manual does fall short on this point and one other: You are directed to a special insert to learn more about modem attachments, but my copy had no such insert.

A second shortcoming is in the area of Air Combat Maneuvers. Only incidentally will you learn that this section of the manual relates to the ACM menu. Select one of the maneuvers, such as an Immelmann, scissors, or a break, and you'll find yourself in that classic combat situation with a MiG. The idea is to stay with it—or avoid it—by performing the maneuver correctly. If you've selected Training mode, the quarry will leave a trail of open diamonds through which you must fly.

Other than that, the documentation is excellent, having by now been through several versions, a process that has presumably refined it. Al-

though there are many drawings and diagrams to aid you in using the HUD and controls, I think a quick-reference card or keyboard overlay would be of great benefit.

While *Falcon* will run with only 512K, certain sound routines, the black box, and communications options are available only with one megabyte or more. Because the program is supplied on two disks, I also recommend using a second drive if possible.

As you probably realize by now, I'm both excited and impressed by *Falcon*. It is without a doubt one of the best of its kind and a valuable addition to the library of anyone who flies in spirit if not in fact. As to how good it is. . . .

It is the nature of the computer business that whatever you do today will be exceeded tomorrow. For now *Falcon* stands with the best and outshines most. But I'm not about to give you any more absolutes.

—Ervin Bobo



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Universal Military Simulator

Rainbird

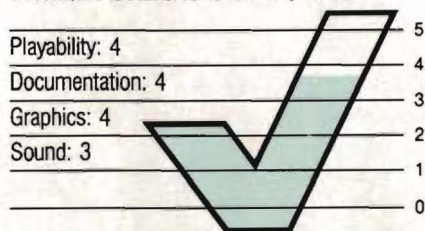
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\$49.95

American Civil War: Scenario Disk 1 \$19.95

Vietnam: Scenario Disk 2 \$19.95



According to its manufacturers, *Universal Military Simulator* is the ultimate war game.

That's a pretty big claim, but Rainbird comes close to fulfilling it.

In fact, *UMS* redefines the concept of a war game. Most computer war games are played on a flat, hexagonal grid. Color is used to show elevation—all positions of the same elevation are the same color. Line of sight (a unit's field of vision) is often hard to determine.

Like other war games, *UMS* uses a grid superimposed over a map, but the map is displayed with a stunning 3-D view. Hills and valleys are quite visible. Using menus, you can zoom in or out to view critical areas of the map. The map can even be rotated, allowing views from different angles and perspectives.

Another striking difference is how pieces move. Traditional war games are divided into turns. First one side moves and then attacks. Next, the other side moves, then attacks. This process is repeated until the end of the game. In *UMS*, on the other hand, both sides plot their movement before any attacking takes place. An interesting feature of *UMS* is that while movement is being plotted, arrows showing each piece's movement are drawn on the map. This is a very nice effect—it's like watching a World War II newsreel showing armies advancing along a front.

Rainbird uses a look-up-the-word-

in-the-manual form of copy protection, but the *UMS* disk itself is not copy-protected. Kudos to Rainbird for this. Not only is it easy to back up the disks, but there are other benefits as well. For example, the review copy of the game had a flaw on one of the disks, and the game refused to load and run. Because the disk wasn't protected, I simply copied the disk and then used DiskDoctor (from the C directory of the Workbench disk). I then booted the copy of the program, and the game worked fine.

Graphics can be a problem on Amigas that have more than 512K of memory. The Amiga's custom graphics chips can access only the lower 512K of memory (called *chip memory*). Because of this, programmers must take care to put their graphics shapes in chip memory; otherwise the shapes won't be drawn properly on the screen. *UMS* not only handles expansion memory well, but it does so elegantly. It first checks to see how much memory is available. If it finds 512K, the game proceeds normally. If it finds more memory, however, it loads in added sound data for an opening song.

UMS comes with five scenarios, but others can be loaded. Two scenario disks are already available.

artillery fire, cavalry charges, and so on. These sounds are not necessary for gameplay, but they add a nice touch.

Another nice feature is the game's expandability. The basic game comes with five scenarios, but it's capable of loading scenarios from other disks as well. Rainbird has already released two other scenario disks: one covering the Civil War, the other covering the war in Vietnam. The scenario disks are less expensive than the game itself, so once you've bought the game, a new scenario disk is a cost-effective alternative to buying a new game.

The game itself is extremely flexible. You can play against the com-

puter or a human opponent. The computer can play either side. In addition, you can switch sides with the computer in midgame. And, in case you're not satisfied with the built-in scenarios, *UMS* includes an editor that allows you to choose the characteristics of each unit, including strength, speed, and efficiency. You can create your own maps or have *UMS* generate a random map according to your specifications. You can even design your own custom scenarios using the same menu-driven interface.

Finally, the documentation is very good. While it was written for the Atari ST version of the game, both the ST and Amiga versions are so similar that there's no conflict. Rainbird has included a scenario handbook that describes the historical flow of each battle. Reading about the actual battles often provides clues as to how the battle should—or should not—be fought.

One of the major drawbacks of simulating a 3-D display is that the pieces sometimes appear cluttered. In *UMS*, each piece is shown as a little flag attached to a pole. *UMS* always displays the current piece in front of surrounding pieces, but when the action gets hot and heavy, it can be difficult to find. Zooming in on the map is helpful, but when the pieces are crowded together, it's still confusing.

The game also tends to be very picky about mouse clicks from time to time. When firing an artillery piece, for example, you simply click on the piece you want to shoot. At times, however, I've spent several minutes clicking on and around a piece, trying to get it accepted as the target.

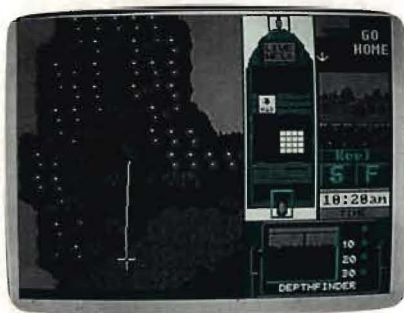
Also, there is no save-game option. While most of the scenarios can be played in a few hours, there really should be some way to save games in process. Customized maps, armies, and scenarios can be saved, however.

Is *UMS*, as Rainbird claims, the ultimate war game? Definitely not. (I don't think there will ever be an *ultimate* war game.) All things considered, however, *UMS* is an excellent war game. Compared to the games of its genre that I've played, it's among the best, incorporating several exciting and exclusive new ideas. If you enjoy war gaming, you won't tire of *UMS* very quickly.

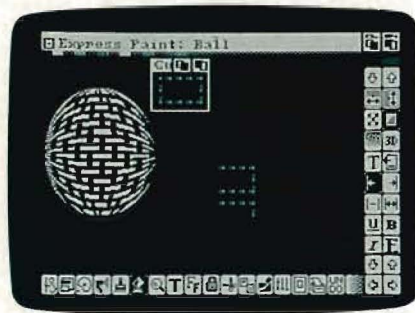
—Jim Fuchs



Captain Blood



Reel Fish'n



Express Paint 3.0

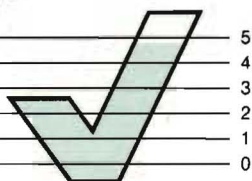
MINI-REVIEWS

Mini-review contributors this month include Rhett Anderson, Ervin Bobo, Keith Ferrell, Jim Fuchs, and Troy Tucker.

Captain Blood

Mindscape
3444 Dundee Rd.
Northbrook, IL 60062
\$49.95

Playability: 4
Documentation: 5
Graphics: 5
Sound: 5



Now and then a program forces you to sit back, sigh, and think, "This is why I bought an Amiga." *Captain Blood* is such a program.

As you race through the galaxy trying to find the five clones of yourself, you'll use joystick skills, puzzle-solving abilities, memory games, a system of icon communication, and more. Communication with a variety of aliens is, in fact, the fascinating heart of this game.

Captain Blood is complex and will not be solved quickly; the game should remain entertaining for a long time.

Visually, *Captain Blood* is a rare treat. Though it won't help me solve the puzzle, I sometimes like to destroy a world or leap through hyperspace just to enjoy the psychedelic light shows resulting from these actions.

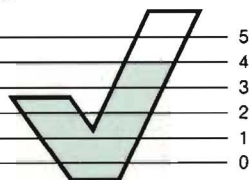
Combining always-excellent graphics with good sound, good documentation, and a story worth exploring, *Captain Blood* is an outstanding piece of science-fiction software.

—E.B.

Reel Fish'n

Interstel
Distributed by Electronic Arts
1820 Gateway Dr.
San Mateo, CA 94404
\$44.95

Playability: 4
Documentation: 5
Graphics: 5
Sound: 2



Bass fishing only seems like an unlikely scenario for a simulation. In the hands of Roger Damon and his colleagues, it becomes one of the season's most thoughtful and successful products.

Reel Fish'n (known as *Gone Fish'n* in an earlier incarnation) gives you an accurate glimpse of a great sport. Starting small in a rented boat with a plastic worm, a spinner, or other tackle, you can work your way up to tournament status, purchasing not only additional tackle, but also equipment such as depth finders and serious bass boats.

Whatever the equipment, the fishing is what matters, and here the program excels. Largemouth bass are tricky fish, but they do exhibit behavioral and environmental patterns that careful fishermen can exploit, and which are well captured in this game. Both surface and underwater structure—weeds, stumps, tires—are likely spots to find fish here, as in real life; likewise, the type of approach—lure, style of retrieve—can increase or decrease your chances of a strike.

Strikes, when they come, call for quick but not panicked response. I've had fish throw hooks during jumps, lunkers make long runs stripping line as they go, granddaddy bass belly-down deep against my retrieve—all of it accurate when measured against real

bass fishing. You can lose tackle to bad casts or underwater snags. If there are future editions, I'd like to see a little more variety in rod and line weights; bass fishing with a fly rod, for example, would make a nice addition to the game.

This is an economic simulation as well. A variety of lakes can be fished, but fishing permits cost different amounts. Big money can be earned by entering tournaments, but the entry fees aren't cheap.

Graphics are superb, as is the documentation, which includes a long, elegant, and only occasionally arguable essay on bass fishing by Damon himself. The man knows whereof he speaks and has captured his sport beautifully on disk. My only real complaints are the ones that got away. You shoulda seen 'em!

—K.F.

Express Paint 3.0

Brown-Waugh Publishing
16795 Lark Ave.
#2110
Los Gatos, CA 95030
\$139.95

Functionality: 4
Documentation: 4
Usability: 1
Features: 5



Express Paint 3.0 is the most powerful Amiga paint program, bar none. It is the most versatile, the most comprehensive—and the most formidable. But power isn't everything. *Express Paint* is a difficult program to use; it's unwieldy.

Because paint programs are tools for artists, they need to feel smooth and comfortable. *Express Paint* doesn't.



Stir Crazy with Bobo

I'm not saying *Express Paint* doesn't fill a niche. It does; it's currently the best paint program for desktop publishers. But *Express Paint* is probably the worst choice for general-purpose image creation and manipulation.

It's too bad. There are many fascinating tools here, tools I wish were in *Deluxe Paint*. For example, you can load and save Workbench icons directly. That's a feature worth its weight in gold.

The program suffers from iconitis—there are more icons than I could hope to figure out. In *Express Paint*, nothing works just as you would expect. The documentation is ample, but it does not live up to the burden the program imposes upon it. Dabblers should steer clear, but determined users may be very pleased with this program.

—R.A.

Stir Crazy with Bobo

Infogrames
Terrific Software
544 Second St.
San Francisco, CA 94107
\$34.95

Playability: 4
Documentation: 3
Graphics: 5
Sound: 5



A French comic-strip character, Bobo, is a hard-luck prisoner who, at the end of six most original games, may give you a high score but still be in the slammer.

Bobo must serve porridge to hungry cons; peel potatoes as fast as possible; use a trampoline to bounce cons over the wall; scrub a floor over which everyone is laying down new tracks (any mother can sympathize



Sword of Sodan

with that one); escape from prison by walking on high-tension wires; and keep a dormitory full of cons from snoring and ruining his sleep.

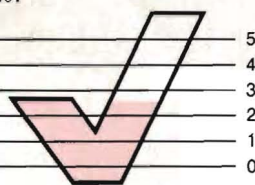
Excellent large graphics, good animation, surprising sound effects (particularly in what may be an international "language"), and adequate documentation help to make the games delightful. All control is by joystick, and while the moves are not complex, they will tax your skills. The title alone, of course, is a major plus. So original.

—E.B. (Erv Bobo)

Sword of Sodan

Discovery Software International
163 Conduit St.
Annapolis, MD 21401
\$39.95

Playability: 2
Documentation: 3
Graphics: 2
Sound: 3



Sword of Sodan is a graphic adventure game set in the cities of the Northern Kingdom. The cities have fallen into the hands of Zoras the necromancer and his evil minions. Trained as an expert swordsman, you are the last hope of restoring peace in the land.

You must use your special sword to battle your way through hordes of nasty creatures until you reach Zoras, your final and greatest enemy.

The most striking feature of this game is the screen-sized characters. These guys are really big! They look good, but they do take some getting used to. Other features include 11 different levels of play, digitized sound, a choice of hero or heroine, and a



Annals of Rome

smooth-scrolling horizontal background. An instant-replay option is also included for people who have expanded memory. But, although I have expanded memory, I didn't find this feature very useful.

The game does not play well. There are too many petty problems that cannot be overlooked. For example, during most of the game you encounter barrels rolling out of nowhere, and you must jump over them. I can live with that if I have to—but the barrels pass right through the enemies standing in front of me. Not fair.

The music and sound effects are good, and screen wipes between levels are impressive, but you can't build a good videogame on these qualities alone.

—T.T.

Annals of Rome

PSS
Distributed by Datasoft
19808 Nordhoff Pl.
Chatsworth, CA 91311
\$34.95

Playability: 2
Documentation: 3
Graphics: 2
Sound: 2



Annals of Rome is a Risk-like game set in 273 B.C. You are ruler of the Roman Republic, while the computer commands the surrounding nations. Your objective is to keep the empire going as long as possible.

Unfortunately, the game falls short of its premise. For example, the only thing you can do with the money in your treasury is to bribe your troops to prevent them from rebelling. No in-

vestment in training. No investment in weapons. No thrill of building toward victory.

Commanders are chosen from a list of 26 people. Each person has varying loyalties and abilities to command. Problematically, though, the list showing each person's strengths is displayed at the beginning of the turn, not while you're making decisions. Therefore, you must either memorize the list or write it down on paper.

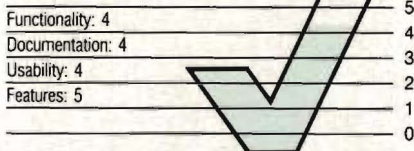
The game lacks polish. An insert warns that if your machine has more than 512K of memory, you must run NoFastMem. Since the program works only when you boot from the game disk, you might try to copy the disk and modify the copy to run NoFastMem. Unfortunately, the disk is copy-protected. This leaves owners of machines with more than 512K of memory three options: disconnect the extra memory, modify the game disk (risky at best), or buy a different game.

My advice? Choose the final option.

—J.F.

Devpac Amiga Version 2

MichTron
576 S. Telegraph
Pontiac, MI 48053
(313) 334-5700
\$99.95



Devpac Amiga has always been known as a speed demon among Amiga assemblers. Version 2 is even faster. But speed isn't everything, so Devpac includes an excellent integrated programming environment. Program entry, assembly, and debugging all take place from within the editor. The editor is good, the assembler is fast, and the debugger is powerful.

Devpac flies by at a top speed of 70,000 lines per minute. You can optimize your code, but only a few optimizations are performed. The manual is much better than the documentation packaged with other Amiga assemblers, but it's still a bit skimpy

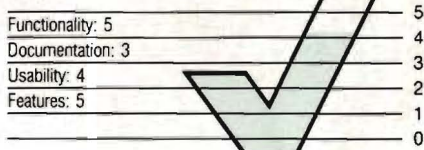
when it comes to examples.

Devpac offers all the amenities and latest features: precompiled include files, Metacomco compatibility, and much more. Amiga assemblers have grown up.

—R.A.

C.A.P.E. 68k Version 2.0

Innovatronics
111311 Stemmons Frwy.
Suite 8
Dallas, TX 75229
(214) 241-9515
\$89.95



The latest version of C.A.P.E. 68k leads Amiga assemblers into a new generation. Programming the Amiga in assembly language, a task that used to be sheer drudgery, is now a valid and reasonable way to create full-blown games and applications.

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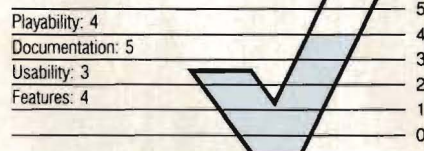
forward to make its quantum leap. It features an integrated editor/assembler environment, speedy precompiled include files for programmers who want to program by the book, an *ARexx* interface, and (best of all) amazing optimizations. If you think you write good 68000 code, you'll be embarrassed by the optimizations that *C.A.P.E.* makes. And if you prefer another assembler, you should still throw the code through *C.A.P.E.* before you put your name on it.

The documentation needs work. It's fine for experienced assembly language programmers, but the manual could use more examples—or even tutorials—for beginners. *C.A.P.E.* has been improving constantly; hopefully we'll see a debugger and disassembler packaged with it sometime in the future.

—R.A.

Nag Plus 3.0

Gramma Software
17730 15th Ave. NE
Suite 223
Seattle, WA 98155
\$79.95



Does anyone really like to be nagged? Until *Nag Plus 3.0*, I would have guessed *No*. But *Nag* has changed my mind.

Nag is a surprisingly helpful schedule assistant for your Amiga. If you're a busy person with a lot of meetings and deadlines, you'll really appreciate this program.

Think of *Nag* as a talking calendar. You can enter as many as 99 events per day. When a scheduled item comes up, *Nag* lets you know. I set up my copy to notify me with a sound effect and then read my appointment out loud in the Amiga's voice. For example, last Friday *Nag* mooded (a genuine digitized cow moo) and said, "Take Tiffany to see *Rainman*."

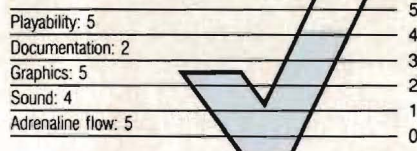
Nag works so well because the Amiga is a perfect vehicle for such a program. It just hangs out, watching the clock for your appointments. It's easily called up to the screen with a

hot key anytime you want to add an appointment or see just what sort of day you can expect. *Nag* is loaded with extras, including an autodialer, an *ARexx* port, and excellent help screens. I highly recommend it. But first I want to nag about the price—\$79.95 is a lot of money, even for such an excellent program.

—R.A.

Hybris

Discovery Software International
163 Conduit St.
Annapolis, MD 21401
\$39.95



Tired of playing wimpy arcade games? Try your hand at *Hybris*. It's not for the fainthearted. *Hybris* has all the gut-wrenching action that you can stand, and then some.

The look and feel of *Hybris* rivals that of any coin-op game on the market, and that's saying a lot these days. Its battlefield is a smooth-scrolling graphic masterpiece. Pilot your scout ship over beautifully detailed mountain ranges, desert plains, and oceans. Of course, you won't have time for sightseeing once the aliens learn of your presence.

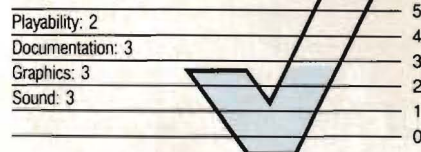
A large assortment of deadly assault ships attack from all sides. Each has a unique attack pattern. Some fire at you, while others attempt to ram your ship. Initially your scout ship is equipped with small blasters and a few smart bombs, but you can increase your firepower by destroying special numbered targets at various stages of the game. There are five levels of firepower.

Hybris features an option that allows you to change the difficulty level of the game. As you get better, the game gets better. You can adjust the levels for practice or for a younger game player. High scores are automatically saved to disk. These special features, along with eye-popping graphics and excellent sound effects, make *Hybris* the best arcade game I've seen on the Amiga.

—T.T.

Technocop

U.S. Gold
Distributed by Epyx
600 Galveston Dr.
Redwood City, CA 94063
\$49.95



Despite road-race action, a mazelike puzzle, and some elements of hand-to-hand combat games, *Technocop* still manages to come up short—perhaps proving that throwing everything into the pot is not the best way to make a stew.

The idea is that you race along in your high-powered V-max car, avoiding other vehicles when you can, running them off the road or blowing them to bits when you can't. Suddenly your on-board computer advises you of a crime and a criminal to be caught or killed.

If the road violence isn't enough, the ensuing maze action in the building should be sufficient. Shoot a criminal (one of a sadistic lot given to the use of whips and chains) and he becomes a pile of blood and gore topped by a pair of eyeballs. Points are earned for this, and then it's back on the road toward your next case.

It's difficult to get excited about a game I'd forbid my children to play, no matter how well it's executed. So in spite of good graphics, sound, and documentation (including clever split-screen effects), I can't be enthusiastic.

—E.B. ▲

Reviewed Next Issue

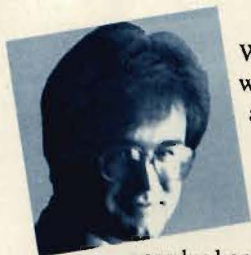
Aussie Joker Poker,
CygnusEd Professional,
Space Station Oblivion,
Reach for the Stars, *Rebel*
Charge at Chickamauga,
and more.

How do they rate?

SPOTLIGHT

John Foust

Digi-View



Welcome to "Spotlight." This column will help you get more from the hardware and software you already have for your Amiga. This month, I'll discuss video digitizers in general and Digi-View in particular.

Video digitizers are among the most popular hardware items sold for the Amiga. They're as popular as extra memory, hard disks, and modems. What are all these digitizer users doing? If you have a digitizer, are you happy with your results?

It may be a strange commentary on today's society that an image is somehow seen as being more "real" on a television screen than on the printed page, but that's often the case. It certainly is when it comes to digitizing: A significant percentage of the images found in the public domain are unaltered renditions of magazine or poster art.

For some, a digitizer is an artist's aid, like tracing paper. It provides an easy way to reproduce a scene or picture. Once digitized, the image can be trimmed, recolored, and retouched in a paint program.

Two types of video digitizers are available for the Amiga. The first type is best exemplified by Digi-View from NewTek. Digi-View needs about 10 seconds to freeze a black-and-white image and about 30 seconds to freeze color. It creates color by means of three exposures taken through a color-filter wheel that sits in front of the lens. The second type can grab an image in a fraction of a second. This includes Perfect Vision from SunRize Industries, Amiga Live! from A-Squared, and FrameGrabber from Progressive Peripherals and Software.

Owning a Digi-View is not like owning an Instamatic; it's more like owning an old-fashioned daguerreotype. If you were to point your video camera at a friend, he or she would need to sit perfectly still for 10–30 seconds. If you want to capture images from videotape, you need the noise-free freeze-frame found on \$500-plus videotape players. These applications are better suited to the second type of digitizer, often called a realtime digitizer. They are designed to grab images from rapidly changing video

signals. However, no matter what kind of digitizer you have, there are common techniques which can bring you the best possible results from your system.

The choice of a camera greatly affects final image quality. A simple recommendation is to get as good a camera as you can afford. For still-image digitizing, it is best to get a black-and-white camera. For realtime digitizing, a color camera makes more sense. A good VCR or laser-disc player is a good source of images, too.

The most important measure of quality is resolution, measured in lines. Older cameras have lower resolution—about 500 lines. Newer cameras may have about 700–800 lines. Color cameras have a lower resolution than black-and-white cameras, which explains why they are less desirable for still-image work.

The most expensive choice is the camera used in the broadcast industry—a three-gun camera. It's really three separate cameras, with one tube each for red, green, and blue. Because the color filtering is introduced inside the camera, the results are better. Three-gun cameras also have high resolution.

Two popular black-and-white cameras for use with Digi-View are the Panasonic 1410 and the RCA TC7011. Each camera is available for around \$250.

One important buzzword is *internal sync*. You don't need to know what it means, but you should know that this feature is needed by Digi-View; avoid cameras that lack it. Some models have a switch to choose between random and internal sync. Be sure that

yours is set to internal because image quality will suffer if it isn't.

Separate lenses are available for most cameras. Usually, the camera comes with a fixed-iris lens. For more flexibility, you might consider a variable-iris lens, which offers more control over the amount of light entering the camera. If you own a 35mm SLR camera, you can purchase an adapter called a *C-mount*, which will allow you to use your lenses with your video camera.

When searching for a long cable to connect the video camera to the digitizer, it's easy to mistake an audio cable for a video cable. Both types use the same connector, often



Fringes of false color appear when an image has many different colors. The skin tones are smooth, but the pupil has fringes.



This HAM image was made with a three-gun professional camera. Note the sharpness of the color transitions.

called an *RCA phono jack*, but a video cable is usually thicker. Using a cheap audio cable instead of a higher-quality video cable reduces the strength of the video signal and yields murky images. It also destroys the high-frequency component of the signal, causing a loss of detail. Good video cables can be found at any consumer-electronics store.

The video camera must not move during an exposure. Taking a lead from conventional photographers, many people use a copy stand, a flat board with a tall mounting bracket that holds the camera. The lens points straight down toward the target, and light fixtures mount on the sides of the board. NewTek now recommends cool-white fluorescent ring lights for copy-stand illumination. They light very evenly and are cool to the touch. Hardware stores carry them for about \$10 for each tube and adapter.

A less-expensive alternative is to mount the camera on a tripod and aim the camera at a wall. The print is fastened to the wall. A pair of strong incandescent lights can evenly illuminate the wall from a few feet away.

When you digitize still-life scenes, borrow techniques from traditional photography. Digitized images look best with a wide range of contrast. Still-life scenes will require careful lighting to bring out a good range of light and shadow. A glossy print digitizes better than a pebble-finish one. Position the lights at about a 45-degree angle relative to the surface of the print. If you have trouble with glare on a particular print and you can afford to alter it, try the matte spray available at an art store.

Most often, digitizing problems can be traced to a lack of light. If there isn't enough light, the camera cannot pick out the detail in the picture. Most cameras try to compensate for low-light situations by boosting the strength of the entire signal. Unfortunately, this often introduces noise and adds a gray cast to the image. This boosting technique is reasonable for human viewing because the mind easily compensates for the lack of detail. But computers aren't as smart.

Uneven lighting causes hot spots in the image that distort both color and brightness. Minimize extraneous light. Incident light interferes in several ways. If other sources of light in a room are as bright as your copy-stand lights, you'll have a hard time controlling glare and spurious reflections. It's helpful to darken the room to prevent this.

Pay attention to all sources of light in the room. Is there a skylight in the ceiling? If so, the light could come straight down through the colored filters and onto the page.

Another obscure light source is the camera's power-indicator light. The light isn't strong enough to reach the platform of the camera stand, but it can reach the filter wheel and reflect into the lens. Block out the power light with a piece of black tape.

After the camera grabs a clean image, the software (be sure to upgrade to the latest software—*Digi-View 3.0*) takes over. It tries to display the digitized data as an Amiga screen in a given screen resolution. Crop the image before digitizing. Place the center of interest on the center of the screen—the camera's best resolution is in the center.

Use black paper to mask out unwanted portions of the picture. This may minimize the number of colors present in the image. The software will work just as hard to capture the colors of the backdrop as it will to capture the image itself. Also, be sure something small and white is in the picture, even if you must crop it later in a paint program. The *Digi-View* software works best when it has a white reference point somewhere in the image; it uses this as a yardstick to create all the other colors.

Choosing colors for 32- or 16-color images can tax the *Digi-View* software. Most images have more colors than this, so the software creates new colors by painting with mixtures of pixel colors that resemble the colors it can't generate directly. This is known as *dithering*.

Video digitizing is a perfect match for the Amiga's HAM mode. (It's hard to believe that HAM was almost left out of the Amiga's design: No one could think of any use

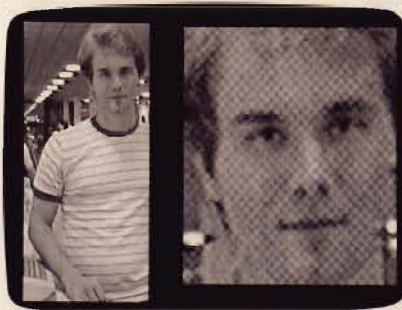
for it!) Video images rarely have sharp transitions of color. HAM creates its 4096 colors with smooth color transitions. However, HAM mode does have a drawback: It can't display more than 16 sharp color transitions. When a certain transition can't be displayed in HAM, close examination will show a color fringe along that edge.

For this reason, some pictures will always be difficult to digitize in HAM. It's nearly impossible to display a large number of colors and shades with many sharp transitions without introducing HAM fringe errors. This explains why digitized images of nudes turn out so well; there are few other colors in the image beyond flesh tones, so the software can easily choose enough palette colors to properly execute the color transitions in the picture.

Just as in using a camera, video digitizing requires practice and skill. A proper environment and perseverance will bring many good images to you and your Amiga. Special thanks goes to video specialists Oran Sands, Robert Blackwell of NewTek, and Scott Armstrong of SunRize Industries for their help in compiling this article. ▲



Cameras that have "random sync" generate vertical streaks in an image. Note the shifts across the center of the pupil.



A CCD color camera was used to make this image. The honeycomb pattern results from the low resolution of this color camera.

ON DISK

Amiga Resource
Volume 1, Number 2
Summer 1989



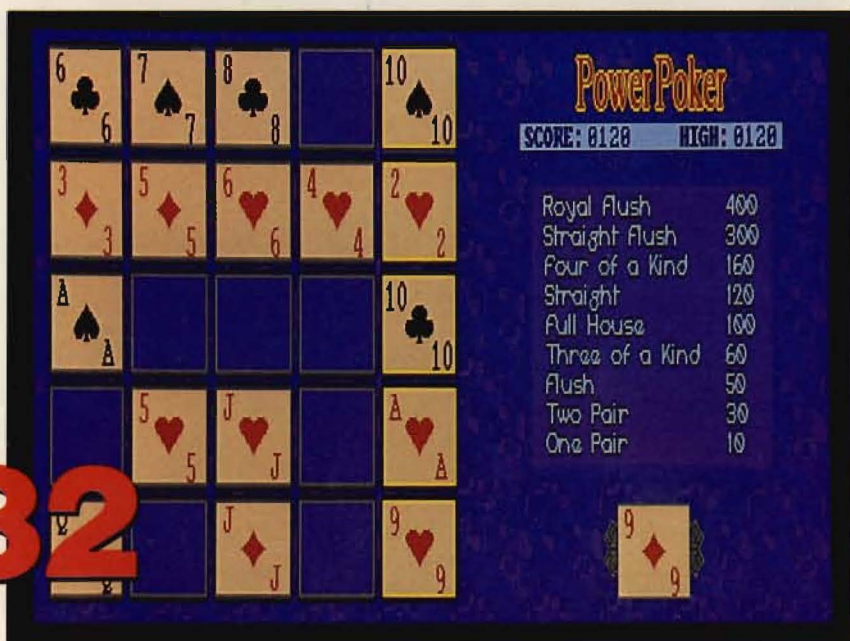
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One of the most addictive games we've seen

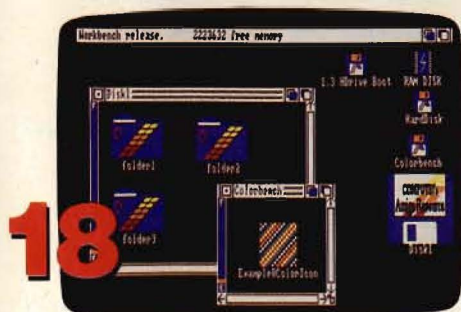
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Advanced Laser Chess

Mike M. Duppong

"Advanced Laser Chess" is a strategy game for two players. Based on the original Laser Chess (which can be found as a type-in program in the June 1987 issue of *COMPUTE!* magazine, in *COMPUTE! Books' Second Book of Amiga*, and on the recent *COMPUTE!'s Amiga Games* disk), this version is more complex, has more pieces, and demands even more thought, foresight, and sneaky tactics.

Ten different pieces are present, giving you a wealth of tools you can use to achieve your prime objective: the elimination of your opponent's king.

The stunning graphics and crisp digitized sound effects will pull you into the game, and the fascinating game-play and strategies will make you and your friends avid players.

Getting Started

To begin a game of Advanced Laser Chess, simply double-click on the game's icon. You'll find the game in the LASERCHES drawer of this issue's companion disk. You can also run the game from the CLI. To do this, type CD LASERCHES to change the current directory to LASERCHES. Then type RUN ADVLASER to start the game. If you copy Advanced Laser Chess to another disk, be sure to copy the entire LASERCHES folder.

When you start the game, you'll be presented with a title screen. Click on the left mouse button to stop the opening sequence and start the game. Double-click to bypass the title screen entirely.

An ominous sound is played continuously during the game. You can toggle this sound on and off by pressing the space bar. Advanced Laser Chess is a multitasking program. Press Left Amiga-N to get back to the Workbench screen.

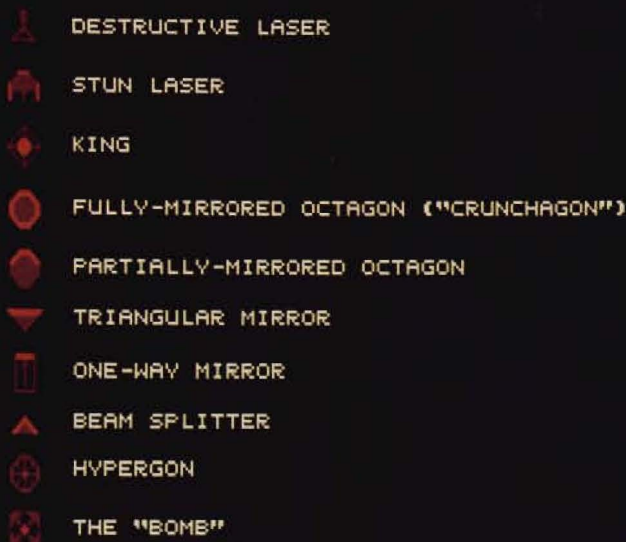
Advanced Laser Chess is played on a 15 × 11 board. In the center of the board is a displacement device, which randomly appears and disappears.

When the device is visible, any piece that moves on top of the device disappears for a moment and then reappears in a randomly selected square facing in a random direction. The same piece may use this method of displacement several times in the same turn if it gets the chance. A piece is destroyed if it moves onto the center square when the displacement device is not visible. Laser beams hitting the displacement device are deflected in a random direction.

The center column contains four gates that randomly open and close. When a gate is closed, it functions as

and fully mirrored octagons known as *stompers*. The stompers capture other pieces by moving on top of them. Once a piece is captured, it is removed from the board. A stomper can only capture one piece per turn, although several different stompers can each capture a piece in the same turn. Partially mirrored stompers can be rotated in 45-degree increments, but the fully mirrored stomper cannot be rotated.

The diamond-shaped piece is the king. It is the most valuable piece in Advanced Laser Chess, and one of the most vulnerable. Kings possess the ability to capture other pieces, just as



a normal square. But if a piece moves onto an open gate or if a gate opens when a piece is on top of it, the piece is destroyed. A piece reappearing on an open gate after it's been displaced is also destroyed. Laser fire is unaffected by gates.

The Pieces

Each Advanced Laser Chess piece has its own unique characteristics and capabilities. Notice that some of the pieces have one or more brightly colored sides. These surfaces are reflective armor—perfect for deflecting laser and freeze beams. A beam that hits a piece on a nonreflective surface destroys or freezes that piece, but a hit on a reflective side doesn't hurt it at all.

The front row contains partially

stompers do. However, if the king is captured or is hit by a laser from any direction, the game is over. The display changes to the color of the winning army to announce the suspension of hostilities. (Press either mouse button to abort the display.) When the game ends, all pieces are disabled, but you may still interact with the *quit*, *restore*, and disk icons.

The pieces that look like wagon wheels are hypergons. In a sense, the hypergon is a mobile displacement device: It has the same properties that a displacement device has, but it can move. To displace a piece with a hypergon, move a hypergon on top of it. The piece disappears and then reappears in a new location, facing in a random direction. A freeze or laser

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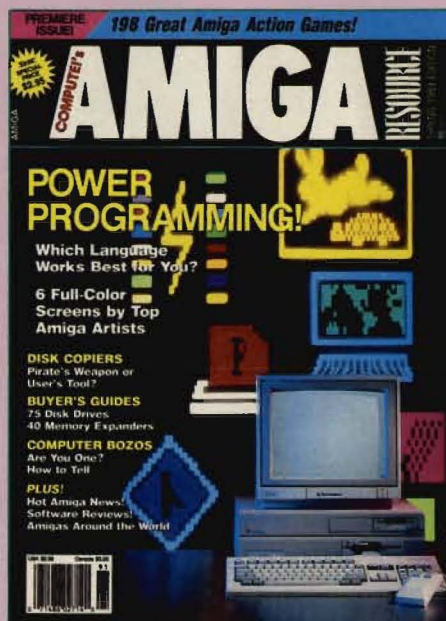
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beam that hits a hypergon is deflected randomly; therefore a hypergon cannot be frozen or destroyed by a laser. A hypergon cannot be rotated.

Triangular mirrors are the basis for laser- and freeze-beam defense. These pieces have one reflective side and can be rotated to face their mirrors horizontally, vertically, or diagonally as needed.

A piece that looks like an arrow enclosed in a rectangle is a one-way mirror. The one-way mirror allows a beam to pass through uninhibited when the beam is moving in the direction of the arrow. A beam which strikes the one-way mirror in the opposite direction is reflected. If a one-way mirror is hit by a beam traveling in any other direction, it is either destroyed or frozen, depending on the type of beam. A one-way mirror can be rotated as needed. Because of the unique protection it offers, the one-way mirror is ideally suited for protecting the laser- and freeze-beam pieces.

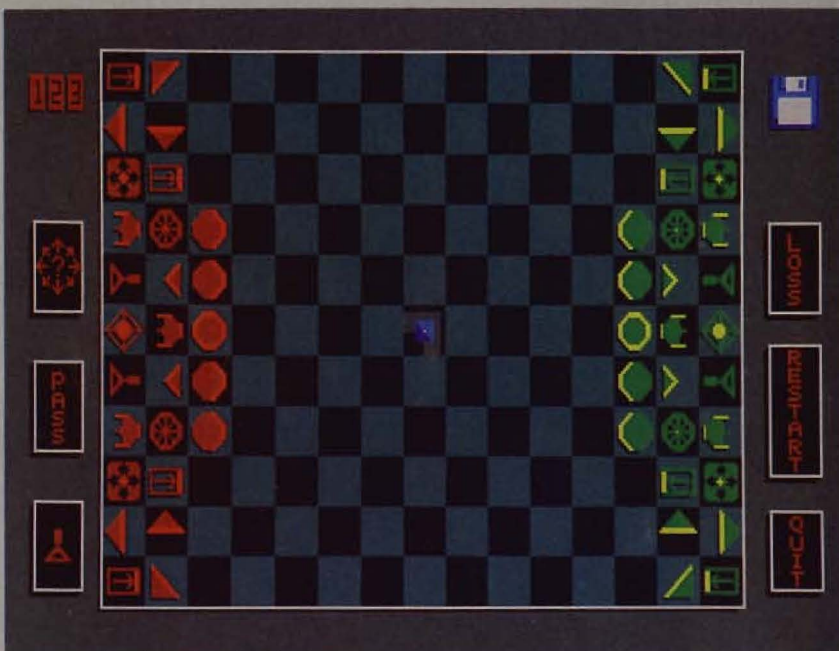
A piece that looks like a cannon is a laser. One of the most valuable pieces in Advanced Laser Chess, the high-powered laser is capable of destroying any nonreflective piece it shoots. The laser has no reflective sides; therefore it is extremely vulnerable to its own kind and is usually protected with a system of one-way and triangular mirrors.

Directly in front of the king and to the outside of the lasers are freeze lasers. Mirrored on three sides, the freeze laser usually needs no special protection. Its main goal is to temporarily disable other pieces. The freeze laser fires a supercooled beam that freezes any piece it touches. A piece turns white when frozen and regains color if it thaws. A frozen piece has a 20-percent chance of thawing at the beginning of a turn. A frozen piece cannot be selected; therefore it cannot be rotated or moved. Also, any mirrors on a frozen piece become nonreflective, making it extremely vulnerable to laser beams.

Beam splitters look like small triangular mirrors and have two reflective sides. The beam splitter can be used to divide a single beam into two separate ones. For this to happen, the beam must strike the splitter's vertex (the point where the two reflective sides meet). The resulting beams travel

in opposite directions, perpendicular to the original beam's path. A beam moving parallel to a reflective surface does not actually touch the splitter, and so it travels through the square freely. A

tion of the screen. The highest number shown is the number of moves remaining in a player's turn. Moving one square, rotating a piece, and firing a laser each count as one move. A player



beam striking the nonreflective side of a splitter either destroys or freezes it, depending on the type of beam involved.

The final pieces between the freeze lasers and the triangular mirrors are bombs. A bomb is potentially the most destructive piece in the game, capable of destroying as many as eight other pieces at once. It doesn't do much by itself, however; it requires a laser beam to detonate it. A laser beam that reaches the center of a bomb detonates the explosive charge, which destroys the bomb and any surrounding pieces. A laser hitting the outside portion of a bomb destroys the bomb without detonating it. If you fire a freeze laser into a bomb, the pieces surrounding the bomb (and the bomb itself) will be frozen. A frozen bomb hit by a laser beam is destroyed but not triggered. A bomb cannot trigger another bomb indirectly. A bomb may be rotated in one of two positions, allowing for hits from horizontal and vertical beams or from diagonal beams.

Making Moves

Each player has three moves per turn. These moves are represented by the 1, 2, and 3 icons in the upper left por-

may move, rotate, fire lasers, or execute any combination of these actions in one turn.

To interact with a piece, you must first select it. To do that, click on the desired piece with the mouse pointer. A square containing a selected piece appears highlighted. If you do not wish to interact with a selected piece or if you have finished with it, deselect it by clicking on the piece again.

To move a piece, first select it; then click on the desired destination. Moving one square counts as one move, moving two squares counts as two moves, and so on. Direct diagonal movement is not permitted, but you can achieve a diagonal move using two regular moves.

To rotate a piece, first select it; then press the right mouse button. Each press of the right button rotates the piece clockwise 45 degrees (if the piece is rotatable). Notice that rotating the piece, no matter how far, from its original facing decrements the number of remaining moves by 1. Also note that rotating the piece back to its original orientation restores the move. That is, if you rotate a piece from its original facing and deselect it, one move is tak-

ON DISK

en and cannot be regained. But if you rotate the piece back to its original orientation and you haven't first deselected it, the move is not taken.

To fire a laser, first select it; then

Beginners will appreciate the moves icon, which consists of a question mark surrounded by arrows. To use it, select a piece and then click on the icon. You'll be shown all of the

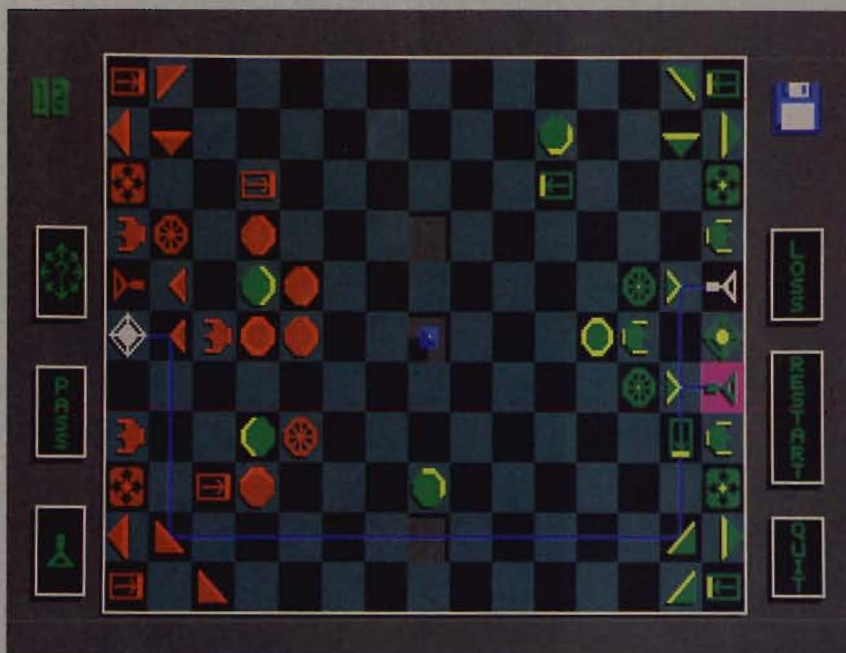
mentally end up with an unusable version of the game.

Strategy and Tactics

The major factor in defeating an opponent is foresight. You must always be aware of what is possible by moving or rotating a few pieces and firing in the same turn. You can't make your moves solely by the current positions of your opponent; you have to make them after you've considered what your opponent can do in three moves. It helps to get in the habit of scanning your opponent's positions and one-turn capabilities before making any moves.

Moving triangular mirrors along the top or bottom wall of the board (with their vulnerable surface against the wall) is a good way to sneak in diagonal shots behind your opponent's front-line defense. Positioning the mirrors in this fashion has an additional benefit: The piece cannot be destroyed easily by laser beams since its vulnerable surfaces are facing the outside wall of the board. Your opponent would have to bring in a stomper or gear up for a diagonal laser defense to harm your mirror.

It's a good idea to always fire through a one-way mirror so that your opponent can't return fire along the



click on the laser icon at the bottom left corner of the screen. The laser continues firing until the left button is released. This enables you to see its effects.

Icons

If you wish to forfeit your turn or any remaining moves, simply click on the *pass* icon. To restart a game, click on the *restart* icon. To quit the game, click on the *quit* icon.

Games can be saved or restored in progress. Simply click on the disk icon in the upper right corner. A requester asks whether you want to save, load, or cancel. Clicking on cancel returns you to the game. Clicking on load or save brings up a string gadget into which you can type the name of the game. An .ALC extension is automatically appended to the filename. The standard board setup (the one you see when you start the game) is named DEFAULT.ALC.

Click on the *loss* icon to call up a screen which shows how many pieces each player has lost. When you release the mouse button, you'll return to the game screen.

possible places where you can move the chosen piece.

Look and Listen

The pieces for Advanced Laser Chess are defined in an IFF file called ALC_PIECE.PIC to allow for easy modification. If you get tired of the colors or piece images, you can change them by altering this file with *Deluxe Paint* or another paint program. Don't get too wild with the colors, though—certain combinations don't mix well on the screen or are hard to look at for long periods of time.

You can also replace or modify the sound effects used in the game. The sounds are located in the SAMPLES directory. If you have a sound sampler, you can create your own sounds. Or, you can use sound effects (cows mooing, ducks quacking, and so on) from the public domain. The files consist of sample data only. Most of the samples were recorded at about 10,000 samples per second. Keep the size of your samples below 32K.

When you make changes, be sure to make them on a copy, not on the original disk. Otherwise, you may acci-

SPECS

Advanced Laser Chess

PROGRAM SIZE: 42,552 bytes

SUPPORT FILES:

ALC_PIECES.PIC 19,304

DEFAULT.ALC 1,350

SAMPLES/

BACKGROUND.SAMPLE 14,601

CANT.SAMPLE 13,182

CRUNCH.SAMPLE 7,128

DISKCLOSE.SAMPLE 1,254

DISKOPEN.SAMPLE 592

EXPLODE.SAMPLE 24,727

HYPERIN.SAMPLE 7,540

HYPEROUT.SAMPLE 7,830

LASER.SAMPLE 10,841

TITLE.SAMPLE 19,002

VICTORY.SAMPLE 16,213

WHAT.SAMPLE 10,698

MINIMUM CONFIGURATION:

512K RAM

AmigaDOS 1.2

ENVIRONMENT

Workbench

Double-click icon

CLI

CD LASERCHES

RUN ADVLASER

ON DISK

same path. But remember that while this is a good defense, it's not a perfect one. One-way mirrors can still be eliminated from six directions, so they must be protected heavily themselves.

Put the freeze-laser's armor to good use. A freeze laser can be used as protection for another piece while remaining capable of offensive action. Using a combination of firing and rotation during the same turn, you can attack and still be able to protect yourself.

Don't get too carried away with the hypergons. While they can potentially get pieces out of trouble, they are always risky—a piece reappearing on an open gate is destroyed. Hypergons can be used to block fire, but this is also risky because the blocked beam could be deflected in its original direction.

The bombs are very tricky pieces to use. If your opponent has any lasers, the bombs must be protected; it's extremely dangerous to have pieces around a defenseless bomb. If you can't muster the pieces to guard it, rotate the bomb to prevent it from being detonated by a laser. Guarding a bomb while trying to move it into enemy lines is very difficult. If it's saved until your opponent's lasers have been destroyed, you can move it into enemy territory without fear of premature detonation by your opponent.

X-Ray

Randy Thompson

What is a window?

In the real world, a window looks through walls. In the world of computers, a window serves quite a different function. "X-Ray" is designed with real-world windows in mind. Just as a kitchen window looks through to the backyard, an X-Ray window looks through the current screen to any screen behind it.

Besides monitoring other screens, X-Ray helps you move from one program to another. Using X-Ray's Next and Previous gadgets, you can quickly scan each available screen. When you

find the one you want, simply click X-Ray's Enter gadget and you move to that screen. Click the Enter gadget while holding down the shift key, and the X-Ray window follows you, opening onto the recently activated screen.

X-Ray is a unique utility that makes viewing, finding, and activating programs easy and often entertaining.

Using the Program

To run X-Ray, enter RUN X-RAY from the CLI or double-click the X-Ray icon from the Workbench. Since X-Ray is such a powerful addition to your Amiga environment, you may want to copy the program from *COMPUTE!'s Amiga Resource Disk* to the Utilities directory on your Workbench disk. (But please remember that X-Ray is not in the public domain; do not give it away to your friends.)

When you activate X-Ray, a window appears with three custom gad-

being viewed. The Enter gadget (shaped like an X) moves you to that screen. If you hold down the shift key when you click on Enter, the X-Ray window follows you to the destination screen—a unique and important feature.

The proportional gadgets that line the right side and bottom of an X-Ray window adjust your view of the underlying screen. By moving the scroll bars, you can view any portion of that screen. As with most windows, you can also move and resize an X-Ray window, as well as move it behind or in front of other windows. To remove an X-Ray window, simply click the Close gadget.

Taking X-Ray Along

X-Ray's most powerful feature is its ability to follow you from one screen to another. Just set X-Ray to view the desired screen, hold down the shift key,



Give your Amiga x-ray vision and look right through screens.

gets that run along the title bar. Click on the Next gadget (shaped like an up arrow) to view the next screen. Use the Previous gadget (shaped like a down arrow) to view the previous screen. (You must have more than one screen open in order for these gadgets to be useful.) The title of the X-Ray window changes to that of the screen

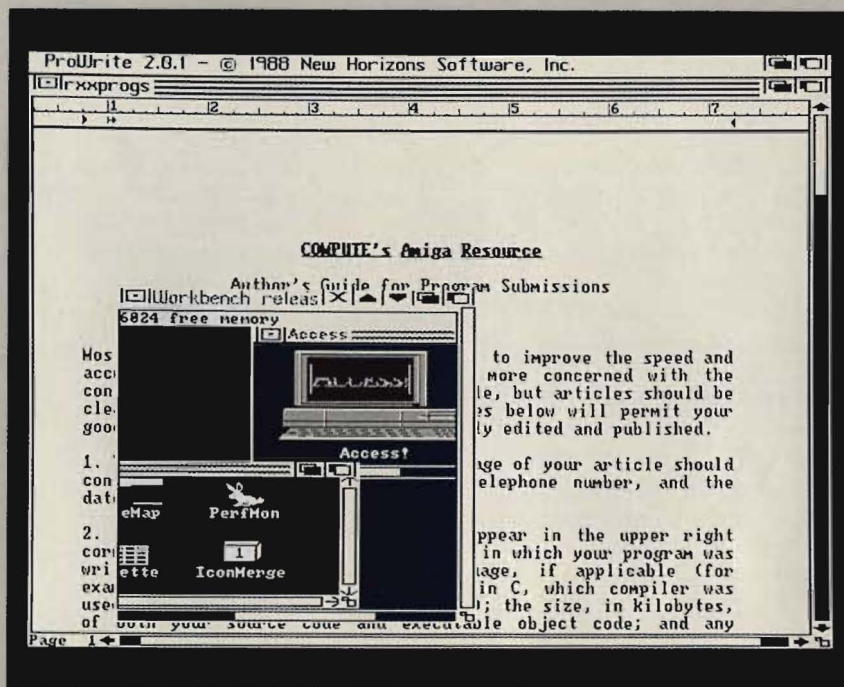
and click the Enter gadget. Not only does the selected screen pop to the front, but the X-Ray window also comes with it. With this feature, you can open X-Ray on almost any Amiga screen.

Imagine working with a terminal program that opens its own screen. Transfer X-Ray to that screen and you

ON DISK

can keep an eye on the Workbench—or any other screen—as you peruse your favorite bulletin board. You can set X-Ray to view the Workbench as it formats a disk. When the disk is formatted, instruct the terminal program to download a program to that disk, move X-Ray to the screen that your word processor occupies, and compose a letter while you continue to track the progress of your terminal program. X-Ray can be a very powerful tool in the Amiga's multitasking environment.

X-Ray's portability has its side effects, however. Some screens are impolite to uninvited windows. Moving X-Ray to a *Deluxe Paint* screen, for example, can cause all sorts of graphic confusion. *Deluxe Paint* will happily draw all over X-Ray. In return, X-Ray will gladly blot out *Deluxe Paint*'s artwork. Even weirder things happen when you use X-Ray with a screen created by *CygnusEd*. It's unlikely that any permanent damage will result, but if X-Ray appears to be causing problems, it's best to either close the win-



"X-Ray" keeps an eye on the Workbench as you compose a letter.

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ON DISK

dow or move it to another, more hospitable screen.

Important: Never close a screen that contains an X-Ray window. If you plan to close an application that contains an X-Ray window, close or move the X-Ray window first. If you don't, your Amiga will most certainly Guru. Programs which are X-Ray-friendly will not allow you to close the screen until X-Ray has been removed.

The Speedometer

When X-Ray is first activated, its window appears blank. It is, in effect, viewing itself. Why would you ever want X-Ray to view itself? When X-Ray is showing other screens, it updates the contents of its window every 200,000 microseconds (five times per second). This update process uses up processor time, thereby slowing down other programs. When X-Ray views itself, however, it uses practically no processor time at all.

X-Ray accepts an optional numeric parameter when run from the CLI.

This number specifies, in microseconds, how often X-Ray redraws the contents of its window. For example, if you enter the command RUN X-RAY 1000000, X-Ray will update its window approximately once every second. Basically, the higher the number, the less often the window is updated and the less processor time is used. Keep in mind that X-Ray can go only so fast, so extremely low numbers, such as 1, simply keep X-Ray running at full speed.

How often you want X-Ray to up-

SPECS

X-Ray
PROGRAM SIZE: 8300 bytes
MINIMUM CONFIGURATION:
512K RAM
AmigaDOS 1.2
ENVIRONMENT
Workbench
Double-click icon
CLI
RUN X-RAY [microseconds]

date its window depends on the type of screen you're watching. If you're watching an animation program, for example, you'll want a fairly fast refresh rate—say 100,000 microseconds. If you're viewing a terminal program, a one-second refresh should suffice.

Size, Shape, and Color

Whenever the X-Ray window is active (signified by a solid title bar), the current screen's colors are changed to those used by the screen being viewed. By using the target screen's colors, X-Ray gives a more accurate picture. Of course, X-Ray can display only as many colors as the current screen allows. If X-Ray is opened on a four-color Workbench screen, and its window is viewing a 32-color arcade game, only 4 of the 32 colors can be displayed.

X-Ray converts all displayed graphics to the resolution of the current screen. This way, you can view any screen from any other screen, whatever their resolution.

An X-Ray window cannot exceed

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the size of the screen that it's currently viewing. For example, when you're looking at a lo-res noninterlace screen from a hi-res interlace screen, X-Ray will expand to only one-fourth the hi-res screen's size. If you're looking in the opposite direction, X-Ray's scroll bars will allow you to view any portion of the hi-res screen, even though you can't see the entire screen at one time.

Interesting Experiments

You can open as many X-Ray windows as your computer has memory for—one for every screen, if you like.

Interesting things happen when two X-Ray windows look at each other from separate screens. With this setup, you'll see an X-Ray window that shows an X-Ray window looking at the first X-Ray window, which is looking at the second X-Ray window, which is looking at the first X-Ray window, and so on.

Ever wonder what a Workbench screen would look like in lo res? Run the Amiga Basic program entitled Screen, found in the BasicDemos drawer on your Extras disk; then run X-Ray and move its window to the lo-res screen. Viewed from this resolution, Workbench icons look like large cartoon illustrations. Using this same technique, you can see what HAM screens look like from the Workbench, how interlace screens appear in non-interlace mode, or what happens to Extra Half-Brite mode when observed from a screen with only two bitplanes. As you can see, X-Ray can produce some interesting, if not useful, results.

Note to commercial software developers: X-Ray is a powerful tool for users of your program. If you'd like to make your program X-Ray-friendly, check the FirstWindow pointer in the Screen structure of the screen you wish to close. If the pointer is not NULL (even after you've closed your own windows), do not close the screen. Instead, wait until the user has closed or moved the X-Ray window from your screen. If you choose to make your program X-Ray-friendly, please mention the fact in your documentation.

Mr. Gadget

John L. Jones

Programming gadgets in C can eat up a lot of code. After I'd worked on a program for only a short while, I had enough source code devoted to string and Boolean gadgets to write a small novel. Realizing this, I decided to create a set of C functions to do the work for me—routines that were flexible enough to receive all the information that my program required. After all, information for prompts such as *Which Drive?*, *Enter Filename*, or *Exit Program?* can all be obtained using string and Boolean gadgets.

The solution to my gadget dilemma is "Mr. Gadget," a small group of functions written in C. With these functions, you can open a window with up to six string or eight Boolean gadgets using just one function call. Gadget types can be mixed, allowing you to have the exact number of gadgets that you require. And even if you prefer

Mr. Gadget and opens a gadget window. This function is

```
result = openMrGadget(mrgadget);
```

where *mrgadget* is a pointer to a MrGadget structure.

The MrGadget structure is defined in Mr. Gadget's source code, found on this issue's *Amiga Resource Disk*. It's a large structure, but only the first five elements must be initialized by the user. Here's what the first portion of a MrGadget structure looks like:

```
struct MrGadget
```

```
{
    char *title;
    int ns;
    int nb;
    char **strtext;
    char **getstr;
    ...
};
```

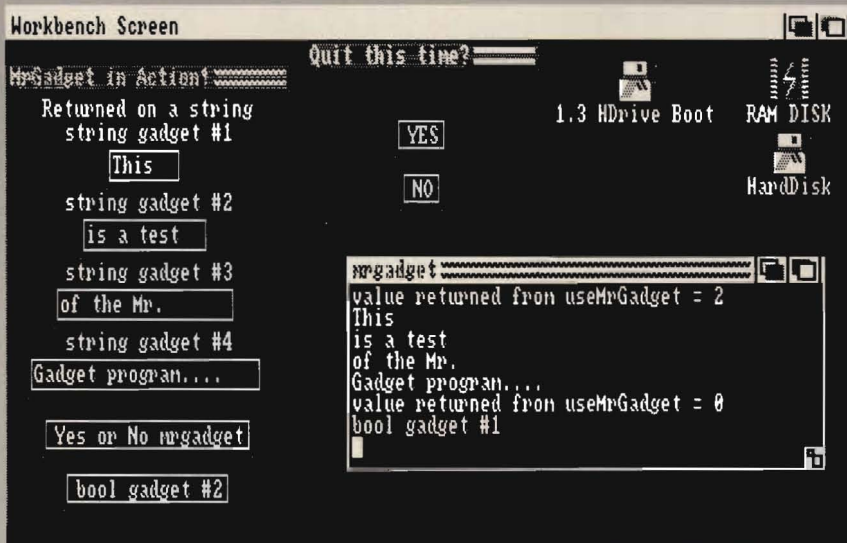
These are the elements that you must initialize prior to calling `openMrGadget()`:

title = pointer to the title of the gadget window

ns = number of string gadgets (0-6)

nb = number of Boolean gadgets (0-8)

strtext = pointer to an array of point-



doing the work yourself, these functions provide a good example of how to program string and Boolean gadgets in C.

Hello, Mr. Gadget

There are four calls that you can make to Mr. Gadget. The first one wakes up

ers. Each pointer should point to a NULL terminated string that holds the title of each gadget requested. String gadget names appear first; then come Boolean gadget names. You are required to have one title for each gadget.

ON DISK

getstr = pointer to an array of pointers. Each pointer should point to a NULL terminated string. You are required to have one string for each string gadget requested. The string lengths determine how many characters may be entered into each string gadget. Characters found in the string are ignored by **openMrGadget()**; they only serve to define the string's length. However, these characters appear as the default input when you call the function **useMrGadget()**. When text is entered via a string gadget, it's returned in these strings. Set **getstr** equal to NULL if you don't have any string gadgets.

That's all the information you need to supply in order to generate a window full of gadgets.

The **openMrGadget()** function returns the Boolean value TRUE or FALSE, depending on the success of the function. The most likely cause of a FALSE value is lack of memory for Mr. Gadget's gadgets and window.

Collecting Information

While **openMrGadget()** opens a window full of gadgets, it does not collect information from them. To accomplish this, you need to call the following function:

code = useMrGadget(mrgadget,prompt);

where **mrgadget** is a pointer to the MrGadget structure that was used to open the Mr. Gadget window, and **prompt** is a pointer to the string that you want to display in the Mr. Gadget window. Use a NULL **prompt** parameter if you prefer not to have a prompt. The prompt can be anything you want as long as it's shorter than the longest gadget title or **getstr** element in the MrGadget structure. If it's too long, you won't be able to see the prompt.

useMrGadget() returns a value of 0 if something has been entered using a string gadget; otherwise **useMrGadget()** returns the number of the selected Boolean gadget (1-8). Boolean gadgets are numbered according to their position in the window, counting

from top to bottom. When **useMrGadget()** returns a 0, it's up to your program to determine which of the **getstr** buffers found in the MrGadget structure have changed.

When you've finished with the Mr. Gadget window, use

closeMrGadget(mrgadget);

to close it. The **mrgadget** parameter must be a pointer to the MrGadget structure that was used to open the window.

With Mr. Gadget, you can open as many windows as you need as long as you maintain a separate MrGadget structure for each one.

Yes or No?

There's one more Mr. Gadget function that you should know about. This function is

code = YesNo(question);

It provides an easy way to ask simple yes/no questions. You need not perform any other calls prior to a

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YesNo()—not even an openMrGadget(). Just send it a pointer to a string less than 70 characters long and Mr. Gadget will open a small window with one Yes gadget and one No gadget, print the *question* string in the window's title bar, and return the result of the user's actions. The code result returns TRUE for Yes and FALSE for No. To ask whether someone wishes to exit a program, for example, you might use the following code:

```
if (YesNo("Exit the program?"))
    exit(0);
```

Instead of your having to click a gadget, the YesNo window also allows you to respond by pressing Right Amiga-Y for Yes or Right Amiga-N for No. You can also use the window's pull-down menu, if you like. Most users appreciate a choice of keyboard, menu, or mouse input.

The Demo Program

On the magazine disk for this issue, you'll find two Mr. Gadget files: MrGadget and MrGadget.c, which contains the C source code for the MrGadget demo program. MrGadget.c is found in the Source directory on the disk.

To run the demo program, simply double-click its icon or enter RUN MRGADGET from the CLI. A Mr. Gadget window appears with four string gadgets and two Boolean gadgets. When you click the first Boolean gadget, a YesNo window appears, allowing you to click Yes and exit the program. For demonstration purposes, the results returned by Mr. Gadget are displayed in a separate window (the CLI window, if the program is not run from the Workbench).

To use Mr. Gadget's source code in your own programs, simply remove the last three functions—Close_shop(), Startup(), and main()—and replace



them with your own. These functions serve only to demonstrate how Mr. Gadget may be used. As shown in the Startup() function, however, you must open the intuition.library and graphics.library prior to using any of Mr. Gadget's functions.

Mr. Gadget opens windows on the Workbench screen only. You'll have to modify the source code if you want Mr. Gadget to work with custom screens.

Mr. Gadget's source code was compiled with Lattice C 5.0, but you should be able to use almost any major C compiler.

"Power Poker" adds a new twist—rather, another dimension. You play on a 5 × 5 grid and try to build the hands that gain the most points. Each card serves two hands, so place the cards carefully. (If you're new to poker, see "Poker Hands," accompanying this article.)

Getting Hooked

You'll find Power Poker on the magazine disk in the PowerPoker folder. The filename of the game is also PowerPoker. To run it, double-click on its icon from the Workbench. Or, from the CLI, type CD POWERPOKER to change the current directory to the PowerPoker folder; then type RUN POWERPOKER to start the game. After the program has loaded, you'll see the grid on the left and the deck to its right. The deck shows a card face up. You can move this card onto any of the 25 openings on the grid. Just point to the desired place with the mouse pointer and click the left mouse button.

The computer randomly selects a card and displays it on the deck. After you've placed the card, the computer picks a new one, and so on, until all 25 cards have been placed. Choose your moves carefully, and remember: There are 52 cards in the deck, but you'll play only 25. The goal is to make the most points possible. ▶

Power Poker

Jud Bleser
Amiga version by Rhett Anderson

Poker is a game that's just as popular today as it was a century ago. Even though there's a random element at play, the game requires careful thought and a knowledge of probability. The variations created by the cards dealt and how you arrange them make poker unpredictable.

SPECS

Mr. Gadget Demo Program
PROGRAM SIZE: 9.592 bytes
MINIMUM CONFIGURATION:
512K RAM
AmigaDOS 1.2
ENVIRONMENT
Workbench
Double-click icon
CLI
RUN MRGADGET

ON DISK

Scoring is based on the hands you build. Point values for winning hands are shown on the screen. If you score in both a column and a row, you receive points for both.

Power Poker keeps track of your score in a box on the right side of the screen. The high score for your playing session is also displayed.

Poker players may notice that the ranking of hands is slightly different from the ranking used in the normal game. Traditionally, a flush is much

er screen behind all other screens. Since Power Poker multitasks, you can perform operations from the Workbench in the middle of a game. You can get back to the Power Poker screen by sending one or more screens to the back with their Screen-to-Back gadgets. Quit exits Power Poker.

Each of the menu selections has an Amiga-key equivalent listed to the right of each item. For instance, you can type Right Amiga-Q to quit.

cards numbered 2-10 and cards called jack, queen, king, and ace. The object is to make one of the following hands (examples are in parentheses):

Royal flush: 10-J-K-Q-A—all of the same suit

Straight flush: A sequence of five of the same suit (9-10-J-Q-K—all diamonds)

Four of a kind: Four of the same value (2-2-2-2-5)

Straight: Five in sequence, suits vary (4-5-6-7-8)

Full house: Three of a kind plus a pair (10-10-10-4-4)

Three of a kind: Three of the same value (9-9-9-4-7)

Flush: Five of the same suit (2-K-8-A-5—all clubs)

Two pair: Two groups of two, each of the same value (A-A-6-6-3)

One pair: Two of the same value (10-10-Q-2-8)



higher on the list. But, since you're drawing 25 cards, the odds of getting two or three flushes are very high. Higher point values have been given to hands that are less likely to occur.

Straights don't need to be in sequential order. For example, 5-6-4-7-8 is a valid straight. "Roll-over" or "round the corner" straights such as 3-2-A-K-Q are not allowed. However, straights using an ace as either the low card (A-2-3-4-5) or high card (10-J-Q-K-A) are acceptable.

Read the Menu

Power Poker has a menu with three choices. You can access the menu normally—by holding down the right mouse button. The three choices are New Game, Screen to Back, and Quit. New Game cancels the game you're currently playing and starts a new one. Screen to Back sends the Power Pok-

Poker Hands

Poker is very easy to learn even if you've never played. There are 52 cards, divided into four sets (suits) of 13. The suits are hearts, clubs, spades, and diamonds; each suit consists of

SPECS

Power Poker

PROGRAM SIZE: 26,096 bytes

SUPPORT FILES:

pp.bak 41,550 bytes

pp.objs 10,576 bytes

MINIMUM CONFIGURATION:

512K RAM

AmigaDOS 1.2

ENVIRONMENT

Workbench

Double-click icon

CLI

CD POWERPOKER

RUN POWERPOKER

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Uedit: A Shareware Star



It's hard to pin a label on *Uedit*. While it has a lot of features normally associated with word processors (like print formatting and an optional spell-checker), it's definitely not *WordStar*. On the other hand, it has so many features that it seems a shame to lump it with simple text

editors like ED. Rick Stiles, the program's author, bills it as a "programmable editor for technical users." Explaining further, he says, "It'll shine your shoes. It'll wash your car. It'll get you a job. It is a job."

Rick isn't kidding about that last part. He's been working on *Uedit* almost steadily since he first got his Amiga in 1985, making *Uedit* the pioneer of Amiga shareware. Under this distribution scheme, copies of the shareware version of *Uedit* can be freely distributed from user to user. This version is completely functional but is not quite as programmable as the full version, and it contains a help file and tutorial rather than a complete reference manual.

Distributing *Uedit* in this manner allows Amiga owners to try *Uedit* before paying for it. If they like the program enough to use it, they can register their copy for a small fee (the current introductory price is \$25). Registered owners get the fully programmable version of the program, additional documentation on disk, and the chance to purchase options like a spell-checker (\$15), a complete reference manual on disk (\$19), or a printed manual (a limited number are available at \$25).

Registered owners are also notified of major updates and can obtain new versions for \$18 (interim bug-fix versions are available for only \$3). They are also eligible for cash bonuses if they distribute copies of the program to users who ultimately register those copies.

Uedit can be approached from at least two levels. The first is as a full-featured text editor and word processor. As such, it has a number of interesting and unique features. It can allocate as many as 100 text buffers, allowing you to edit multiple files in multiple windows, to keep help files and directory listings handy, and to perform multiple levels of cutting and pasting.

Uedit has a search-and-replace feature that works with any character (including control characters); allows wildcard characters in your searches, including an *all-but* feature to let you search for any string that doesn't include a given combination of characters; and can even search for multiple strings at once. *Uedit* allows you to cut and paste rectangular columns and will total numbers in a column, as well. It even converts decimal numbers to hexadecimal, and vice versa.

Uedit features keyboard combinations for every imaginable cursor movement (a line at a time, a word at a time, to end of line, to end of page, and so on). In fact, there are keyboard combinations for every conceivable function. In order to help familiarize the user with this overwhelming list of options, *Uedit* features a unique *teach mode*. When you turn on teach mode, pressing a control-character combination causes a message to appear on the screen explaining what that combination does, rather than causing the command itself to be executed. Although every command has a keyboard equivalent, there are also extensive pull-down menus to help out the beginner, as well as online help files that include complete function summaries.

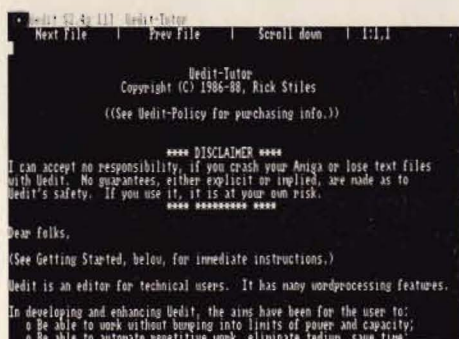
Besides the normal text-editing functions, *Uedit* has a host of extras. Its display options include an interlaced or noninterlaced screen and 2- or 4-color display. Any combination may be selected for screen colors. *Uedit* is one of the few programs that handle system fonts larger than the standard 8 × 8 text fonts correctly, allowing you to use a program like the public domain Setfont to install the Topaz 11 font for a

sharp 640 × 400 display.

The program uses custom fast-text routines to speed scrolling of 8- or 11-line fonts, though it still permits display of any other font size. *Uedit* resides on its own screen, but if you click on its title bar it closes the screen and displays a tiny window on the Workbench screen. In this form, the program remains loaded but, to facilitate multitasking, gives up as much memory as possible and goes to sleep. Clicking in the small window causes the program to open its screen and reactivate the display.

The tab key can be used to insert either a single tab character or a string of space characters out to the current

It will shine your shoes, wash your car, and get you a job. It's a veritable Text Editor Construction Set.



tab stop. *Uedit* features both a file requester and a unique point-and-click file-loading system that allows you to load a file by holding down the control key and clicking on the name of the file in a text window. It allows you to execute other programs from *Uedit* by entering their names as you would from an AmigaDOS command line. It not only features a print spooler that allows you to continue editing files while printing, but it spools file saves as well, allowing you to start editing a file immediately after you've initiated a save. This eliminates a lot of waiting when you're saving large files to floppy disk.

Uedit is a lot more than just a full-featured text editor, however. It is so fully customizable and programmable that it's a veritable Text Editor Construction Set. Every keystroke or mouse click can be a potential macro event that enters a string of keystrokes or program commands, and each can be programmed to perform any function.

A lot of the customization can be performed interactively. For example, in the registered version of the program, you can save the current settings at any time with a single keystroke (margins, display type, key macros) and have those settings loading automatically every time you run the program. You can swap the functions of any two macro keys. *Uedit* also has a feature called *learn mode*, in which you can record a series of keystrokes and mouse clicks and bind them to a macro key. The learned functions (or any other functions) can be repeated either a set number of times or continuously until they fail. This would make it a snap, for example, to insert three spaces at the beginning of each line in a document.

The real power of the program, however, becomes apparent when you begin to work with the command language. This is an entire programming language that can be used to create *Uedit* functions. In fact, the default functions for *Uedit* are themselves programmed in this language. The command language has low-level text-editing functions (such as moving the cursor to a certain position in the buffer, inserting a character into the buffer, reading a keystroke, reporting the cursor position), and high-level functions (such as searching for a string, loading a file, or creating a menu item). It even has control structures (do loops, while loops, if-else conditionals, goto a label), variables, and operators (simple math functions and equality checking). Using the command language, you can have each keypress combination run an entire program. You can customize the menus and the keyboard layout (creating custom foreign-language or Dvorak keyboards). You can create functions like text filters that eliminate nonprinting characters, or you can change line-feeds to carriage returns. You can make the keyboard interface emulate almost any other text editor or word processor. You can even create print-formatting functions.

The printed version of the manual is itself a glowing tribute to the power of the command language. Although *Uedit* doesn't have any built-in word processing functions, using the command language, Rick Stiles was able to format his manual so that it has a table of contents, headings and subheadings in bold print (the headings printed at the bottom of each page as footers), page numbers and gutters on opposite sides of facing pages, and a complete index. It couldn't have turned out better if he had been using a high-powered (and high-priced) word processor.

As if *Uedit*'s own command language didn't make the program flexible enough, Stiles has added support for *ARexx* in the latest version. *ARexx* is a command language that facilitates communication between separate programs

that are running on the Amiga on the same time. Using *ARexx*, it is possible for other programs to send commands to *Uedit*. This means that not only can *Uedit* be run by a person pressing on the keyboard, but it can also be run by another program. An *ARexx* program could, for example, communicate with a terminal program and have it send the text from the serial port directly to a *Uedit* buffer, where the *ARexx* program could instruct *Uedit* to perform search-and-replace functions or make formatting changes. Because *Uedit* was designed for total flexibility before *ARexx* came along, it is now able to extend that power to other programs that support *ARexx*. Although other text editors have *ARexx* support, *Uedit* is the only one that puts an entire

programming language at the disposal of any *ARexx* program. While *Uedit* is fairly simple to pick up and use, getting the full power out of the program requires a familiarity with programming in general and with the command language. Perhaps that's why Stiles recommends the program for the technical user who likes to tinker under the hood.

Even those without a lot of computer experience can enjoy *Uedit*'s many unique features, however, and the more adventurous may also learn a little about programming by experimenting with the command language. At this price, *Uedit* is definitely worth a try. If you like it, don't forget to pay for it. One visible success story could encourage the creation of a lot more creative shareware on the Amiga, and that's a development that would benefit us all.

On this issue's companion disk, you'll find the latest shareware version of *Uedit*. Because this issue's disk is full to the brim, *Uedit* is on the disk as a packed file. You must run the file *Uedit.pak* to expand *Uedit*. Copy this file onto another disk before you expand the program. Complete details for this procedure can be found in this issue's "How To Use the Disk" section. Before you start, you'll need this issue's companion disk, your original Workbench disk, and a blank disk. ▲

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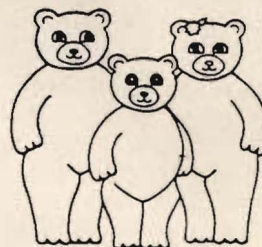
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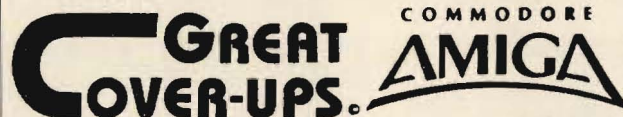
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Every issue of *COMPUTE!'s Amiga Resource* is accompanied by a 3½-inch disk (the magazine may also be purchased separately). If you experience a problem with the disk, even after reading the programs' documentation, please contact us at (919) 275-9809 between 9:00 a.m. and 4:30 p.m. Eastern time, Monday through Friday.

To use the disk, insert it into your disk drive and then turn on your computer. (Amiga 1000 owners must boot with Kickstart first.) You may boot with your own copy of Workbench, but the disk's icons will not appear as colorful or as detailed as they do when you boot with the magazine disk.

You run programs by double-clicking their icons. Some programs may be found within drawers (icons that resemble file folders). Please look into each drawer on the disk. We recommend that you read the "On Disk" section of the magazine prior to running any of our programs. If you wish to move a program that is in a drawer to another disk, be sure to copy the entire drawer so that you can be sure that you copy all support files that the program may need.

Most programs on the disk are accessible through the Workbench environment. Some programs, however, are designed to work only in the CLI environment. Such programs do not have icons and are not visible from the Workbench. Since the magazine disk may be too full to include many CLI commands, you will have to boot with your own disk to access the CLI and work with these programs.

Artwork from "Amiga Art Gallery" may be found in the ArtGallery drawer. To view a picture, double-click its icon. When the painting appears onscreen, simply click the mouse once to return to the Workbench.

Our disk is not copy-protected. We encourage you to make a backup of the disk as soon as possible. With the exception of the program in our "Best of the Boards" column, the contents of the disk are copyrighted and may not be used by anyone other than the owner of the magazine. Artists who appear in "Amiga Art Gallery" hold the copyrights to their own work. Amiga Workbench version 1.3 is copyright 1985, 1986, 1987, 1988 Commodore-Amiga, Inc., all rights

reserved. All other disk contents are copyright 1989 COMPUTE! Publications, Inc., all rights reserved. We ask that you respect the copyrights of the works on the disk and of the disk in its entirety.

We suggest that you write-protect the disk by sliding the write-protect tab to the open position. This will cause programs that attempt to write to the disk to fail. You could slide the write-protection tab to the closed position to allow writing, but there may not be enough room on the disk for any more files. If this occurs, copy the offending program to another disk to use it.

On Disk This Issue

Uedit is a feature-packed shareware text editor discussed in this month's Best of the Boards column. It is on this issue's disk as a packed file and cannot be run as is (unpacked, *Uedit* is too large to fit on the disk with the rest of the magazine's programs). To use *Uedit*, boot up with the Workbench disk that you received with your computer (version 1.2 or 1.3) and use Workbench's Initialize option found in the Disk menu to format a blank disk. Use the Workbench menu option Rename to change the name of the disk from Empty to *Uedit*. See your computer's manual if you have trouble with this step. Now, open a CLI window and type COPY RESOURCE1:UEDIT.PAK UEDIT: and follow the system prompts. Next type CD UEDIT: and then type UEDIT.PAK and follow the system prompts. Now you can use *Uedit*.

From the Workbench, double-click on UES to get started.

The three programs that accompany this issue's "Programmer's Page" ("Colorbench," "Normalbench," and "SET4567") may be found in the C directory of the magazine disk; they do not have icons. To use these programs with your own disks, you'll need to boot with the Workbench disk that came with your computer and use the CLI to copy these programs to another disk.

With the exception of *Uedit*, the source code for all of the programs on disk may be found in the disk's Source directory. Within Source are separate directories for each of the programs. For example, the source code for

"MultiGadgets" may be found in Source/AskRobPeck. The Source directory does not have an icon and cannot be accessed via the Workbench. You'll need to boot with the Workbench disk that came with your computer and use the CLI to access these files.

If you own a sound digitizer or a sound-manipulation program, you may be interested in the digitized sounds that accompany our "Advanced Laser Chess" program—there are 12 sound samples in all. These digitized sounds may be found in the directory LaserChess/samples. Again, you'll need to use the CLI to copy these files to another disk.

On Disk Directory

| | | |
|----------------------|--|------------------|
| c (dir) | | EndCLI |
| colorbench | | normalbench |
| LoadWB | | v |
| set4567 | | |
| LaserChess (dir) | | |
| samples (dir) | | |
| background.sample | | cant.sample |
| crunch.sample | | diskclose.sample |
| diskopen.sample | | explode.sample |
| hyperin.sample | | hyperout.sample |
| laser.sample | | title.sample |
| victory.sample | | what.sample |
| .info | | Advlaser |
| Advlaser.info | | alc_pieces.pic |
| default.alc | | |
| 1 (dir) | | |
| Disk-Validator | | |
| devs (dir) | | |
| system-configuration | | |
| s (dir) | | |
| startup-sequence | | |
| PowerPoker (dir) | | powerpoker |
| .info | | pp.bak |
| PowerPoker.info | | |
| pp.objs | | |
| Source (dir) | | |
| sColorWbench (dir) | | |
| Colorbench.a | | Colorbench.c |
| Colorbench.mod | | Normalbench.a |
| Normalbench.c | | Normalbench.mod |
| AskRobPeck (dir) | | |
| gad.c | | |
| PowerPoker (dir) | | |
| powerpoker.mod | | |
| ALC (dir) | | |
| advdoor.c | | advgraph.c |
| advdiff.c | | advdiff.h |
| advlaser.c | | advlaser.h |
| advsound.c | | advsound.h |
| advtitle.c | | build |
| X-Ray (dir) | | |
| X-Ray.c | | |
| Mr.Gadget (dir) | | |
| mrgadget.c | | |
| libs (dir) | | |
| icon.library | | info.library |
| version.library | | |
| ArtGallery (dir) | | |
| .info | | Blue Lady |
| Blue Lady.info | | Dunk |
| Dunk.info | | Pelican |
| pelican.info | | |
| .info | | ArtGallery.info |
| Disk.info | | LaserChess.info |
| MrGadget | | MrGadget.info |
| MultiGad | | MultiGad.info |
| PowerPoker.info | | Uedit.pak |
| X-Ray | | X-Ray.info |

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Send your best work to *COMPUTE!'s Amiga Resource*. See "Where to Write," page 6, for more information.

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A M I G A USER GROUPS

The following list includes updated entries to our annual "Guide to Amiga User Groups."

Send typed additions, corrections, and deletions for this list to

Amiga User Groups
COMPUTE!'s Amiga Resource
P.O. Box 5406
Greensboro, NC 27403

When writing to a user group for information, please remember to enclose a self-addressed envelope with postage that is appropriate for the country to which you're writing.

User Group Notes

The Amiga Users of Calgary (AMUC) has a new mailing address. All club correspondence should be sent to P.O. Box 154, Station G, Calgary, Alberta, Canada T3A 2G2. The club also has two new bulletin board service numbers: (403) 246-2560 and (403) 246-2085.

New Listings

MARYLAND

Baltimore Amiga User's/Developers, P.O. Box 2432, Baltimore, MD 21203-2432
National Capital Amiga User Group, P.O. Box 12360, Arlington, VA 22209

MISSOURI

AUGKC, 9014 Central, Kansas City, MO 64114

NEBRASKA

Greater Omaha Commodore Users Group, P.O. Box 241155, Omaha, NE 68124

NEVADA

Southern Nevada Amiga Group (SNAG), 1973 N. Nellis Blvd., Suite 224, Las Vegas, NV 89115

NEW JERSEY

The Jersey Amiga Users Group (JAUG), P.O. Box 1986, New Brunswick, NJ 08901

NEW YORK

The Bronx-64 Users Group (BUG 64), P.O. Box 523, Bronx, NY 10475
Queens Commodore Users Group, 37 Skillman Ave., Brooklyn, NY 11211

OHIO

Cincinnati Commodore Computer Club, c/o Cure of Ars School, Berwick & Roe Streets, Cincinnati, OH 45227
The Dayton Area Commodore Users Group (DACUG), 1117 Lavern Ave., Kettering, OH 45429

OREGON

Medford Interest Group Amiga (M.I.G.A.), P.O. Box 4034, Medford, OR 97501

PENNSYLVANIA

PhilAmiga Users Group, 1000 Conestoga Rd., C-364, Rosemont, PA 19010
Philadelphia Area Computer Society Commodore SIG, P.O. Box 57096, Philadelphia, PA 19111

TENNESSEE

Clarksville Commodore Users Group, P.O. Box 2171, Clarksville, TN 37042-2171

VERMONT

Amiga SIG, P.O. Box 103, Underhill, VT 05489

VIRGINIA

National Capital Amiga User Group, P.O. Box 12360, Arlington, VA 22209
LARC AmigaSIG, c/o Don Lansing, Graphics Branch, MS 125A, NASA-Langley Research Center, Hampton, VA 23665

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THE TOP 10

- **#131 PacMan '87** - Great sound and graphics. Adds new elements to PacMan. Saves Top 10.
- **#127 Wheel of Fortune** - A great computer version for multiple players. It even talks.
- **#23 Monopoly** - Enjoy great graphics and sound while playing three tough computer opponents.
- **#37 Business Programs** - Included are an address book, an amortization program, a talking mail manager, and a label printer.
- **#27 Amoeba Invaders** - A better Space Invaders!
- **#140 Virus Killer** - Everyone needs this! Makes it easy to detect and eliminate known viruses.
- **#115 Word Processor** - Lots of features.
- **#134 Applications** - Label maker/printer, grocery list maker, and AMIGazer - a star viewing program.
- **#142 Q-Bert** - Like the popular arcade version.
- **#139 Bull Run** - Great Civil War strategy board game, with impressive graphics and sound.

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THE BEST OF THE REST

503-664-5953 - Foreign Orders

BUSINESS/HOME

- **#116 Business II** - VC-Spreadsheet, HP-10c calculator, and several diversions for when the boss isn't looking!
- **#117 Business III** - DataBase, a bunch of great new fonts, RSLClock-great clock utility, AmigaSpell.

LANGUAGES

- **#9 FORTH** - Two versions of the FORTH programming language.
- **#50 XLISP** - A version of LISP, the artificial intelligence language. Includes documentation.

COMMUNICATIONS

- **#4 Communications** - Starter and Aterm are both included. Both run from Workbench or CLI and are comparable to communications packages selling for \$50+. Full control of baud rates, phone directory, all protocols, auto chop of files, and many other extras. Works well with the Avatex 1200 modem and others. Source code included.
- **#90 Modem Madness!** - Terminals include StarTerm, ATerm, and Kermit. Telecommunication utilities such as Archive are also here. Other types of programs and utilities are also included in the price of admission.

UTILITIES/APPLICATIONS

- **#60 AmigaBasic** - Two programs that are truly of commercial quality. Cell-Animate and Graphit. Some Deluxe Paint picture files are also included.
- **#97 Tutorial Disk1** - A disk full of information and programs to instruct Amiga Programmers and users. Several C & ASM source files are included.
- **#98 Tutorial Disk2** - More of the best of Amiga Information.
- **#101 Utilities** - Many new utilities like Timeset - a time setting utility and DirCopy-a great copier (very quick), and about a dozen more. Some new fonts are also included on this disk.
- **#105 Potpourri I** - This disk contains several different kinds of programs, some of the highlights are: PopCLI2-evokes a new CLI window at the press of a button; PSound-sample sound recorder and editor; 3-D Breakout; DiskCat-catalogs and organizes disk files; IconMaker-makes icons for most programs so that they can run from Workbench; FKey-template maker.
- **#129 Amiga Utilities II** - A hard disk backup; Target-sounds a gunshot whenever the left mouse button is pressed; Dpaint Tutor; WinSize-change window size from CLI easily, and lots more.
- **#132 Videomaker Utilities** - This disk is packed with utilities to make your desktop videos easier to produce and more professional looking.

- **#133 DOS Helper** - A program designed to help you with the AmigaDOS commands. Can be activated from icon of the CLI. Supports multitasking, so that you can refer to it when you need it. As usual, there are other good programs included on the disk.
- **#135 Applications II** - Long Movie-plays several IFF pictures in fast succession, creating animation. QuickBase-a mail manager DBase. Persmail-a DataBase for keeping records of friends, family, associates, customers or employees. MORE.
- **#146 Calendar** - A very good personal calendar for birthdays, holidays, meetings, bills and other events. Excellent graphics. Calendar program also has a diary. Other programs include some graphics and Checkbook.
- **#150 Textcraft+ Demo** - A demo of a very good word-processing program of high quality. Menu driven. Has a lot of helps to show you how. Textcraft+ also has a Speller Check available.

SOUND/MUSIC

- **#18 Future Sound Demo** - Another great sound demo of digitized sound. Includes the wicked witch of OZ, breaking dishes, sea gulls, car crash, ducks, others.
- **#30 Super Sounds** - Great digitized sounds from movies like Star Trek, 2001, James Bond movies, Star Wars, and Starman. Is it real or is it the Amiga?!!
- **#77 Instruments** - Turn your keyboard into 25 different musical instruments.

SLIDE SHOWS

- **#1 Norman Rockwell** - 17 beautiful digitized Rockwell paintings in this self-running slideshow presentation. You've got to see these!
- **#55 EA Demo and Polyscope** - More great graphics for your enjoyment.
- **#67 DPSlide8** - Over 30 slides of all sorts on this self-running slideshow.
- **#94 Diga-View** - This one shows the digitizing process in stages. Several good pictures are included. Other programs also included.
- **#95 DigaSlide11** - Another in the great series of slideshows with great artwork. Self-running with over 25 pictures.
- **#108B Juggler** - Famous demo that shows the beautiful graphics of the Amiga and just how powerful this program is. It is easier to run than 108A, but only has the one demo on it.

GAMES

- **#38 Basic GrabBag2** - Around 25 programs of various types. Many of these are must-haves. At less than \$.20 each, you can't go wrong!
- **#44 Games3** - More great games including Life, Vegas Slot Machine, Reversi, others.

- **#52 Basic Games** - Tons of ABasic games - discover some treasures!
- **#61 Sinking Island** - Only about 100 of all types!!!!
- **#102 Sinking Island** - Return to Sinking Island is an excellent adventure game. Well worth the price - hours of enjoyment!!!!
- **#114 Potpourri X** - Othello, A key-shortcut program for AmigaDOS. Various new tools, automatic printer-driver generator, much more.
- **#118 Great Graphic Games** - Includes Missile Command, 2-D Triclops, Cosmo-asteroids clone, BrakeOut, Yatzee, Hack and more.
- **#121 Backgammon** - A great game from David Addison.
- **#122 Solitaire** - Two versions by David Addison.
- **#123 Cribbage** - Take on the computer or a friend.
- **#124 Milestone** - A great computer version of Miles Bourne by the author of Monopoly for the Amiga, David Addison.
- **#125 Othello** - A great 3-D version of this popular game.
- **#128 Space Games** - Cosmoroids (like asteroids) and Gravity Wars highlight this disk just full of games.
- **#137 Blackjack** - A full-featured game which allows pair-splitting, double-down, etc. Bandit-play the slot machines without going to Vegas!!! More.
- **#141 Dominoes** - Dominoes game with great graphics. Also Tic Tac Toe, Drawing and Molecules programs.
- **#147 Jackland/Graphics** - Adventure clue game. Also some great pictures (graphics), a useful utility called Quickbase, and a fun program called Thinges which you will enjoy!!!
- **#148 Boulder Dash** - Very popular game with excellent graphics and has several challenging levels. This disk is full - It has Othello, Life3 and many useful utilities.
- **#151 4 in a Row** - A fun, but challenging game you play against the computer. There is an excellent demo "MandFXP-D3", a utility or 2 and the fun TARGET - A weirdo thingy.

MISCELLANEOUS

- **#88 Amiga Basic Programs** - Over 50. Games, utilities, applications, entertainment, and finance. Also included is a program that allows you to use IFF files in your Amiga Basic programs.
- **#119 mCAD** - A full-featured computer-aided design program.
- **#136 Graphics2** - Border Set-useful for desktop publishing and video, making cards, coupons or menus, and your own artwork. Xicon-allows you to run AmigaDOS commands or programs from Icon.
- **#144 Christmas Animations** - 10 beautiful scenes and graphics with sound. Great scenes include: Lit Candle, Elves, The Christmas Tree, The Manger, Season's Greetings, Holly Wreath, Chimney Smoke, Church Bells, and Walking Home.
- **#145 Animations 3** - More Great Animations. 3 very good demos plus 3 workbench pictures and Blobs.

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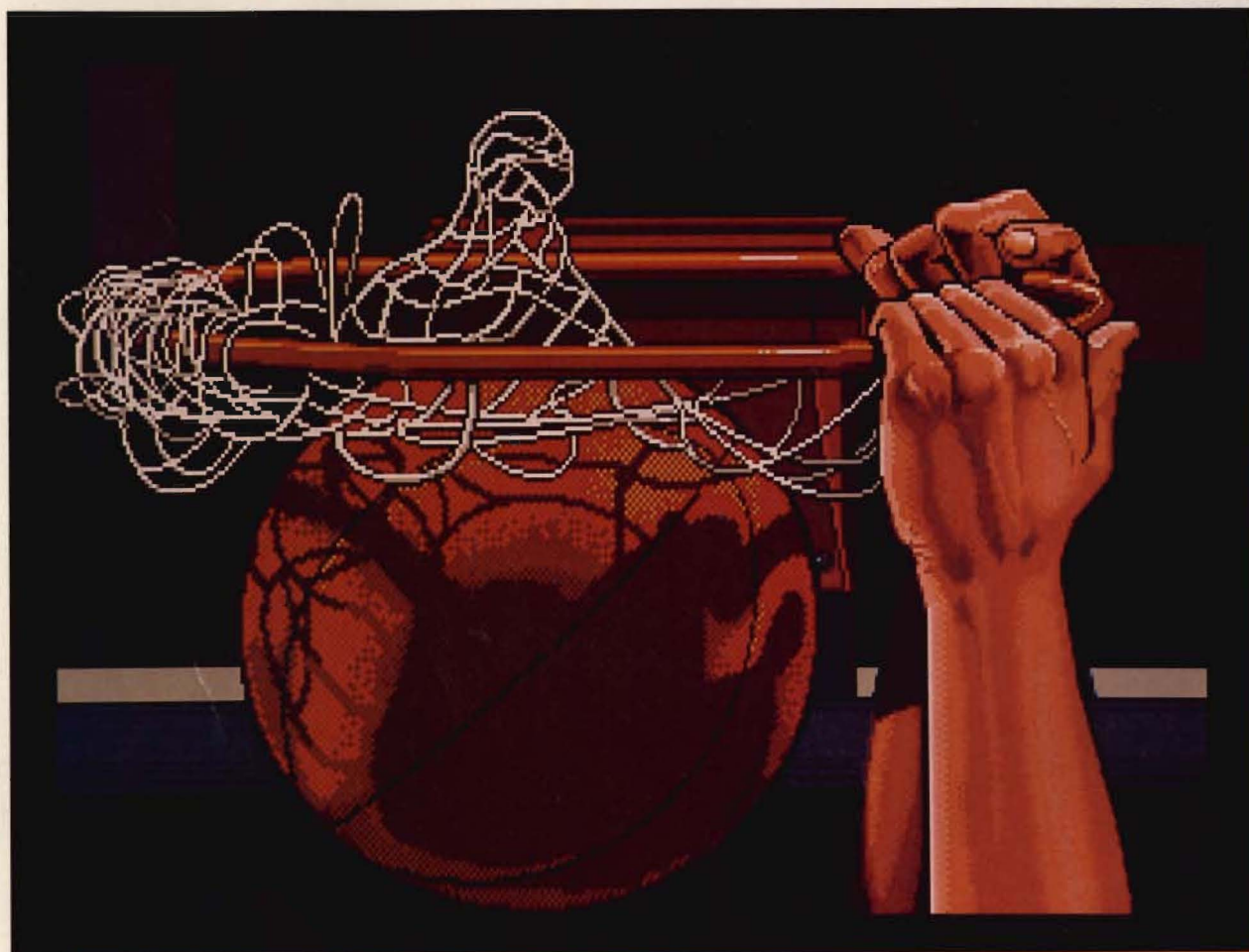
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Dunk

Roseann Mitchell
Belmont, CA

"Dunk was drawn on an Amiga 500 using Deluxe Paint II in 32-color, 320 × 200 lo-res mode. The image was created as a title page for Accolade's Fast Break game, which is a 3-on-3 simulation of professional basketball."

Welcome to "Amiga Art Gallery." On these pages, in each and every issue of *COMPUTE!'s Amiga Resource*, you'll find the best Amiga artwork around. The pictures in this issue may also be found on the magazine's accompanying disk.

Blue Lady

Gregg Wilcox

Minneapolis, MN

Blue Lady was created with Digi-Paint in noninterlace HAM mode.



Pelican

Brian Judd

Salt Lake City, UT

"Pelican was created in early 1986 on my 'new' Amiga 1000 using Deluxe Paint. Since then, I have done numerous game graphics, including Epyx's Destroyer for the Amiga, Accolade's 4th & Inches for the 64 and Amiga, and various other IBM PC, 64, and Amiga game titles."

If you'd like to see your art in these pages, send it to us at the following address. We pay \$100 for each piece of art we accept. Rejected submissions are returned only to artists who enclose a self-addressed, stamped envelope.

Amiga Art Gallery
P.O. Box 5406
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TAKING SIDES

Rhett Anderson vs. Randy Thompson

WYSIWYG—Useful or Useless?

USELESS! What I see is *never* what I get. I'm tired of the promises. I'm not quite ready to say that WYSIWYG is a bad idea (although at this rate I might be ready to say that soon), but as most companies have implemented the concept on the Amiga, WYSIWYG is a license to produce slow, buggy, sloppy software.

Literally, WYSIWYG stands for What You See Is What You Get. It's a reasonable-sounding idea, isn't it? Why shouldn't what you see be what you get?

In the old days (maybe five years ago), WYSIWYG meant that if you had an 80-column printer, you could see 80 columns on the screen. That way, you could see where words and pages would break. WYSIWYG word processors hid the printer control codes so that they wouldn't mess up the breaks—a pretty good idea.

In the fight for features, word processors changed. They moved away from text screens and onto the graphics screen. Bye-bye speed. Hello trouble and expense.

On a graphics screen, software designers started getting neat ideas. Hey, we can display *italics*. We can display **bold** characters. Even ***bold italics!*** Wow, we can display other fonts. Everyone will want to use 20-point Old English text for subheads. Hey, we can even include graphics in the document. Wouldn't Shakespeare be jealous!

Welcome to amateur night. In the space of a few

short years, we moved from tiny, speedy, powerful word processors to greedy, poky, fluffy monsters on the edge of the abyss itself—desktop publishing. And letters to Grandma, corporate reports, and innocent school papers took on a sort of crazy-quilt look.

Here's the facts. Your \$200 dot-matrix printer beats the resolution of your \$400 monitor hands-down. If you really want to get what you see, you want big, blocky letters. Stick with the NLQ mode and forget WYSIWYG. More facts: It's tougher to write a newfangled super-WYSIWYG word processor than a non-WYSIWYG word processor. It's tougher to make it fast, to debug it, and to test it. And in my opinion, it's tougher to use one as well.

Looking over at Mr. Thompson's side, he's right when he says that WYSIWYG is an abused term. Even he abuses it when he discusses *Microfiche Filer*, which doesn't even claim to be WYSIWYG. It simply uses the Amiga's interface, as it should.

I urge readers to go to a dealer and fight a WYSIWYG word processor on their own. I applaud Mr. Thompson's dedication and patience. He's a better man than I am.

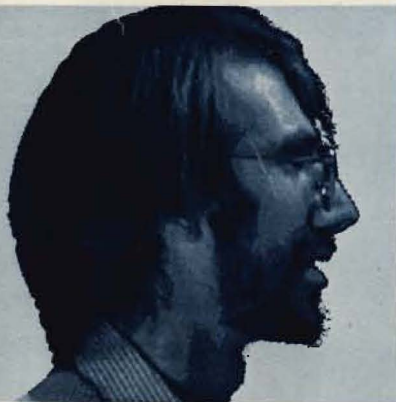
USEFUL! I'll be the first to admit it: *WYSIWYG* is an overused and abused term. But it's because WYSIWYG is such a powerful computing tool that marketing strategists and advertising professionals litter this awkward acronym throughout their fliers and press releases. And while snobbish computer nerds mock it ("WYSIWYG is for wimps") and novices misspell it (WIZZY-WIG?), the concept of What You See Is What You Get provides a program with features that simply cannot be replaced.

Many of today's most powerful computer programs would be useless without WYSIWYG. Take desktop publishing. Can you imagine laying out even the simplest of newsletters without the ability to preview a document and see how your graphics appear, how your text wraps, and even whether an article fits onto the page? What about CAD programs and database report generators? Yes, report generators. You may not realize it, but every time you use *Microfiche Filer* to design a form, you're using a WYSIWYG interface. If you weren't, you couldn't just *drag* a field to the desired location—you'd have to enter each field position numerically using *x* and *y* coordinates (I suppose Mr. Anderson prefers this method).

Word processors have benefited the most from WYSIWYG. Just a few years ago, if you wanted to produce italic characters, you had to insert cryptic codes within your text—codes that make English read like Greek. Want to center a line? Print bold type? Change your margin settings? Enter a code. With WYSIWYG, however, you change your text via a keypress or a menu option and view your changes onscreen, *before* they're put on paper.

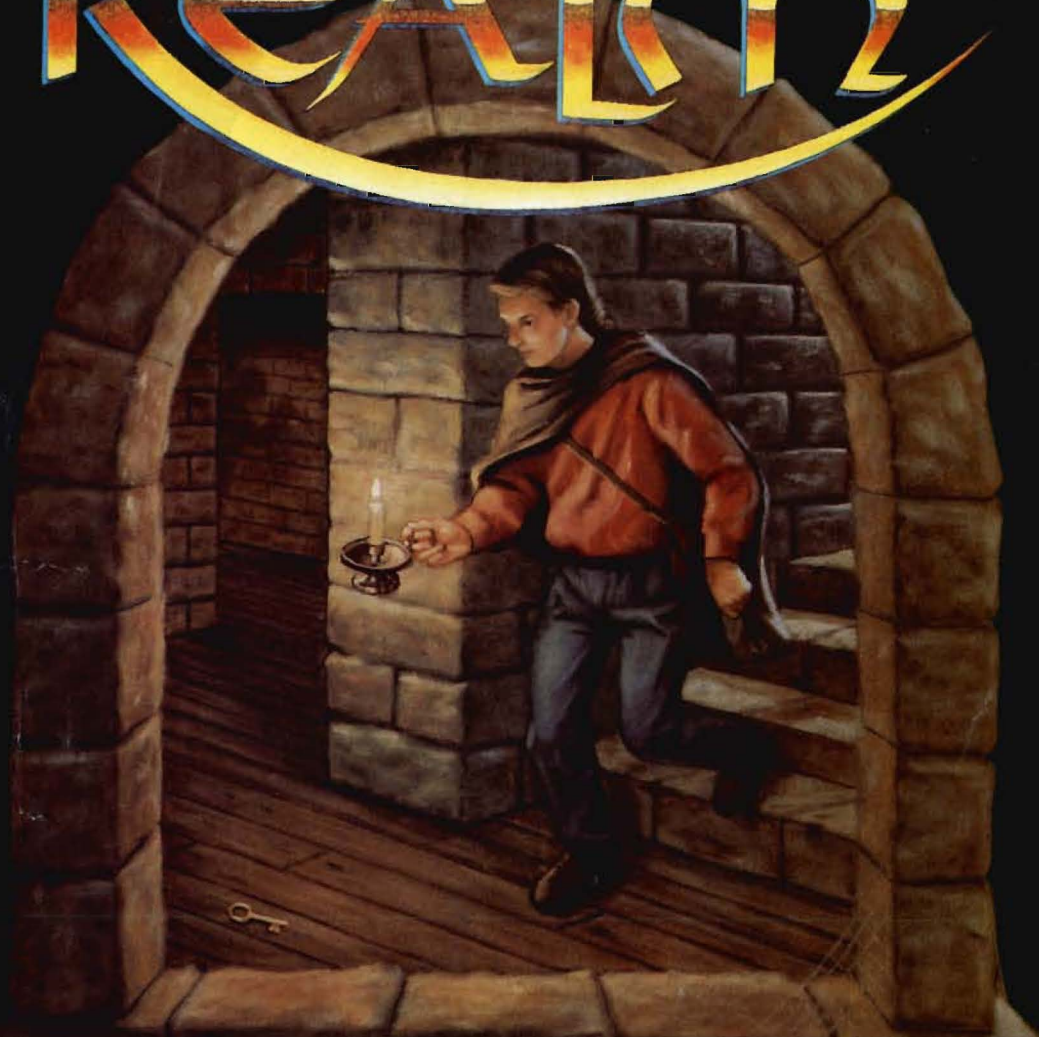
Denying the usefulness of WYSIWYG is almost like denying the usefulness of the Amiga. With an entirely bitmapped screen (no "text" mode) and a powerful graphics subsystem, creating true-image graphics is second nature to this computer. Limiting the Amiga to WUYSTPO (Wait Until You See The PrintOut) programs is simply inane. No, it's easy to see that WYSIWYG *is* an effective and useful feature.

Looking over at Mr. Anderson's side, I see he's once again allowed his deep-seated fear of computers (and modems and fax machines) to cloud his thinking. Sure it's "tougher to write a newfangled super-WYSIWYG word processor," but that doesn't make it a bad thing. All quality projects take time, and Mr. Anderson's ineptitude at using "newfangled" software doesn't make them any less useful.



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