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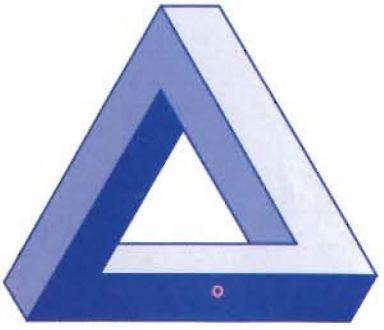

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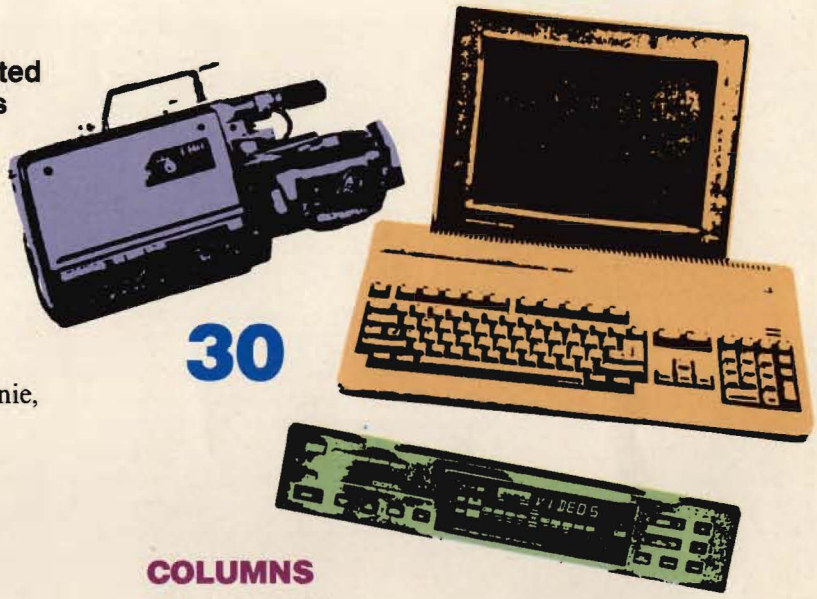

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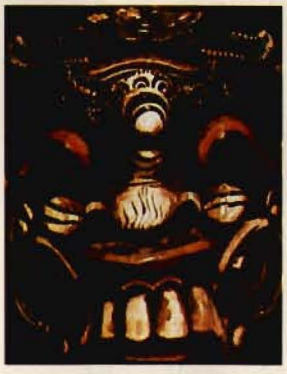

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THE
WINDOW

Perspectives from the Editors

Wow! When we asked you what you thought of our magazine, you responded.

Ever since last issue's "Readership Survey" hit the newsstands, our offices have been flooded with survey forms. Some of you are even taking the time to attach letters that further explain what you do and don't like about *Resource.* That's great, because it helps us improve and expand in ways that you want us to.

I won't give away the survey results here (we're saving that for next issue, so keep sending in those response forms); I'll list a few of the more interesting, if not statistically significant, comments that we've received.

In the praise department, we've collected many fine compliments: "You have the best magazine." "Never get rid of 'Taking Sides.' It's my favorite!." "I've let all of my other Amiga magazine subscriptions lapse." "Your programs are the best." And my personal favorite, "I like the slick finish on the cover—hands don't get dirty."

What *don't* you like? One reader made it a point to circle our "Taking Sides" column and write "Garbage! Pointless and uninformative." Many of you requested more articles on hardware; almost all of you want us to go monthly; and one anonymous reader pleaded, "Please, no more spelling checkers or virus detectors. I must have three of every one written." Well, we've never published a spelling checker, but if we do, we'll make sure that it's a worthy addition to your collection.

Enough about *our* publication. If you haven't heard yet, the great Amiga magazine shakeout has begun. First on the list of casualties is *Ahoy's Amiga User,* which fell off the shelves about a year ago and has yet to climb back up. Next to go was *AMNews.* This quality disk-based publication has had a history of making it through tough times, but now it looks as if *AMNews* is down for the count. *AMNews* editor Peggy Herrington should be congratulated for her efforts. Her work was outstanding and her product helped influence the Amiga market in a number of positive ways.

Sentry, a review-intensive magazine, has finally called it quits. Although its subscriber base was never very large, *Sentry*'s editors had an uncanny ability to publish product reviews even before those products reached the retail stores. Also, *AX* and its editor Jay Gross have parted ways, leaving that publication in the lurch.

Maybe saddest of all (to me at least) is the loss of *The Transactor.* Although not officially out of publication at the date of this writing, I do know that *The Transactor* is down to only one editor and that all future issues, of both the 8-bit *Transactor* and *Amiga Transactor,* have been suspended indefinitely.

Finally, rumor has it that the publishers of *AmigoTimes* are looking for cash and will not publish another issue until they find it. Let's hope they do.

While on the topic of rumors, one last bit of hot news has recently surfaced: Commodore is developing a new multimedia/game machine that's based around the Amiga 500. It will come complete with a CD-ROM and sell for around $600. Why so cheap? Presumably it has no keyboard or disk drive—these items will be sold separately. If you're interested, be sure to catch our next issue—we'll have all the juicy details.

—Randy Thompson

Looking ahead . . .

Ready to get hyper? Next issue, *HyperCard* expert Steven Anzovin will look at some of the hypertext and hypermedia products that are showing up for the Amiga. Find out how the Amiga products compare to the real McCoy—where they're lacking and where they shine.

If you enjoy this issue's "Desktop Video for Beginners," be sure to catch Fred Hurteau's follow-up feature in June. The focus will be on software.

Inexpensive scanners continue to appear on the market, so we've postponed Sheldon Leemon's in-depth review of scanners to give him time to look at the new entries. We think you'll be pleasantly surprised by the quality of these new peripherals for the Amiga.

Ben and Jean Means interview Brad Schenck in our next issue. We're waiting to see what the two-time Badge Killer Demo winner has to say about his work.

As always, we'll be packing our disk with exclusive software that you won't find anywhere else.

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trends

Two for Six

Now that you have a megabyte of Chip RAM in your Amiga, how would you like to go for two? Few people realize that there's a **2-meg version of the Agnus** chip. The capability to take the chip up to 2 megs was designed as a bond-out option—one easily exercised in future designs. The problem is that no existing Amiga motherboard has the address lines and memory space to support 2 megs of chip RAM—or so we thought. But a perusal of Commodore's **new schematics for the Revision 6 Amiga 500** motherboard reveals that there is a configuration in which the 256K × 4 memory chips can be replaced by 1 meg × 4 chips, for a total of 2 megabytes of Chip RAM.

We've heard rumors that a few prototypes of this bond-out two-meg Agnus have been floating around, but don't get your hopes up yet. For one thing, four-meg chips are still pretty rare. And only the scarce Rev 6 500s can use the two-meg Agnus chips without some serious surgery.

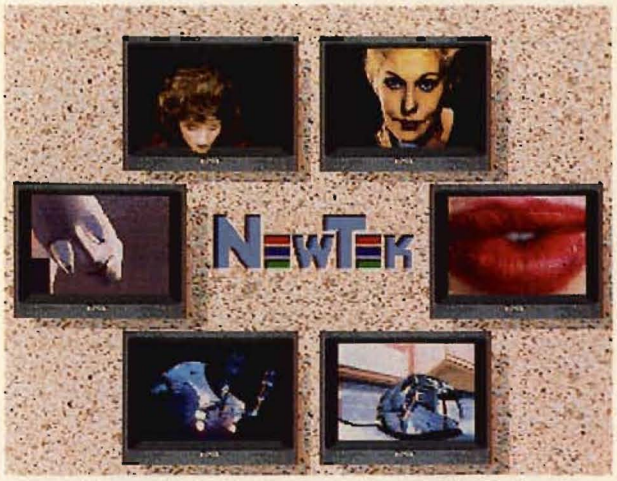
Commodore went to the Rev 6 500 design for a while in order to allow the use of one-megabit RAM chips when the old standby 256K chips became scarce and costly. As an extra bonus for users, the **one-meg Super Agnus had to be installed** in these machines in order to allow them to address the higher-density memories. Since the easing of the RAM crisis, however, **256K chips have become dirt-cheap.** Commodore has switched production back to the old 500 design with the original Fat Agnus and 256K RAM chips and would like to forget that Rev 6 ever existed.

Recent shipments of Super Agnus chips have come with the installation instructions for the 500 deleted. Moreover, the company may be concerned about users trying to add their own RAM chips to the Rev 6 motherboards. Since that motherboard only needs four chips for the standard 512K of memory, there was room to provide space for another four chips. By adding those chips and changing a couple of jumpers, you could get a total of **one megabyte on the motherboard** (and no, you couldn't get a meg and a half by plugging in a 501—it just wouldn't work). But in a recent bulletin to dealers, Commodore stated that those empty holes were for "experimental" purposes and that **all warranties would be voided** if you attempted to plug RAM chips into them. Perhaps two megs of Chip RAM is one surprise Commodore would like to save for the Amiga 3000.

—S.L.

Hot News and Insider Gossip by Sheldon "The Ear" Leemon

New Products edited by Mickey McLean



Postscript to Perry

Some wags have begun to speculate that one reason NewTek has been so late in shipping the Video Toaster is that its developers have been **busy embedding secret messages** in their demo software.

For example, if you take some of the gibberish from the "Maxine Headroom" sequence of their new Demo Reel 3, slow it down, and play it backwards, you'll hear the voice of Laura Longfellow saying, **"I am not a bimbo."** And if you look at the program file for NewTek's Dynamic Hi-Res viewer with a file editor like *NewZap* (featured in last issue's "Best of the Boards"), you'll see the following message: "If you're good enough to disassemble this, you might be good enough to **join the team that makes no compromises.** Call NewTek (913) 354-1146. PS Perry, we have been expecting you." This last reference may be to Perry Kivolowitz of ASDG. There is clearly no love lost between NewTek and Perry, who has been strongly pushing his own **24-bit graphics file format** over the one NewTek uses in Digi-View. As for being the team that makes no compromises, it must mean no compromises *except* when it comes to meeting shipping deadlines.

—S.L.

Tech 2000

Commodore has announced that it is a participating sponsor of Tech 2000, the world's first interactive multimedia gallery. Located at Techworld Plaza in Washington, D.C., the gallery features the most advanced applications and demonstrations of interactive multimedia computing by Commodore and other leaders in the field.

Ten Amigas form an integral part of the exhibit, operating as interactive kiosks directing visitors through the exhibit.

In an unrelated announcement, Commodore has signed a 12-month multimillion-dollar reseller agreement with General Computer Centers, a regional retail dealer based in Pennsylvania. This is the second major reseller agreement the company has signed recently. Last September, Commodore announced that it had signed a reseller agreement with Connecting Point of America.

General Computer is the leading computer retailer in eastern Pennsylvania, operating 13 computer outlets throughout Pennsylvania and Delaware. The company offers computer merchandise and service to a variety of different markets, including government, corporate, small business, and education.

—M.M. ▷

Sheldon of Fongo

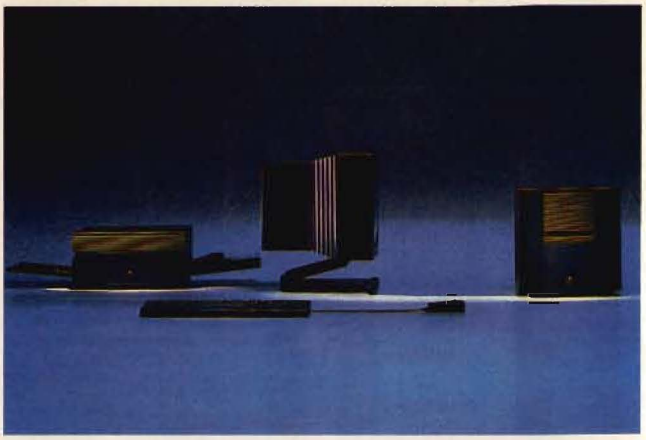
Some ideas are better than others. Take the case of the new AX-S expansion system for the 500 and 1000 from Spirit Technology. The premise behind this product is simple. There are **hundreds of low-cost peripherals** for the IBM PC that Amiga owners would love to use. So why not make a bus translator that takes the signals from these peripherals and converts them to signals that the Amiga can use?

In practice, however, there are some hitches. First, you need IBM slots, which necessitates the addition of a clumsy slot-box (and power supply). Second, each of these hundreds of peripherals needs a **custom software driver** to let the Amiga know what to do with them. While Spirit promises to provide drivers for the most popular add-ins, it admits that you may have to write your own software (using the supplied libraries) in order to get your peripheral to work. In effect, Spirit is betting that Amiga 500 owners will be clamoring to spend about $1,000 to buy **an expansion box approximately the size of an aircraft carrier,** all in order to save about $30 on an internal modem or $200 on a slow hard drive.

Don't get me wrong—it's not that I believe that there's no place for IBM peripherals in the Amiga marketplace. I just think that the most likely candidates for a conversion product are 2000 owners who already own some PC slots, empty and waiting. I've heard that a lot of video enthusiasts, for example, wish for a converter that would allow them to use a **Targa board** in their 2000 as a frame buffer, without having to use a Bridgeboard as an intermediary. When I put this proposition to the folks at Spirit, however, they just looked at me **like I was from the planet Fongo.** After all, why would 2000 owners, who have already demonstrated their ability and willingness to pay hundreds of dollars for greater expansion potential, be interested in a product that would further increase their expansion possibilities?

If I really am from the planet Fongo, however, I'm not the only one. Word is that Brick Ecksten of Hypercube Engineering (designer of the Hurricane accelerator board) is working on a hardware/software combination that will allow 2000 owners to use a **Targa or Vista board without a Bridgeboard.** If all goes well, he will be collaborating with the Spirit people in order to ensure that his hardware will be flexible enough to talk to the same kind of PC **network cards, scanners, A/D converters, fax modems, and tape backup systems** as the AX-S system, in addition to working with IBM frame buffers.

—S.L.



Things Could Be Worse

Whatever happened to the **NeXT** computer? You know, the one that was going to revolutionize the computer industry with its built-in read/write optical disk drive? The one that **costs slightly less than a new Miata.** I don't know about you, but I haven't seen any of those optical program disks show up at my local computer dealer yet. It's too bad, because I've been looking forward to writing for some classy publications like **"NeXT World" or "NeXT Week."** I guess it shows that even with revolutionary technology, a visionary leader like Steve Jobs, four years of development time, and hundreds of millions of dollars, it takes an awful lot of effort for a new computer with a proprietary operating system to establish itself. Maybe **Commodore isn't doing so bad** after all.

—S.L.

And If It Doesn't?

Brøderbund takes the old game adage seriously with its new release *If It Moves, Shoot It.* The object of the game is simple: Get them before they get you.

It's up to you to save the galaxy from aliens, but you'd better move fast to avoid their bullets, bombs, and laser beams. At the end of each of the five levels, you'll encounter a giant guardian alien that must be destroyed in order to progress to the next level.

The suggested retail price of *If It Moves, Shoot It* is $29.95.

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

And Now, Plan B

If nothing else, Commodore's luck is consistent—consistently bad, that is. It finally gets a **dynamic new management team,** only to meet with a holiday season in which buyers have shied away from big-ticket items in all categories, from cars to computers. So now there's some talk of going to Plan B, an educational promotion in which **students and educators are offered unbelievably low prices** for Amigas.

How low? One package is said to feature an Amiga 500, a 1084 monitor, a 512K memory expander, and an external disk drive for $799. Under this program, the student or teacher would go to an Amiga dealer, show proof of educational status, and give the dealer **a check made out to Commodore.** The dealer then would send the check to Commodore and receive the system for distribution to the customer (presumably after the check had cleared).

It's not yet clear just who will be eligible for the promotion. At a minimum, it's expected to apply to full-time college students and their professors. How much farther the deal will go is open to question. But, as one dealer put it, "Unless sales have picked up over Christmas, they may extend this offer to **high schools, elementary schools, charm schools, and obedience schools."**

—S.L.

Video Control

Electronic Arts has released *DeluxeVideo III*, a desktop video program that provides complete control over the Amiga's graphics, animations, and sounds.

You can use the program to create interactive demos, animated cartoons, or other types of video presentations using the full range of Amiga graphics, animation, and sound. The videos can be recorded on videotape or played back through the Amiga. *DeluxeVideo III* also supports object-oriented interactivity for *HyperCard*. You can click on an object onscreen to activate another video sequence, a sound effect, or any other type of data that the program manipulates.

DeluxeVideo III supports all Amiga resolution modes including HAM, hi-res, and interlace; super bitmaps; high-speed animation; MIDI output; and IFF-standard sound and music files. It also has full *DeluxePaint III* capability, using Anims or AnimBrushes created in *DeluxePaint III* and combining them with pictures, digitized sound effects, or music to create sophisticated audiovisual presentations.

The suggested retail price of *DeluxeVideo III* is $149.95. Upgrades are available for *DeluxeVideo* owners. Electronic Arts will send *DeluxeVideo III* to owners who send in the front cover of their *DeluxeVideo* owner's manual and $49.95 plus $7.00 for shipping and handling.

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News from Toronto

The World of Commodore show, held in Toronto from November 30 through December 3, gave computer users in the Ontario area a chance to mingle with Commodore's representatives and its supporting software publishers, hardware manufacturers, retail dealers, and magazine editors including us at *Amiga Resource*. Commodore's large booth at the rear of the hall featured 64s, 128s, and PC compatibles, but it was the Amiga that took center stage.

An entire wall of the Commodore booth was dedicated to education. The 64 has always been strong in the Canadian education market, but the Amiga has already begun to make inroads. Commodore officials indicated that projects such as pilot programs have been implemented to help increase the Amiga's share of the market.

In addition to the buying and selling of products, the show offered numerous seminars on the use of the Amiga led by noted experts such as Jim Butterfield.

Although Toronto still has a large base of 8-bit computer users, many users visiting the COMPUTE! Publications booth seemed eager and willing to move up to the Amiga. Commodore has devised a way to make the transition easier with the introduction of the Amiga 500 Starter Kit. The kit includes *Kindwords* 2.0, *Fusion Paint, SuperSki, Hole-in-One Miniature Golf,* and *Crazy Cars*. The kits sold for less than $100 separately and for around $700 bundled with an Amiga 500.

—M.M.

Champions of Orphans

Some hardware developers are counting on diehard Amiga 1000 owners to take up the cry of **"Amiga 1000 forever!"** Recent developments have left these Amiga pioneers somewhat out in the cold, since they will not be able to add the new **Super Agnus and Super Denise** chips to their systems. Some champions of these orphans have recently emerged, however.

First, Gregg Tibbs came up with the Rejuvenator board, a substitute daughterboard that will fit **a meg of Chip RAM on a 1000.** Now, word comes from Australia of the Phoenix board, an entire replacement motherboard for the 1000. In addition to adding Enhanced Chip Set (ECS) capabilities to your 1000, this board plans to support up to two megabytes of switchable RAM on the main board, an internal clock/calendar, provisions for up to three sets of switchable Kickstart ROMs, internal drive connectors for up to four disk drives, a switch that allows drive booting from external drives, a video slot, and a 2000-compatible expansion slot.

If this board sounds too good to be true, consider this: The company estimates the cost of the board with one megabyte of memory to be about $465 U.S. and expects the development time to be "three to four weeks from commencement." That is, if the company can take in enough **advance deposits to finance the project.** I think I'll pass.

—S.L.

Take Off to the Islands

You can explore a tropical paradise with *Hawaiian Odyssey Scenery Adventure,* an enhancement disk for any SubLOGIC flight-simulation program, including *Flight Simulator II, JET,* and *UFO.*

The disk covers the entire island chain in detail including downtown Honolulu and Pearl Harbor on the island of Oahu. You can also fly into the crater of Mauna Loa, one of Hawaii's most volatile volcanoes. The 400-mile long Hawaiian Island chain contains approximately 30 airports, many with Visual Approach Slope Indicator landing lights. Improved runways feature FAA-spec threshold markings, fixed distance markers, and touchdown zone markers.

The disk also offers the first SubLOGIC scenery adventure. You must locate the secret jewel of the goddess Pele from the cockpit of your airplane. First, you must find and follow a set of clues scattered about the islands. Once you determine its location, the jewel is only visible under a strictly-defined set of conditions. If you make a mistake, you might never find your way back.

Hawaiian Odyssey Scenery Adventure carries a suggested retail price of $29.95 and requires one of the flight-simulation programs mentioned above.

SubLOGIC, 501 Kenyon Rd., Champaign, IL 61820

Step Right This Way

Come one, come all to the *SideShow* from Actionware. Now you can turn your Amiga into a carnival.

Choose from eight games including Balloon Alley, Knife Throw, Haunted Hill, Dunk Tank, and Test of Strength. In Dunk Tank, you throw balls at targets in order to drop a person into the water. With the program's Exclusive Interactor, you can use a digitizer or a paint program to change the face of the victim.

The only thing missing is the cotton candy (but Actionware did include a package of caramel popcorn).

SideShow has a suggested retail price of $44.95.

Actionware, 38 W. 255 Deerpath Rd., Batavia, IL 60510

Supergame

You can help Superman fight for Truth, Justice, and the American Way with *Superman: The Man of Steel* from IntraCorp and its Capstone line of entertainment software.

In this interactive comic book, you become Superman, and you're racing to save the planet. Two of your most hated enemies, Darkseld and Lex Luthor, have aligned, and terrorists have hijacked a yacht with the Governor and Lois Lane on board. You must use your x-ray vision, strength, and flight to foil your nemesis and save the world from destruction.

The suggested retail price for *Superman: The Man of Steel* is $39.95.

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

READERS FEEDBACK

Send questions or comments to Amiga Feedback, 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.*

Mute Bridgeboards

Your article "Bridging the Gap" by Neil Randall [Fall 1989] prompted us to add the Bridgeboard to our Amiga 2000. We were shocked, however, to find that the Bridgeboard was mute.

Our Amiga dealer (Computers, Etc!), upon whom we focused our frustration, researched the problem and produced a sound kit containing a speaker, the connector, and a set of step-by-step instructions for installing the speaker within the computer's housing. We are now happy with the Bridgeboard's performance, thanks to our dealer's effort.

John Najjar
Sarasota, FL

We haven't been able to get the kit that you mention from our local dealer or through Commodore, but we did find a brief mention of the Bridgeboard's audio output in Appendix H of the 2088 Bridgeboard User's Guide.

Jumper J2, located at the very top of the Bridgeboard toward the rear, provides two pins that can be connected to any inexpensive eight-ohm speaker. You'll need a connector for the jumper and about a foot of two-conductor wire to hook it up.

Since locating a jumper plug can be difficult, you may have to solder the wires directly to the jumper's pins (be sure to use a low-heat soldering iron). Radio Shack's #278-388 wire and #40-245 speaker should work fine. You might also want to invest in some thick double-stick tape to attach the speaker somewhere inside the 2000's case. Just stick the back of the speaker to some unused portion of the case and you're in business (avoid attaching it to the Amiga 2000's power supply, however, as that can get fairly hot).

Don't expect this modification to make your MS-DOS software sound anything like the Amiga's, however. Tinny bleeps and bloops are par for the course when it comes to the PC. In fact, we recommend adding a simple single-pole single-throw switch to one of the speaker wires, just so you can disable the Bridgeboard's audio when it starts grating on your nerves.

Pen Pal Opinions

I agree with many of the comments made by Mr. Anderson about *Pen Pal* [reviewed in the December 1989 issue], but my overall opinion is much higher.

I do have an answer for a question raised on page 56 about using the spelling checker. To skip a word that the spelling checker has highlighted as incorrect, just click the Spell button. I think Brown-Wagh intended for this to mean *continue spelling.*

My biggest criticism of *Pen Pal* is one mentioned in the review: It's a memory hog. I have had *Pen Pal* guru several times while I was trying to incorporate graphics into a letter. Perhaps the new Super Agnus would allow *Pen Pal* to handle graphics more efficiently.

My rating for Usability would be a 3, but I came from a strictly IBM world and am just getting used to what an Amiga word processor is all about. Hey, I'm happy to pay less than $300 for a word processor with WYSIWYG while editing.

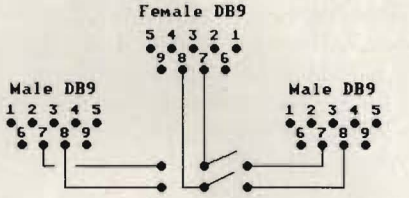
Lance A. Forbes
Cheyenne, WY

Quicker Switch

In your December 1989 issue of *Amiga Resource,* you present "Quick Switch," a hardware project by Joe Rothman. This project uses a quadpole double-throw switch that is used to switch all four directional pins in the Amiga's mouse port. There is an easier (and cheaper) way to achieve the same results using a more common double-pole double-throw (DPDT) switch. Looking at the pin configuration of a mouse port, we can see how Quick Switch works:

Pin	Name	Use
1	MOUSE V	Mouse Vertical
2	MOUSE H	Mouse Horizontal
3	MOUSE VQ	Vertical Quadrant
4	MOUSE HQ	Horizontal Quadrant
5	MOUSE BUTTON 2	Right Mouse Button
6	MOUSE BUTTON 1	Left Mouse Button
7	+5V	Positive 5 Volts (100 mA)
8	GND	Ground
9	MOUSE BUTTON 3	Middle Mouse Button

Quick Switch works by switching pins 1–4 of the port to either of the two ports on the controller. An easier way, however, would be to switch pins 7 and 8, as shown in the diagram below. All other pins (1–6 and 9) should be connected to the same pins on both of the controller's output ports.



Connect pins 1-6 and 9 of the female DB9 to pins 1-6 and 9 on both male DB9s

Only the device with its power connected will be able to return any signals to the computer. I've made quite a few of these and used them with a wide variety of products—mice, joysticks, and light guns—all with no interference. Best of all, the project can now be built using an inexpensive DPDT switch, which is easily obtained from any Radio Shack store.

Nicholas Brenckle
Hamden, CT

Thanks, Nicholas. Although we didn't have a chance to test your wiring scheme, it looks like it will work fine. The only time that you may run into a problem is if an input device contains its own power supply. ▷

READERS FEEDBACK

CLI Help

I have been having a problem with the *Resource Disk* which I have received. I can only use the programs which can be opened by clicking on an icon. If I try to run the programs from the CLI, I get the message *Unknown command.* For example, if I type *run SNAP-!PLUS,* I get *Unknown command SNAP!PLUS.*

Od Kridakorn
Marietta, GA

Whenever you see the message Unknown command, *you should type DIR to see if you misspelled the command. In your case, however, the command is probably not in your current directory; it's in the root directory of our Resource3 disk. To make Resource3 the current directory, you use the CD command.*

We'll assume that your current directory is the root directory of your Workbench disk (that's the default directory when you first open a CLI). Type CD RESOURCE3: to tell the CLI to look to our disk. Now type DIR again and you'll see the Snap!Plus name, *along with several other filenames. Type RUN >NIL: <NIL: SNAP!PLUS to start the program. In AmigaDOS 1.3 or greater, the RUN >NIL: <NIL: command allows you to close down the CLI from which you ran the program before you exit the program.*

We design every Resource Disk *to be operated from the Workbench. If you'd like to learn more about the CLI environment, we'd like to suggest two books published by our columnists. First,* AmigaDOS Reference Guide, Third Edition, *by Sheldon Leemon and Arlan R. Levitan, published by COMPUTE! Books. Second,* The Amiga Companion, *by Rob Peck, published by IDGC/Peterborough.*

Jarheads

I am a freshman attending the Bronx High School of Science, in New York. I recently purchased your magazine for a school project, and I was thoroughly impressed with the level of journalism in your publication. I expected a bunch of computer jarheads writing about nonsense, but instead I got an informative perspective on the Amiga computer.

I especially enjoyed the article "Amiga BASICs." It was very informative. As a matter of fact, that was the article I used for my school project. Even though I didn't know anything about computers, the article was clear enough that I knew what I was talking about when I wrote about it. But now that I'm so interested in computers, I've been thinking about a career in computers.

Well, thanks for publishing such informative articles. Keep up the good work.

Michael Gongora
New York, NY

Turbo Pascal for the Amiga

I want to buy a Pascal program like *Turbo Pascal* by Borland to use on my Amiga. Which one would be closest to this? Nobody seems to know.

Mike Meyer
Porthill, ID

There is no popular Amiga version of Pascal. Metacomco does offer a version of Pascal for the Amiga, but it's hardly comparable to Turbo Pascal *as far as speed and ease of use are concerned. Modula-2 is an enhanced descendant of Pascal and is very easy for Pascal programmers to pick up. There are several excellent versions from which to choose:* M2Sprint *from M2S,* M2-Amiga *from Interface Technologies, and* Benchmark Modula-2 *from Avant Garde. Each of these has the integrated environment that a* Turbo Pascal *programmer would expect.*

Alternatively, you might consider learning C, the Amiga's system language. Since most Amiga demos are written in C, it's a good language to be acquainted with. The two most popular C compilers for the Amiga are Lattice C *from Lattice and* Aztec C *from Manx.*

Design Your Own Games

I've tried programming action games on the Amiga and found it rather difficult. I was curious to know if there are any programs available that allow you to easily create your own arcade-style games.

Erik Hughes
Dayville, CT

Accolade has recently released Shoot 'Em Up Construction Kit *for $19.95. It requires only 512K and runs on a single-drive system. You can contact Accolade directly by calling (408) 296-8400, or you may order the program from your local dealer or mail-order house.*

We haven't heard of any other programs for creating Amiga arcade games, but Microdeal (phone number 313-334-5700) offers the program Tail-spin, *which allows you to create your own adventure software.* Tailspin's *suggested retail price is $49.95.*

It's Inevitable

I am curious: Will there ever be a computer with better graphics capabilities than the Amiga's? Or is there already one out?

Cristian Enescu
Los Angeles, CA

There will certainly be computers with better graphics than the Amiga. In fact, there are already a few (none within the Amiga's price range, however). The better question is "When will there be an affordable computer that tops the Amiga in graphics and animation?" We can only guess at the answer. Apple and IBM are both said to be working on low-price, high-performance color computers, but it's impossible to say when or if these machines will make it to the market.

But don't let that stop you from buying an Amiga. The Amiga has long been the leader in microcomputer graphics, and you're guaranteed to get plenty of enjoyment from an Amiga before it's superseded by a competitor.

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Deformed Volleyballs

I would like to point out that some of your programs do not appear to function when copied. For example, on my system, the volleyball sprite in *Arcade Volleyball* is spread all over the screen in black-and-white. Some of the other programs that I have copied seem to have other problems, yet they work fine when run from the original disk.

Timothy J. Pagano
Flint Hill, VA

The problem you are experiencing with Arcade Volleyball, *which appeared on our Fall 1989* Resource Disk, *has nothing to do with the fact that it was copied from one disk to another; it has to do with the disk that you booted with prior to running the program, or, more precisely, that disk's Preferences settings.*

Near the center of Preferences' main window is a proportional gadget that allows you to reposition the Amiga's screen on your monitor—a nice feature if your monitor doesn't have any such controls itself. However, if you use Preferences to position your screen too far to the left, you can disable the Amiga's highest-numbered sprites. Arcade Volleyball *uses all seven of the Amiga's available sprites, and the volleyball just happens be made from the top two, sprites 6 and 7.*

This quirk affects all programs that use sprites higher than 4 or 5. Just as an experiment, try running Arcade Volleyball *with the screen as far left as it will go—you'll lose the volleyball* and *the right volleyball player (which is made from sprites 4 and 5).*

Technically, the problem is caused by a hardware conflict between the Amiga's bitplane DMA and sprite DMA. The Amiga sets aside certain time intervals (clock cycles) for the Agnus chip to fetch sprite data and bitplane data from chip RAM. By moving the screen to the left, you tell the Amiga to start fetching bitplane data sooner than normal, and this steals clock cycles that are usually reserved for sprite DMA. And because data for the highest-numbered sprites are fetched last, they're the sprites that are disabled first.

To solve your problem, simply boot with your disk, run Preferences, and adjust the screen-position gadget as far right as you can without losing your picture off the right side of the screen (most monitors have a horizontal-position knob, so you can move the picture back to the left if you wish). Alternatively, you can be sure to boot with our disk—or any Workbench disk that still has its default Preferences settings—before running the game.

As for your other difficulties, we can only guess as to what is going wrong. First, if a program is found within a folder, you must be sure to copy the entire *folder by dragging it onto the destination disk. Many of our programs require support files, such as pictures and digitized sounds. These*

files are all kept in the folder along with the actual program. If the program can't find these files, it will not be able to run.

Another potential problem is arp.library. Many of our programs that use file requesters require that the system file arp.library be located in the libs directory of your boot disk. (Whenever one of our programs requires arp.library, we state so in the accompanying magazine article.) So in addition to copying the program, you will also have to copy arp.library from the libs directory of our disk to the libs directory of the disk that you wish to boot from. To make this more convenient, both our December 1989 and February 1989 disks contain an IconX script that does this for you. Simply boot with your disk, double-click on the Resource Disk*'s InstallARP icon, and follow the instructions that appear onscreen. Again, you will never have a problem running these programs as long as you boot with our disk.*

A Virus with a Message

Recently I borrowed a program which seems to have infected my computer. After the fourth warm reboot, the computer displayed the following text prior to opening the Workbench screen:

A COMPUTER VIRUS IS A DISEASE
TERRORISM IS A TRANSGRESSION
COMPUTER PIRACY IS A CRIME
THIS IS THE CURE
BGS9 plus *???* (some words written in German)

I have tried to reinstall a standard boot block on the disk, but this does not appear to eradicate the apparent virus. I have also used *Professional Virus Killer* V2.0. This located the virus in memory but did not kill it (instead the computer locked up).

Can someone identify this virus and the means of killing it?

Graeme G. Beard
Petrie, Queensland
Australia

You have been infected with the BGS9 virus. This is not *a boot-block virus, so you cannot destroy it using the INSTALL command or the popular public domain utility* VirusX.

BGS9 attacks the first executable file called by your startup-sequence. It takes this file, hides it in the DEVS: directory (giving it a filename that cannot be listed by DIR or LIST), and then replaces the original file with its own virus code. This way, the BGS9 code will be executed every *time you boot with the infected disk. And just to be insidious, part of the virus code calls the original executable file so the user doesn't suspect any funny business. To kill this virus, we suggest that you use the public domain program* KV *(Kill Virus) that's usually distributed along with* VirusX. KV *appeared on our October 1989* Resource Disk *and is also found on the New Orleans Commodore Klub's 1.5* inNOCKulation Disk *(3701 Division Street, Suite 140, Metairie, Louisiana 70002). They charge $3.50 for the disk.*

Another way to erradicate the virus would be to locate the bogus executable file and replace it with the correct one. This method assumes, of course, that you still have a good, uninfected disk lying around.

Does Arlan Believe?

In "Abstractions" (December 1989), Arlan Levitan establishes his objectivity by stating that the Amiga is something he prefers for a couple of specialized functions, but for the mainstream stuff he prefers a PC, and for other specialized functions, a Mac or even an Atari!

Then he goes on to describe ten lies and fabrications about the Amiga, states they contain "seminal specks of truth," but does nothing to refute them.

One of the most difficult things to establish in the mind of a prospective buyer is that the Amiga can do anything in any field and do it well. The message Mr. Levitan conveys is that Joe Average would be better off with a PC.

Please tell me that hiring Mr. Levitan is some kind of clever tactic to keep him out of general-interest computer mags where he could do some real damage to the Amiga.

R. G. East
Kingston, N.S., Canada

It's not Arlan's job to believe in the Amiga. It's also not his job to sell Amigas to Joe Average. We pay Mr. Levitan to say what he thinks and to do it in an entertaining way.

Honestly, the dealer lies given in Arlan Levitan's December column were so outlandish—Amiga 500s are burning down people's homes, the entire motherboard must be replaced to change a single chip, and so on—we never suspected that anyone would take them seriously. "Abstractions" is intended to be a humor column, but we'll agree that not everyone may share Arlan's sense of humor.

By the way, we're not doing a very good job of keeping Arlan out of other magazines. You can find more of Arlan's artful work in Computer Shopper*'s "Levitations" and* Game Player*'s "Cheap Thrills."*

Bad Move

I read in your December issue that the Amiga 500 would be sold in Sears, Service Merchandise, and other big department stores. In my view, Commodore is making a serious mistake. By offering the Amiga in department stores, it will only hurt the company's image as an innovative computer manufacturer. Although this will help the sales of the Amiga 500, the Amiga 2000 series will have a hard time disassociating from the Amiga 500 and probably be viewed as a toy computer.

Ray Collins
West Plains, MO

Colorful Ideas

There are a couple interesting side benefits to using the *Set4567* [October 1989 "Programmer's Page"] and *Colorbench* [Summer 1989 "Programmer's Page"] programs from the

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Resource Disk. The Workbench demo programs found on either the Workbench 1.1 or Workbench 1.2 disk actually use all eight colors of the improved Workbench instead of just four. Also, the Palette tool from the Extras 1.3 disk works with all eight colors.

David W. Ferguson
Pontotoc, MS

Very Alive

In the December 1989 "Weird Software and Strange Peripherals" feature, Arlan Levitan made the misleading statement, "Very Vivid vanished from the scene before Mandala *ever came to market," implying that the Toronto-based company Very Vivid had gone out of business. While it is true that it has been more than a year since Very Vivid has produced any new products, it is still around. In fact, Very Vivid has recently released a new multimedia product titled* Interactor. ▲

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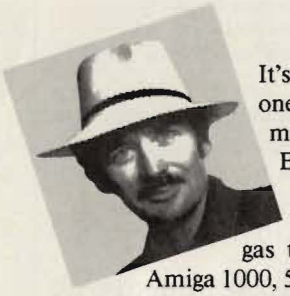
Shay Addams

The Amiga Tells All



It's not easy interviewing a computer. For one thing, you have to learn to speak machine language. After flunking the Evelyn Woods Speed HEX-Reading Course, I gave up and hired a translator. Then I had to decide which Amigas to interview. I finally settled on the Amiga 1000, 500, and 2000 (the 2500 was on the way to the airport—you know those 2500s, always in a hurry).

Shay: How does it feel to know your roots can be traced back to a company that specialized in a dwarf-sized joystick, not to mention the infamous Joyboard?
Amiga 1000: I'm proud to know my ancestors were jabbed, yanked, and twisted into painful, awkward positions by people whose only goal in life was to shoot little spaceships out of the sky. Makes me feel as if my family made a real contribution to the American way of life.
Amiga 500: And let's not go making fun of the Joyboard, Mr. Know-It-All-Game-Reviewer. You probably spent more time in the eighties jumping up and down on my great grandfather and yelling "Die, alien scum!" than you ever did thinking about the deforestation of the Amazon or the greenhouse effect.
Amiga 2000: Our ancestors, joysticks? You must be thinking about some other computer.

Shay: Well, on that subject, if you had to be any other computer, which would it be, and why?
Amiga 500: An Apple II. Then I could take a long vacation, since nobody writes Apple software anymore.
Amiga 2000: I'd be an MS-DOS machine—IBM compatibility is something I just can't get enough of, and besides, then I could really look down my nose at other computers. The IBM does have a nose, doesn't it?
Amiga 1000: I'd be a Timex-Sinclair 1000, since I wouldn't have to change my last name!

Shay: What do you think about the fact that most software companies are writing the majority of their software for other computers, then converting it for the Amiga? Does that make you feel rejected, inferior, or just plain ugly?
Amiga 1000: It's a disgrace. Trip Hawkins should be banished from the software industry for backing out on Electronic Arts' initial support for the Amiga. Nowadays we see more original stuff written for us coming out of Europe than from America.

Amiga 500: But there's one aspect of the situation that turns this disadvantage into a real boon for Amiga users. By the time the Amiga version is written, the programmers have had months to track down and eliminate bugs discovered in the original version by actual users. Not only that, but the programmers occasionally are able to work improvements into the game, based on responses from people who played the IBM version first, for example.

Shay: Speaking of computer games, what's your favorite?
Amiga 500: Computers don't play games, dummy—people do! We have to do the work, keeping track of all those bits and bytes, moving those animated monsters back and forth across the screen, blittering, EXECing, and Intuiting, while you're out there having fun!

I'd be a Timex-Sinclair 1000, since I wouldn't have to change my last name!

Shay: Then what do Amigas do for fun?
Amiga 1000: Well, sometimes I like to chew on disks! That's always good for a few laughs.
Amiga 2000: Yeah, but it's rough on your bridgework. I have more fun with inexplicable *guru meditation error* messages, usually just when the person is on the verge of topping his lifetime high score at *Tetris* or about to finally checkmate me in *Battle Chess.*
Amiga 500: Fun? What's fun? All I've been doing for the past six months is spreadsheets, databases, and—yuck!—word processing for a guy who runs a mail-order shoeshine company from a rented Winnebago in Sheboygan. Why can't I get a job at MTV, superimposing titles over Madonna's bellybutton?

Shay: Do you have any inside information you can reveal on the future of the Amiga?
Amiga 2000: The next version of Kickstart will be called Jumpstart. When you hit the On switch, somebody from AAA drives over and plugs a set of jumper cables into the mouse port.
Amiga 500: My motherboard will be replaced with a mother-in-law board. The Agnus, Denise, and Paula chips will be replaced by Bambi, Bridgette, and Tawni, and, in addition to Mac emulation, the 3000 will feature an Elvis impersonation. In the meantime, Agnus is getting even fatter and will soon require its own expansion box and power supply.
Amiga 1000: Besides improved customer support, Commodore will offer child support for all abandoned Commodore 64s, provided the user marries an Amiga. ▲

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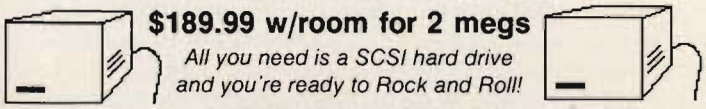

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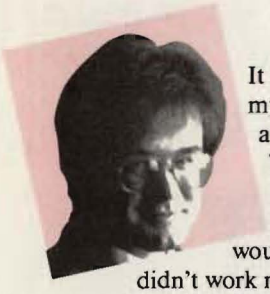
RS-232 Cables



It was a nightmare I will never forget. In my office, my Amiga 2000 and AT clone are connected serial port to serial port. Through a thin cable, I push files in both directions. One night, the cable stopped working. Then my Amiga wouldn't boot, and the PC's serial port didn't work right, either. I panicked, and so begins a horrid tale of men, machines, and money. This month in "Spotlight," I explore the dark world of RS-232 cables, also known as *serial cables,* or "those [expletive deleted] serial cables."

If I were Shirley MacLaine, I'd be convinced I was struck down by the Fifth Law of Computer Karma: *Never connect a cool computer to a boring computer.* Did the cable just stop working? Not really. I was tinkering with the cable when it broke.

It isn't hard to make your own cables. Cable-making technology is more accessible and affordable than ever, meaning that you can buy all the parts you need at your local Radio Shack. Making your own cables is now as easy as installing a color television antenna, and, best of all, you can do it without climbing a ladder.

If you're simply adding an external modem to your system, you won't need to make a custom cable. Your dealer probably sells the right kind for a reasonable price. But you'll need to make your own cables for the weird cases: setting up an old Televideo terminal to the Amiga for debugging, hooking up a serial printer, or connecting the Amiga to another computer.

According to the experts, all RS-232 devices can be classed as DTE or DCE, short for Data Terminal Equipment and Data Communications Equipment, respectively. For best results, skip the buzzwords and read the manual. Making a cable is a simple matter of matching between two and six pairs of wires that carry important serial signals.

The most important signals are on lines 2 and 3, known as TXD and RXD. These transmit and receive data. Your modem might have TD and RD lights to show the electrical state of these lines. Line 7 is the signal ground, a reference point for On and Off states. Lines 4 and 5 are known as RTS and CTS, and lines 6 and 20 are DTR and DSR. These lines perform hardware handshaking, the synchronization of two devices to prevent the loss of data. Line 8 is CD, carrier detect. The CD light on your modem reflects the state of this line.

A cable that connects each pin one-to-one isn't always correct for serial devices. Some devices transmit data on line 2, and some use line 3; it depends on whether the device is considered DCE or DTE. For correct communication, the transmit line of one device must connect to the receive line of another. In similar fashion, RTS and CTS must be coupled in a complementary way, along with DTR and DSR. By reading the manual for each device you want to connect, you learn which pins carry which signals.

For example, to connect two Amigas together on the serial port, you'd need to connect line 2 of the first machine to line 3 of the second. In this simple case, you could use a straight-through serial cable plus a null-modem adapter, which is a small box that swaps lines 2 and 3, 4 and 5, and 6 and 20. You can buy one for less than $10.

Sometimes there is no need to connect all eight signals. At minimum, some pairs of devices will work with just lines 2, 3, and 7 connected. To check which lines are active on a device and, therefore, need to be connected, Radio Shack sells a great gizmo called the RS-232 Line Analyzer for $14.95. It has male and female plugs and connects in-line between the devices on your cable. It has seven two-color LEDs, one for each line except line 7 (there is little need to monitor the signal ground). A green light means active, red means inactive, and off means no connection.

> The screen went blank, and my face went pale. The Amiga wouldn't even reboot.

Before I started tinkering, my Amiga was connected to the PC with only lines 2, 3, 6, 7, and 20. MS-DOS and *Microsoft Windows* require more than this. True to form, they want it all—RTS *and* CTS, DSR *and* DTR, and CD. Satisfying the two pairs of handshaking signals is easy. But where would the CD signal come from? Fortunately, the Amiga serial port supplies 12 volts on its serial connector, in a wonderfully nonstandard way. So I jumped the Amiga's 12 volts (an On signal) to the PC's carrier-detect line, and both computers were happy.

So, how did my nightmare begin? When things stopped working, I was convinced that I had destroyed the PC's serial card. It broke for no apparent reason six months before, so my suspicion was justified. I went to the computer store and bought another. Since swapping cards had no effect, I was certain that I had destroyed the Amiga's serial port.

Multimeter in hand, I poked around and checked the voltages on the serial port driver chips. My hands fumbled, and I shorted two pins together. The Amiga's screen went

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Here's a selection of Gemini's latest software from Europe. More are coming! European Shareware is different from the USA's. Most of these are very interesting demos to show off the power of Amiga's music, graphics, and animations. The synthesized music is excellent! Graphics and animations are the most creative we've seen. So, give them a try and enjoy!

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MADONNA	AMG 167	Digitized music with voice and picture of Madonna. Contains some of Madonna's popular music!
MICHAEL JACKSON	AMG 168	Digitized music with voice. Contains popular songs by mega-artist Michael Jackson!
POP MUSIC DEMO	AMG 169	Contains some excellent synthesized Euro-pop music! Great for showing off your Amiga sound!
BOWIE DEMO	AMG 170	Contains music of David Bowie!
DELIRIOUS 1	AMG 171	(2 Disks) Remember Eddie Murphy's video "Delirious?" Well, this it! It shows a picture of the comedy king. You select a topic from the menu and you will get the digitized version (of the video)! It's great! A must see, must hear demo! Don't forget the 2nd part of this (disk B)!
DELIRIOUS 2	AMG 173	More of the Eddie Murphy Delirious! Check it out! Contains 2 disks!
NORTHSTAR DEMO	AMG 175	The disk contains a whole bunch of awesome synthesized music, graphic demo and messages! It shows some creative special effects too!
HORROR DEMOS	AMG 176	Contains 4 very different graphics and sounds demo. The first two are very gruesome! The third and fourth demos are music and graphic messages for those strange European programmer/hackers out there. It's nothing horrifying. But the first two are the best! Unbelievable animations!
DEREK AND CLIVE	AMG 177	2 disks! This is part A. Contains digitized voices of Derek and Clive. Tells jokes for a long time.
DEREK AND CLIVE	AMG 178	2nd disk of 2 disks!
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blank, and my face went pale. It wouldn't reboot, either. Now I could be sure the serial port was blown. Checking the Amiga 2000 schematics, I was now convinced I had destroyed the 1488 and 1489 serial driver chips. These chips insulate the Amiga's sensitive circuitry from the possibly harsh signals of the outside world. Blood and gore on the movie screen bores me, but killing two thousand dollar's worth of living, breathing computer makes me weak in the knees.

So, I took the entire machine apart and spread it on the living room floor. Out came the motherboard, and I was out the door to buy new chips and sockets. Needless to say, kids, don't try this at home; it voids your warranty. Of course, this warning has no effect on those of us who are afflicted with *technomachismo.*

Hours later, after desoldering the old chips and adding the sockets and new chips, a friend suggested swapping the 8520 chips. These custom Commodore chips control the hardware handshaking lines, among other things. The machine still wouldn't boot.

While tearing apart the cable once more, I discovered my central mistake. On a male DB-25 connector, pin 1 is on the left. On a female DB-25, pin 1 is on the right. I wasn't careful, and wired a female connector as if it were male. Instead of line 2, I was wired to line 12. No wonder it didn't work. Every time I checked the continuity with my multimeter, I checked the wrong lines. After wiring the connector the right way and swapping one of the 8520 chips with one from a spare machine, everything was back to normal.

What can you do with another computer connected to the Amiga's serial port? For programmers, it gives access to ROMWack, a built-in debugger. You can also use the AmigaDOS AUX: device handler as an extra CLI window. By entering NEWCLI AUX:, you'll get a text-only CLI on the other computer, running at the baud rate set in Preferences.

In the public domain, programmer Steve Drew wrote an AUX: handler that allows some communications programs to share the serial port. With this AUX handler, a terminal program on the second computer can send files to and receive files from the Amiga using a file-transfer protocol like ZMODEM. On my PC, I start my terminal program, enter CLI commands like CD and DIR, and then type AZ SEND WORK.TXT; the Amiga file WORK.TXT is sent to the PC without error. When the transfer is finished, it returns to the CLI.

Drew provided other useful tools to allow remote access to your Amiga using an autoanswer modem. These tools include password protection and a version of EMACS that shares the serial port so you can edit files over the modem.

Connecting other devices over the serial port is easy and expands your Amiga in tremendous ways. Don't forget: Male connectors have pins, and female connectors have sockets. ▲

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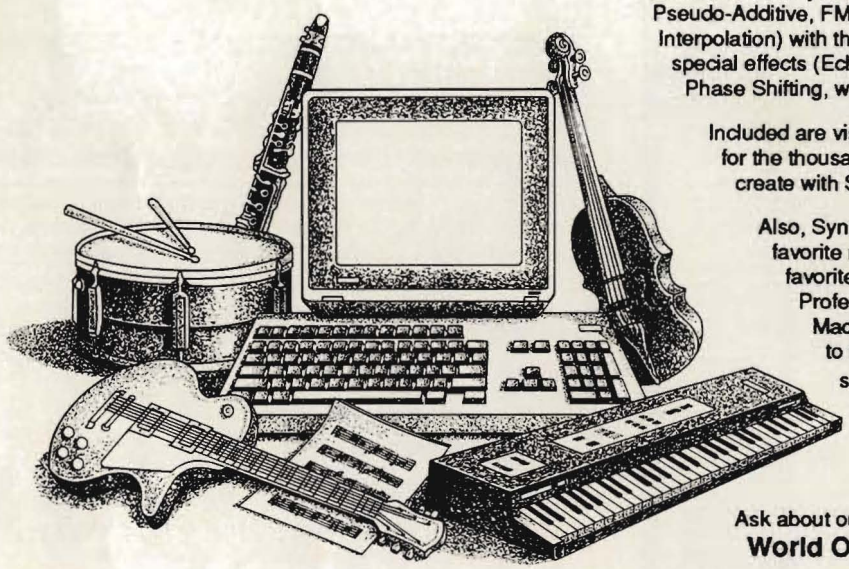

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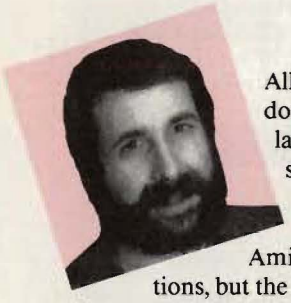
Circle Reader Service Number 119

ABSTRACTIONS

Arlan Levitan

Of Bugs and Duds



All those who were hoping that Commodore would make a big Amiga splash at last November's COMDEX computer show in Las Vegas can stop holding their breath. Commodore may have spent millions showing America that Amigas can lift houses from their foundations, but the Amiga booth at COMDEX had trouble raising eyebrows and interest. Commodore positioned itself just off the main floor of the show, strategically located by a doorway that connected the East and Main Hall exhibition areas.

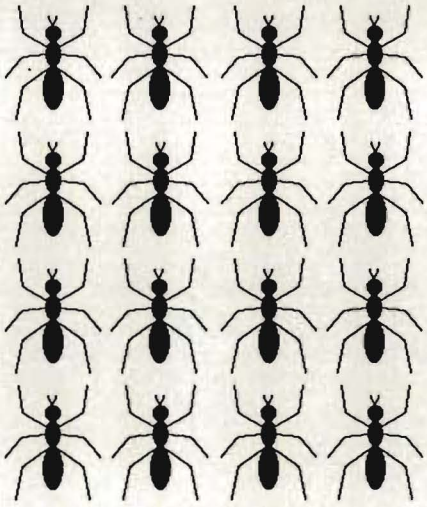
Gone was last year's wall of synchronized monitors running stunning animation and graphics demos to the catchy beat of the "Only Amiga" theme song. Commodore seemed bound and determined to prove that Amigas can be just as boring as COMDEX's homogeneous sea of endless IBM PC variants.

Not a single Amiga 500 was on display, since Commodore knows that corporate America equates "serious" computers with large rectangular boxes that all look alike. The booth had about a dozen stations where "important" applications were demonstrated to show attendees on 2000-series machines, while Commodore public-relations flacks competed furiously in their semiannual "Cavalcade of Surliness" tournament.

The games-not-allowed rule was still in effect: Not one pixel's worth of entertainment software made an appearance at the Amiga booth. After all, COMDEX is a serious show, and we wouldn't want to call undue attention to the graphics and sound that make the Amiga great for personal use as well as a solid performer in video and animation vertical markets. Meanwhile, Microsoft was packing 'em into their booth with demos of the latest and greatest version of *Flight Simulator* for the PC, and Texas Instruments wowed the crowd with an arcade racing game that utilized its latest generation of high-performance graphics chips.

As I savored my last days of Vegas's 70-degree November sunshine, the season's first cold snap descended on the peninsula of Michigan. Fifteen minutes after landing in Detroit, I was scraping ice off my windshield with the edge of a 3½-inch disk and girding myself mentally for a domestic battle more arduous than trying to wrest an evaluation unit out of Commodore for review.

Two years ago, my family and I moved to more commodious quarters in a pleasant 'burb of the Motor City. We picked up a lot of space, but lost one amenity that folks in our area take for granted: We have no basement. I know that's hardly enough to merit a raised eyebrow in the southern and western U.S., but it's considered downright weird in the Midwest. When friends ask what the basement is like at the end of the obligatory first-time-over house tour and are informed that we don't have one, social occasions tend to take on the tone of a scene from "Alien Nation."

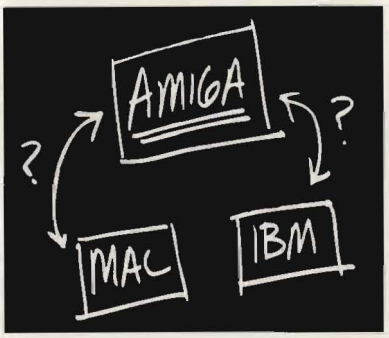


It's hard to trust a species that's more organized than the teamsters.

The prevailing attitude is that slabs may be fine for the local morgue and mobile home parks, but no Michigan domicile is complete without a basement. Even my folks gave me a long hard look (probably wondering from which side of the family this aberrant behavior stemmed) when they learned they'd have to get out a pickax if they wanted to see anything below the ground floor. I won't deny that basements are decidedly handy. They do provide a convenient place for storing items that you don't want so that they can be water-damaged when the local drain system backs up in the spring. Once they're ruined, there's no guilt associated with tossing Aunt Edna's custom-made quilted paisley-print nose warmers or that embarrassing Plus/4 into the trash.

Of course, we're not talking about an ordinary slab house with a baseboard heating system. We're talking weird heat for a late-1940s structure. The house was built and lived in by a gonzo plumbing contractor who truly believed in the words: "Water, water, everywhere." A network of copper-carried heated water keeps our concrete foundation as warm as toast. The system has been relatively trouble-free, with the exception of occasional nightmares in which I stroll downstairs to be greeted by a full-scale simulation of Old Faithful in the middle of our living room's conversation pit.

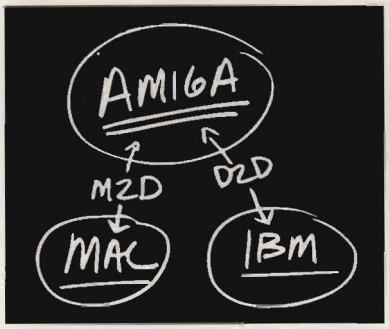
By this point, most readers are wondering what



PROBLEM

Your boss wants you to produce an animated video presentation to help sell that new project to top management. You know that a full-color, animated presentation, developed on the Amiga, using its powerful desktop video software, will make a convincing impact.

The Amiga is the right machine for the job, but how can you easily import the images and data you need for your presentation from other divisions of the company, data and images which come from Macintoshes and IBM PCs?



SOLUTION

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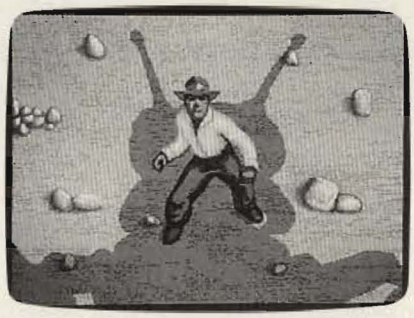
closed-loop heating systems inlaid in concrete have to do with Amigas. There's a somewhat tenuous connection which bears further explanation, especially if I'm going to get close to knocking off two pages' worth of copy for this month's column.

While I don't mind living on a slab, I'm no fan of insects. If one crawls, flies, jumps, or burrows in my sight, I'll spend at least a millisecond considering the vastness and myriad complexity of nature before I squish it with a brick, book, or bullet. I'm not a total insectiphobe, but my kids ask mommy why dad applauds during Raid and Black Flag commercials. At least I recognize the roots of my antibug attitude. As a youth, I misspent most Saturday afternoons at one of the local theaters. There my friends and I watched ghastly movie matinees through the extended sleeves of coats thrown over our heads that protected us from a host of celluloid monsters.



Our favorites were science-fiction movies featuring the grossest monsters we could find. They may have been no match for the graphic mayhem of Freddy Krueger's excessive Nightmare series, but one of those hoary flicks gave me a case of the willies that branded me for life. It was called *Them.*

Them was cliché, crude, and filmed in a straightforward style that made it seem terrifyingly real to a seven-year-old. In the movie, common ants exposed to radiation from nuclear tests mutate and grow bigger than Commodore's 1990 holiday-season advertising budget. The protagonist's efforts to convince the authorities that the atomic ants mean business are dismissed until picnickers start disappearing along with their lunches. By the time the government wises up, the king-size critters have spread and set up house in urban sewer systems. In the finale of the film, the U.S. Army holds its nose and goes in after them with flamethrowers blasting.

For weeks after seeing *Them,* my friends and I carried tenpenny nails in our back pockets so we could drive them into the mouths of anthills we found. I guess we figured that would trap them underground or scare them into retiring to the nearest ant farm.

Thirty-three years have passed, and I'm still not crazy about ants—it's hard to trust a species that's more organized than the teamsters. As we moved into our new home and settled in, trouble was brewing underground. As is common construction practice, our slab foundation was poured over a packed base of sand. As the temperature dropped with the approach of winter, the slab and the sand below it heated up nice and toasty. Shortly thereafter, every colony of pavement ants in the neighborhood made a beeline—uh, ant line—to Levitan's Subterranean Ant Sauna.

At first they kept pretty much to themselves, sending an occasional scouting party out for chips and beer. As more snow fell and the mercury dropped, our visitors' raids grew more daring and frequent. My wife's aversion to the use of pesticides gave the little buggers free reign of the house for a couple of foot-stomping weeks. Gretchen finally relented when they began to insist on watching Arsenio Hall instead of David Letterman. A prudent amount of Diazinon managed to keep things in check, but part of me knew that the ants were biding their time.

Just when it seemed that extended psychoanalysis might be the only solution, Cinemaware came to my rescue with the release of *It Came from the Desert.* I had enjoyed *Rocket Ranger* and the firm's other titles, but one look at *It Came from the Desert*'s lurid cover art set the hook and reeled me in. It was *Them* all over again! In *It Came from the Desert,* it's you against the colossal ants, in a life-and-death struggle for the town of Lizard Breath. They could try to hide from me, but it was only a matter of time before the evidence I collected would convince the town's mayor to call out the National Guard. Forget the tenpenny nails: Calling in air strikes is a lot more satisfying.

The ants aren't your only worry in *It Came from the Desert.* One also has to deal with the Hellcats, a gang of local toughs, and Ice, their knife-wielding leader. Even the most careful player will eventually sustain some injury and land in the hospital. Once there, you can lay back and accept Nurse Judy's proffered treatment or attempt to escape. Treatment takes time, and time is one commodity you don't have on your hands. The story begins on June 1, 1951 and there are only 15 days left to prove the existence of the ants, locate their nest, and destroy the queen.

I haven't made it to the end of *It Came from the Desert* yet, but those who complete it haven't faced the final challenge. Owners of *It Came from the Desert* can order the sequel *Ant Heads* ($14.95), which serves up a new scenario, set five years later in the same locale.

If you're a fan of pulp movies, enjoy transforming ants into pulp, or just want to experience what may well be the most engaging collage of action, humor, and solid Amiga graphics available to date, check out *It Came from the Desert.* It's the first Amiga game I've played that has more laughs than an hour with a shrink and less than half the cost of the latter.

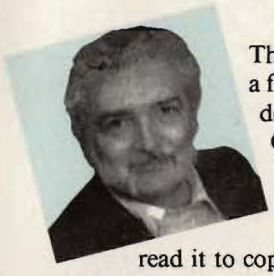
If you'll excuse me, I've got some spraying to do in the kitchen—it looked like the last bunch of ants that crawled by were carrying joysticks. ▲

Cinemaware came to my rescue with the release of *It Came from the Desert.*

CLI CLIPS

Jim Butterfield

Safety and Spaces



This issue's quick tip: Want to check that a file on disk is sound or that you haven't developed a bad disk sector? Type COPY *filename* NIL: and the file will be checked by copying it to . . . nothing!

When a file is copied, the Amiga must read it to copy it, of course. Even when the copy is being thrown away (sent to nil:) it will still be read, and any problems will be reported to you.

Guarding files. There are new virus programs around that don't live in the boot-block area of your disk. Instead, they infiltrate program or data files. A favorite attack area is your C directory. If one or more commands are subtly changed, you're likely to get very nasty problems.

One way to beef up defenses against such viruses is to use the Amiga's protection bits.

Protection bits. If you use the List command to list a file, directory, or disk, you'll see letters displayed to the right of each file size. For 1.3, these have been expanded to *sparwed.*

The letter *s* identifies a script file. Typing the filename within the CLI will call in the Execute command to perform whatever activities the script calls for. A script file is made up of ASCII characters; you can read such files with the command Type.

The letter *p* identifies a program file written in pure form so that it can be made resident.

The letter *a* marks a file as having been archived. If the file is changed or updated, the archive bit will be turned off so that the user (or a utility program) can tell that a new backup would be appropriate.

The letter *r* indicates that the file may be read. If this bit is off, you'll have trouble seeing the contents of the file.

The letter *w* indicates that the file may be written to. If this bit is off, the file can't be changed.

The letter *e* identifies an executable file—in other words, the file is a program that you may run.

The letter *d* indicates that the file may be deleted.

One way to make things harder for a virus is to arrange to turn off the *w* bit for all files in our C: directory. That way, the commands cannot be overwritten. You might also like to turn off the *d* bit. We'll do this in a moment.

Nothing is permanently locked. For example, you can protect a file against accidental erasure by switching off the *d* bit, but that bit could be turned back on at a later time.

Loadable vs. runnable files. The *e* (execute) bit is interesting. It's there to prevent you from trying to run files that can be loaded but not run. You will find many such files in l:, libs:, fonts:, and devs:. Many of the data files are intended to be loaded into memory but are not programs. Attempting to run them might cause a software exception.

You might like to add the command *ViewDir* to your C: library. You can find it in the C directory of this issue's companion disk. This program gives you the size of subdirectories within any selected directory or disk. *ViewDir* has three options which can be used individually or in combination. The first option, -b, shows the file sizes in blocks instead of bytes. The second option, -i, causes *ViewDir* to ignore .info files. And the last option, -t, tells *ViewDir* not to show file types.

One of the file types that *ViewDir* can identify is Loadable. You might be surprised to look through a directory such as l: to see the number of files that have this classification. Some loadable files contain defensive code so that if you try to run them, they will exit safely.

You might like to use the List command on some of the above-named directories, noting how many files have the execute bit turned off. You may find a few that have been overlooked. If so, it's a good idea to turn them off using the Protect command.

Not all files need this protection; if a file is not classified as loadable, the system will not try to execute it even if the *e* bit is on. For example, try typing S:STARTUP-SEQUENCE. This file contains text, not a loadable module; the Amiga will politely tell you that it can't run the program you requested.

> There are new viruses that live in program and data files.

Don't be confused by the Execute command, which executes a script file, and the *e* (execute) bit, which identifies a program that will run in the Amiga's memory.

Stabilizing C. We mentioned that you might feel more comfortable going through the files in your C directory and turning off the *w* and *d* bits for each file. You could do this for files in other directories, too.

It would be nice if you could use pattern matching, so that PROTECT C:#? -WD would do the whole thing in one shot. Sorry, Protect does not permit pattern matching.

Doing the files one at a time would be tedious work. You might have 100 or more files in your C directory. That's a lot of typing, and a lot of opportunity for spelling errors. There must be a better way.

In fact, there are at least three ways of doing the job with a Workbench 1.3 system.

Using SPAT. The directory S on your 1.3 disk contains a script file called SPAT. The name stands for Single PATtern, and it will allow you to do pattern matching with commands that normally do not support this feature. SPAT will work only if you use the standard 1.3 startup, which makes the command Execute resident and creates directories T: and ENV: in RAM.

Here's how to do it. Type SPAT PROTECT C:#? -WD and, after a pause, the job will be done. The magic SPAT command has added pattern matching to Protect.

How does it work? Keep in mind that SPAT is a script file and that you may read its contents with a simple Type command. It's hard reading for a beginner, so I'll give you a hint: Look in directory RAM:T for a file called q1. This file was created by SPAT. Read it, using Type.

Method 3, below, does the same job using SPAT-type logic but without the need for SPAT itself.

Old Reliable: List and Ed. Here's another method that can be used even if you don't have Workbench 1.3. Enter the following commands.

```
LIST >RAM:XX QUICK
  NOHEAD C:
RUN ED RAM:XX
```

If you don't have Workbench 1.3, omit the word NOHEAD from the first command. Without NOHEAD, you'll need to use ED to take out the first line (title) and last line (file count) of file XX; do this by pressing Esc and then entering the ED commands B, D, T, and D, and Return.

You should have a list of all files in the C directory on the screen. Look through them if you wish. If there are any files whose protection bits you wish to leave untouched, remove the file from the list and then press Esc-D.

When you're ready for the main task, press Esc. An asterisk appears at the bottom of the screen. Type T; RP (E //PROTECT C:/; CE; E // -WD/; N) and then press Return. Each line will change into a Protect command.

I'll explain the meaning of what you have typed in just a moment, but first, a word in case of errors. If you make a bad mistake and wreck things beyond reasonable repair, just press Esc followed by Q (for QUIT). The edit job will abort, and you can start over.

Now, about that line you typed in. It contains several commands, each one separated from the others by means of a semicolon. The commands you typed were as follows:

T Go to the top of the document.

RP Repeat the following part until an error is encountered; that would include finding the end of the document.

E //PROTECT C:/ Change what's between the first pair of slashes into what's between the second pair.

CE Move the cursor to the end of the line.

E // -WD/ Change "nothing" into " -wd".

N Go to the start of the next line. This command will fail when there are no more lines left in the document.

If the Protect commands look the way they should, you may save the edited document by pressing Esc followed by X. The file ram:xx will now contain a script. Execute it with EXECUTE RAM:XX.

When you have confirmed (with LIST C:) that the *w* and *d* protection bits have been turned off for all files, you may delete ram:xx if you wish; it has done its job.

The LFORMAT option. Here's a third way, one which illustrates a new feature of 1.3, the LFORMAT option that's available in commands such as list. This is the method that SPAT uses.

Type the following command.

```
LIST C: LFORMAT="PROTECT %S -WD"
```

The directory C: is listed, but in a format provided by the LFORMAT option. When you press Return, you'll see the commands within directory C: listed within the LFORMAT envelope, giving results such as PROTECT RUN -WD. These commands would be good enough to do the trick if we were to set our current directory (CD) to the directory C:. But we can do more: Type LIST C: LFORMAT="PROTECT %S%S -WD". The only change is that the %s field has doubled. When you press Return, you'll see that the path has been added to the filename.

SPAT allows you to do pattern matching with virtually all commands.

The above is sufficient to do the job for C: and most other system directories, but we'll take it one step farther. Suppose that there was a file named ding dong within C: or some other directory. The above List command would generate PROTECT C:DING DONG -WD. That's wrong. We need PROTECT "C:DING DONG" -WD.

We can't just slip the quotation marks into the LFORMAT specification; the first one encountered would seem to close the opening quotes. Instead we can use the asterisk escape to permit the use of quotation marks.

```
LIST C: LFORMAT="PROTECT *"%S%S*" -WD"
```

One more refinement. Some directories, such as devs:, contain more than files—they also contain other directories such as Keymaps and Printers. You may not wish to change the protection bits of these subdirectories. If this is the case, you could ask List to display files only.

```
LIST FILES DEVS: LFORMAT="PROTECT *"%S%S*"
  -WD"
```

Try these extra features. Then we'll go back to the simpler format; this time, we'll direct the commands we're manufacturing to a file from which they can be executed.

```
LIST >RAM:YY C: LFORMAT="PROTECT %S%S -
  WD"
```

The file yy is written to RAM: and is ready for you to display, edit, or execute. ▲

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ASK ROB PECK

Rob Peck

Two Screens in One

This issue I've put together a program that demonstrates a powerful graphics mode that many commercial developers use but which isn't often talked about in magazines or demonstrated by public domain software. This mode is called dual-playfield mode, and it allows you to create a single screen display out of two separate bitmapped images.

Most programs use single-playfield displays (a playfield is the graphics image produced by a group of bitplanes). In these programs, each screen uses a single drawing area that consists of one or more bitplanes. If there are a lot of windows and such on a screen, animating and repositioning objects requires some slicing and dicing of the display memory since you (or the operating system) must determine which bits in each bitplane must be restored and which bits must be moved.

For example, let's say you wish to move an object across a scene of some type. Every time you position the object in the scene, you have to save the area of the screen where the object is going to appear and then draw the object. To move the object, you must restore the background that you saved (thus erasing the object) and do your save/draw sequence at some other location on the screen. Certain Amiga system functions can do this for you, including the save and restore procedures, but imagine how much faster the animation would be if the background area didn't have to be saved.

When dual-playfield mode is active, there are two distinct drawing areas available to the programmer. Each of these drawing areas may contain graphics with up to eight different colors in low-resolution mode (three bitplanes per playfield) and up to four different colors in high-resolution mode (two bitplanes per playfield). Dual-playfield mode allows you to keep your background picture in one playfield and your animated objects in the other—you don't have to worry about the two interfering.

Consider the case of a control panel for a flight simulator. A large part of the screen does not change; the view through the cockpit window changes, but the instrument display changes very little. Or how about doing titling over live graphics? Some colorful picture can be the main part of the screen, and rolling credits could be placed in a foreground drawing area. Many other dual-playfield effects are possible.

Mix and Match

On a single-playfield display, the colors that make up an image are determined by each pixel's color value. A dual-playfield display, by contrast, contains pixels from two different bitmaps. These two bitmaps are called Playfield 1 and Playfield 2, and you must tell the system which one should appear in front of the other.

In single-playfield mode, color 0 is the background color—that is, the color that you normally see in the border. Colors 1, 2, 3, and so on are selected from the program's own color palette. In a dual-playfield display, the playfield that appears in the background (behind the other playfield) follows these same rules.

The foreground playfield, however, obeys slightly different rules. Color 0 no longer selects the background color, but instead is transparent. So if the entire foreground playfield contains the color 0, only the colors of the background playfield will be seen. All other colors take precedence over the background playfield. So even though the two drawing areas are kept separate, the Amiga's hardware combines the two playfields into one picture, and it's the playfields' colors that determine how the two images are combined. (As a side note, sprites, such as the mouse pointer, work the same way in dual-playfield mode as they do in single-playfield mode.)

System Support

Up to and including the 1.2 version of the Amiga's ROM Kernel and Intuition manuals, there has been little or no mention of how to activate dual-playfield mode in a manner that is friendly to the Amiga's Intuition interface. So, with the permission of Jim Mackraz (one of the creators of Intuition), I have used some code that he developed. This code originally appeared on a demo disk from a 1988 Amiga developer's conference. Jim also developed the program *DropShadow,* which adds a second playfield to the Workbench display for a 3-D effect.

Jim Mackraz's code performs a few tricks to fool Intuition into accepting a dual-playfield screen. First, it opens a standard, single-playfield screen; next it allocates some additional memory space for the second playfield, initializes a few data structures and then attaches these to data structures that Intuition already knows about. This makes the modified screen (now dual playfield) work normally—you can push it to the back, pop it to the front, drag it, and so on. Before the screen is closed, these tricks must be reversed.

About the Program

An example Intuition-friendly dual-playfield program listing accompanies this issue's column. This program, and its source code, may also be found on the *Resource Disk* for this issue. To run the program, simply double-click on its icon or enter DUALPLAYFIELD from the CLI.

This program displays a colorful grid of stripes and a DragMe/CloseMe window, all on a dual-playfield screen. The horizontal stripes and the window both appear in Playfield 1. The vertical stripes are located in Playfield 2. The program adds some user copper-list instructions that toggle the playfields' priorities back and forth. That's why the vertical stripes are constantly jumping in front of and

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then behind the horizontal stripes. Any area that is drawn in the border color becomes transparent, so you can see through the blank areas of the frontmost playfield.

If you drag the window around, you'll discover that no matter where you put it, you can never see horizontal stripes within the window. This is because the horizontal stripes and the window are drawn into the same playfield and share the same displayable colors. The window always obscures anything that is drawn behind it in the same playfield. But the vertical bars always show through the window because the window's main viewing area is drawn in the border color (for the same reason, you can even see through the lettering on the window's title bar).

For another example of dual-playfield mode, Fred Fish disk #268 contains my BADGE Killer Demo contest entry named "Only Amiga." This program uses a dual playfield in the final frame. You'll see a large *Only Amiga* title and four multitasking displays floating over a bouncing colored line. The bouncing line appears behind all the other elements, peering through the transparent areas of each window and through openings in the title's lettering. The demo was titled OnlyAmiga because this type of display would have been considerably more difficult to produce on any other system.

Some of the code found in the example program listed here is actually part of the OnlyAmiga demo. You'll notice, for example, that the foreground playfield is set up to be twice as tall as the Intuition screen to which it is attached. This was done so that my demo program could have slowly rolling credits at the end of the program—a feature included in the demo's source code, but something that I didn't have time to energize before the contest deadline.

Copper-list manipulation, as used here to change the playfield priorities, has many other uses. For example, in games, programmers can use custom copper lists to position the screen's viewing area anywhere within a giant gaming field. But, of course, that's another topic.

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

DualPlayfield.c

```
/* Written for Lattice C 5.02 */

#include "exec/types.h"
#include "exec/memory.h"
#include "intuition/intuition.h"
#include "hardware/custom.h"
#include "graphics/copper.h"
#include "graphics/gfxmacros.h"
#include "graphics/text.h"
#include "libraries/dos.h"
#include "libraries/dosextens.h"

/* A Lattice requirement */
extern struct Custom __far custom;

extern struct Screen *OpenScreen();
extern struct Window *OpenWindow();

struct  IntuitionBase   *IntuitionBase;
struct  GfxBase         *GfxBase;
struct  BitMap          *bmap3 = NULL;
struct  UCopList        *ucl[2];
struct  ViewPort        *vplo = NULL;
extern  UWORD            __far RangeSeed;
struct  Screen          *screenlo;
int     swap;       /* alternatively go PF2 above PF1 and vice versa */
struct  TextAttr myfont1 = { (UBYTE *)"topaz.font", 8, 0, 0 };

#define BACKGRND 0
#define BLACK    0
UWORD titletable[] = {

    BACKGRND, 0x0fff,0xD32,0xE60,0xFE5,0x0F7,0x08F,0xB6F,

    /* black,white,red,orange,yellow,brtgrn,blue,purple */

    BACKGRND, 0x0fff,0xD32,0xE60,0xFE5,0x0F7,0x08F,0xB6F,
    BACKGRND, 0x0fff,0xD32,0xE60,0xFE5,0x0F7,0x08F,0xB6F,
    BACKGRND, 0x0fff,0xD32,0xE60,0xFE5,0x0F7,0x08F,0xB6F );

struct NewScreen nslo = {
    0, 0,320, 200,3,1, 0,SPRITES,SCREENQUIET | CUSTOMSCREEN,&myfont1,
    (UBYTE *)"",NULL,NULL );

struct NewWindow nw = {
    0, 0, 160, 100, 0, 1, CLOSEWINDOW, WINDOWCLOSE|WINDOWDRAG,
    NULL, NULL, (UBYTE *)"DragMe/CloseMe", NULL, NULL, 5, 5, -1, -1,
    CUSTOMSCREEN };

struct NewWindow nwbak = {
    0, 0, 320, 200, 0, 1, 0,
    BACKDROP | BORDERLESS,
    NULL, NULL, (UBYTE *)"", NULL, NULL, 5, 5, -1, -1,
    CUSTOMSCREEN };

main()
{
    SHORT     i;
    struct    IntuiMessage    *msg;
    ULONG     class;
    int       exitval, it_is_done;

    UWORD     *getaword, randval;
    struct    Window   *windowlo = NULL;
    struct    Window   *wbak;
    struct    RastPort *srplo, *rportbak;
    struct    RasInfo *rinfo2;
    struct    BitMap  *bmap2;
    struct    RastPort *rport2;
    UBYTE     *initialptr[3];
    /* hold data from *msg  */

    ucl[0] = NULL;
    ucl[1] = NULL;

    swap          = 0;
    it_is_done    = 0;
    randval       = 0x5555;

    getaword      = (UWORD *)0;

    for(i=0; i<1024; i++) { /* randomize the random number generator */
        randval = randval ^ (*getaword++); }
    RangeSeed = randval;
    exitval   = 0;

    if (!(IntuitionBase = (struct IntuitionBase *)
    OpenLibrary("intuition.library", 0L))) {
       exitval = 1; goto EXITING;  }
    if (!(GfxBase = (struct GfxBase *)
    OpenLibrary("graphics.library", 0L)))  {
       exitval = 2; goto EXITING;  }

/* ================================================ */

    screenlo = OpenScreen(&nslo);
    if(screenlo == NULL) {
        exitval = 3; goto EXITING; }

    vplo = &screenlo->ViewPort;
    srplo = &screenlo->RastPort;
    LoadRGB4(vplo, titletable, (LONG)32);

    ScreenToFront(screenlo);

    SetRast(srplo, BLACK);
    SetDrMd(srplo, JAM1);

    nw.Screen = screenlo;
    nwbak.Screen = screenlo;

    windowlo = OpenWindow(&nw);
    if(windowlo == NULL) {
    exitval = 200;  goto EXITING;  }

    wbak = OpenWindow(&nwbak);
    if(wbak == NULL) {
    exitval = 201; goto EXITING;  }

    rportbak = wbak->RPort;

    /* ------ Prepare to add a second playfield ----------- */
    /*        This code courtesy of Jim Mackraz             */

    /* allocate second playfield's rasinfo, bitmap, and bitplane */
    if (!(rinfo2 = (struct RasInfo *)
        AllocMem((LONG) sizeof(struct RasInfo),
            (LONG) MEMF_PUBLIC|MEMF_CLEAR))) {
    exitval = 5;  goto EXITING;  }
    if (!(bmap3 = (struct BitMap *)
            AllocMem((LONG)sizeof(struct BitMap),
            (LONG)MEMF_PUBLIC|MEMF_CLEAR)))    {
    exitval = 6;    goto EXITING;  }
    InitBitMap(bmap3, 3L, (LONG) 320, (LONG)200);

    if (!(bmap2 = (struct BitMap *)
            AllocMem((LONG)sizeof(struct BitMap),
            (LONG)MEMF_PUBLIC|MEMF_CLEAR)))    {
    exitval = 7;    goto EXITING;  }

    /* This example came from the demo "Only Amiga" for which the
     * second playfield is twice as tall as the first playfield.
     * Intuition and the system are fooled into thinking, for display
     * purposes, that only a 200-line playfield is available, nicely
     * matching the playfield area that Intuition is using.  However,
     * for drawing purposes, the drawing area is twice as high so that
     * we can scroll new information into the display area just by
     * later changing the display pointers and remaking the display list.
     * The last parameter for InitBitMap would have been 200.
     */
    InitBitMap(bmap2, 3L, (LONG) 320, (LONG)400);

    /* We'll use 3 planes. */
    for(i=0; i<3; i++)  {
        if (!(bmap2->Planes[i] =
        (UBYTE *) AllocRaster((LONG) screenlo->Width,
          (LONG) (screenlo->Height<<1))))    {
        exitval = 8;   goto EXITING;       }
    }
        /* If second playfield same size as first one, then
         * this would have been (screenlo->Height) instead.
         */

    for(i=0; i<3; i++) {
        initialptr[i] = (UBYTE *)bmap2->Planes[i];
        bmap3->Planes[i] = (PLANEPTR)initialptr[i];
    }
    /* get a rastport, and set it up for rendering into bmap2   */
    if (!(rport2 = (struct RastPort *)
    AllocMem((LONG) sizeof (struct RastPort), (LONG) MEMF_PUBLIC)))
    {
    exitval = 9;
    goto EXITING;
    }
    InitRastPort(rport2);
    rport2->BitMap = bmap2;
```

```
SetRast(rport2, 0L);
SetOPen(rportbak, 1L);
    for(i=2; i<8; i++)
    {
        SetAPen(rport2, i);
    RectFill(rport2, 30*i, 20, 25+(30*i), 180);
    SetAPen(rportbak, i);
    RectFill(rportbak, 20, 20*i, 300, 15+(20*i));
    }

/* ================================================ */
    if ( !(ucl[0] = (struct UCopList *)
          AllocMem( (LONG) sizeof (struct UCopList),
    (LONG) MEMF_CHIP | (LONG) MEMF_CLEAR) )) goto OUT;

    /* This list moves playfield 2 to the front when active. */
    CINIT( ucl[0], 400L );
    CWAIT( ucl[0], 1L, 5L);
    CMOVE( ucl[0], custom.bplcon2,  (long)0x64);
    CEND ( ucl[0] );

    if ( !(ucl[1] = (struct UCopList *)
          AllocMem( (LONG) sizeof (struct UCopList),
    (LONG) MEMF_CHIP | (LONG) MEMF_CLEAR) )) goto OUT;

    /* This list moves playfield 1 to the front when active. */
    CINIT( ucl[1], 400L );
    CWAIT( ucl[1], 1L, 5L);
    CMOVE( ucl[1], custom.bplcon2,  (long)0x24);
    CEND ( ucl[1] );

    vplo = &screenlo->ViewPort;
    vplo->UCopIns = ucl[0];

OUT:
    /* manhandle viewport: install second playfield and change modes    */
    Forbid();

    rinfo2->BitMap = bmap3; /* install my bitmap in my rasinfo  */

    screenlo->ViewPort.RasInfo->Next = rinfo2;
        /* install rinfo for viewport's second playfield    */

    screenlo->ViewPort.Modes |= DUALPF;
              /* convert viewport          */
    it_is_done = 1;

    Permit();

    MakeScreen(screenlo);
    RethinkDisplay();

    for(;;)
    {
        if ((msg = (struct IntuiMessage *)
        GetMsg(windowlo->UserPort)) == NULL)
        {
            vplo->UCopIns = ucl[swap^=1];
        /* put "the other" playfield in front */
            MakeScreen(screenlo);
            RethinkDisplay();
        Delay(25);
        }
        else
        {
        class   = msg->Class;
        ReplyMsg(msg);

        switch (class)
        {
           case CLOSEWINDOW:
              goto EXITING;
           default:
              break;
        }
        }
    }
EXITING:
    if(ucl[0])
    {
    vplo->UCopIns = NULL;

    FreeCopList( ucl[0]->FirstCopList );
    FreeMem( ucl[0], (LONG) sizeof (struct UCopList) );
    }
    if(ucl[1])
    {
    vplo->UCopIns = NULL;

    FreeCopList( ucl[1]->FirstCopList );
    FreeMem( ucl[1], (LONG) sizeof (struct UCopList) );
    }
    /* clean up dual-playfield trick    */
    if (it_is_done)
    {
    Forbid();
    screenlo->ViewPort.RasInfo->Next = NULL;
    screenlo->ViewPort.Modes &= ~DUALPF;
    Permit();
    MakeScreen(screenlo);
    RethinkDisplay();
    }

    if (rport2) FreeMem(rport2, (LONG) sizeof (struct RastPort));
    if (bmap2)
    {
    for(i=0; i<3; i++)
    {
        if (bmap2->Planes[i])
            {
            FreeRaster(bmap2->Planes[i],
            (LONG) screenlo->Width, (LONG) (screenlo->Height<<1));

        /* If second playfield same size as first one, then
         * this would have been (screenlo->Height) instead.
         */
        }
    }
    FreeMem(bmap2, (LONG) sizeof (struct BitMap));
    }
    if (bmap3)
    {
    FreeMem(bmap3, (LONG) sizeof (struct BitMap));
    }
    if (rinfo2) FreeMem(rinfo2, (LONG) sizeof (struct RasInfo));

    if (windowlo) CloseWindow(windowlo);
    if (wbak)     CloseWindow(wbak);
    if (screenlo) CloseScreen(screenlo);
    if (GfxBase)  CloseLibrary(GfxBase);
    if (IntuitionBase) CloseLibrary(IntuitionBase);

    if(exitval)
      exit (exitval);
    else
       return(0);
```


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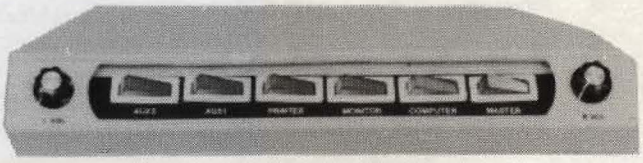

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EVERYTHING YOU'VE ALWAYS

AMIGA G

Say "Amiga" and what comes to mind?

GRAPHICS

Here's a closeup look at the components that make the Amiga a visual wonder.

RHETT ANDERSON

Graphically speaking, the Amiga has the best standard equipment of any home computer. While other computers can match or exceed the Amiga on one point or another, none come close to giving you the complete platter of video that the Amiga serves up.

What is it about the Amiga that makes it, in equal parts, an artist's machine, a gamer's machine, and an animator's machine? The magic words are *custom chips.*

Who's Got the Blitter?

You can thank the Amiga's custom chips for making the Amiga what it is. These custom chips—three hunks of silicon painstakingly designed, hand-wired, tested, and debugged by Jay Miner and the rest of the crew at the young Amiga Corporation—give the Amiga its flamboyant personality.

These chips weren't always chips. At the hard-wiring stage, each chip was a large circuit board, draping wires like spaghetti. These three boards were connected by several wires.

Although the boards could have been made into a single chip, it was more sensible to make them into three chips instead. That's because smaller-scale chips are more economical. So, the three boards became three chips, and the wires connecting the boards became pins on the chips.

The three chips are known by the names Paula, Agnus, and Denise, although the names Portia, Agnes, and Daphne appear in some documentation. In general, Denise handles the graphics information, Agnus handles address generation, and Paula handles I/O (input/output).

It's more useful, though, to think of the custom chips in terms of their capabilities. Two of the functional units on the chips are known as the Copper and the Blitter.

The Copper is located on the Agnus chip. It is a microprocessor designed to control the video display. A list of the instructions for the Copper is really a program, but it is called a *copper list.*

While a general-purpose microprocessor like the Amiga's Motorola 68000 contains dozens of instructions for moving, adding, subtracting, multiplying, dividing, and otherwise manipulating data, the Copper has only three instructions: MOVE, WAIT, and SKIP. MOVE moves a word (16 bits) of data into a hardware register. The Amiga has 196 custom hardware registers. Included among these are the color, sprite-pointer, bitplane-pointer, audio, and display control registers. WAIT waits for a certain video position before proceeding. SKIP is used to control the flow of the program. Branches and loops are possible but are tricky to implement.

The Blitter can also be found on the Agnus chip. It's the Blitter's job to move rectangular groups of pixels from one area of the screen to another (or alternatively, from one screen to

WANTED TO KNOW ABOUT RAPHICS

another). This capability of the Blitter allows for frame animation (as seen in the several ANIM-format animators) and brush animation (as seen in *DeluxePaint III*). For maximum flexibility, the Blitter uses *minterms,* binary values which specify how pixels are to be combined. The Blitter also has two special modes—line mode and fill mode—that aren't usually handled by *blitters* (bit-block image transferers) or *bimmers* (bit-image movers). These capabilities of the Blitter allow for vector-based animation as seen in *Dragon's Lair* and *Space Ace.*

Unsung Hero

While the Copper and Blitter typically hog all of the press, most people are really more interested in the resolution and color capabilities of the Amiga. It's Denise, the unsung hero of Amiga graphics, that controls resolution and color. To be fair, Agnus contributes some limitations to this field. For example, Agnus has registers for only six bitplanes (although there's address space in the hardware registers and space in the Amiga system software for two more).

But in general, it's Denise that controls how graphics data is interpreted and displayed. It does this through its bitplane control registers. The setting saved to the first of these registers, BPLCON0, selects between hi res and lo res, interlace and noninterlace, HAM and non-HAM.

All About Resolution

The Amiga can display four basic resolutions. The following table shows the NTSC resolution, hardware name, and *DeluxePaint* name.

Resolution	Name	*DPaint* name
320 × 200	lo res, noninterlace	Lo-Res
640 × 200	hi res, noninterlace	Med-Res
320 × 400	lo res, interlace	Interlace
640 × 400	hi res, interlace	Hi-Res

All of these screens use the same amount of space on your monitor. Resolution is specified by the size of the *pixel* (the smallest addressable dot on your screen). A lo-res, noninterlace pixel is four times the size of a hi-res, interlace pixel—twice as tall and twice as wide. Lo-res, interlace and hi-res, noninterlace pixels are each twice as big as a hi-res interlace pixel; the former is twice as wide, and the latter is twice as tall.

Believe it or not, these are the only possible sizes for pixels on the Amiga. Other modes you may have heard about have the same resolution as one of the above modes.

A complication is overscan. The Amiga allows you to change the upper, lower, left, and right boundaries of the screen to arbitrary values. While the resolutions above are the conventional ones, you could make, say, a 100 × 100 screen. There's also nothing to stop you from making a screen that extends beyond the customary edges. While just about any size is possible, the following overscan sizes have become a de facto standard.

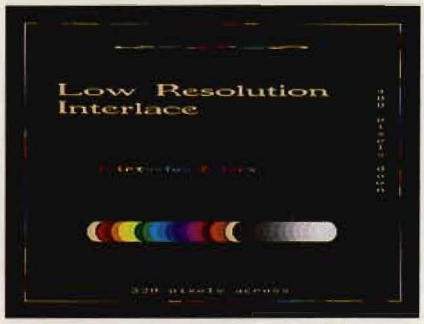
Resolution	Name
352 × 240	lo-res noninterlace overscan
384 × 240	lo-res noninterlace severe overscan
704 × 240	hi-res noninterlace overscan
352 × 480	lo-res interlace overscan
384 × 480	lo-res interlace severe overscan
704 × 480	hi-res interlace overscan

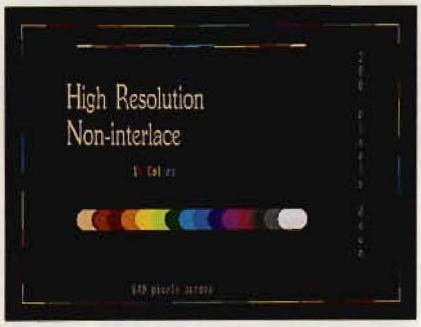
When you buy a software package that supports overscan, odds are that it will use one or more of these sizes.

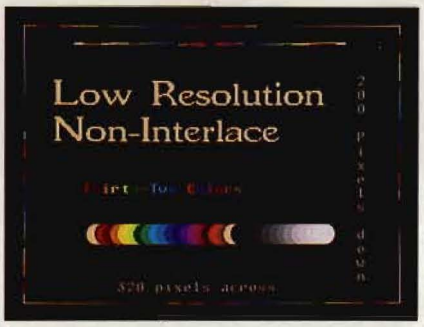
If all Amigas were found on this continent, that would be the whole story regarding resolution. However, foreign Amigas use the PAL television standard as a starting point for graphics. While most differences between NTSC and PAL machines are transparent to the programmer and user alike, there is one common difference. American users spot this difference when European software plunges below the bottom of the screen. European users note it when American software leaves the bottom fifth of the screen blank. While we all wait for high-definition television, the PAL viewer already has a clearer view than the NTSC user has because PAL has more vertical lines. PAL screens come in the following sizes.

Resolution	Name	*DPaint* name
320 × 240	lo res, noninterlace	Lo-Res
640 × 240	hi res, noninterlace	Med-Res
320 × 480	lo res, interlace	Interlace
640 × 480	hi res, interlace	Hi-Res

European overscan sizes are correspondingly larger. ▷







There's yet another fly in the ointment. Future Amigas will include the ECS, or Enhanced Chip Set. The following new video resolutions will be available: 640 × 480, 640 × 960, 1280 × 200, and 1280 × 400. These modes really milk the bandwidth of the hardware. Only 4 colors out of a fixed palette of 64 are available. The first two modes require a new monitor (multisync or Commodore *bisync*).

Bitplanes Mean Colors

A *bitplane* is a rectangular group of bits used by the Amiga to display pixels. Each bit in a bitplane corresponds to a pixel. Like all graphics and audio data on the Amiga, a bitplane must be located in the first 512K of RAM (or the first 1MB of RAM, if you have the Super Agnus chip, which will be part of the Enhanced Chip Set). A single bitplane allows for two colors: a background, specified by color register 0, and a foreground, specified by color register 1. Two bitplanes means that each pixel has two bits of information dedicated to it. Two bits can hold four values, so a two-bitplane screen can have 4 colors. Similarly, a three-bitplane screen can have 8 colors; a four-bitplane screen can have 16 colors; a five-bitplane screen, 32 colors; and a six-bitplane screen, 64 colors.

So far, the Amiga is limited to six bitplanes. Theoretically, an eight-bitplane (256-color) Amiga could be created without too much fuss, but it would be a tough job to shoehorn more bitplanes into the Amiga than that.

There are ways to work around this problem. All you need is a video card to plug into your Amiga 2000 and a monitor capable of handling it. Several such cards are currently available or are in the works. These cards bypass the Amiga operating system—you probably won't see a Workbench screen on one of them—so you'll still need your standard Amiga monitor to launch your 24-bit programs.

While the Amiga is limited by its six bitplanes, it's equally limited by its small number of color registers: There are only 32. If you tell the Amiga that you want to use six bitplanes, it automatically converts the upper 32 colors into half-intensity versions of the lower 32 colors. This configuration is known as *Extra Half-Brite* (EHB) mode. EHB is missing from most Amiga 1000s, but you can buy a new Denise chip to add that mode, if you like. So far, few programs use EHB; *DeluxePaint III* and *SimCity* are two that do.

A switch in BPLCON0 lets you bypass Extra Half-Brite and use Hold-and-Modify (HAM) mode instead. HAM changes the interpretation of bitplanes 5 and 6.

Bitplane 5	Bitplane 6	Result
0	0	bitplanes 1–4 specify color
0	1	bitplanes 1–4 specify blue; red and green are held
1	0	bitplanes 1–4 specify red; green and blue are held
1	1	bitplanes 1–4 specify green; red and blue are held

Resolution, Colors, and Palette
How the Amiga Stacks Up

Computer	Resolution	Colors	Palette
Commodore 64	160 × 200	16	16
	320 × 200	16	16
PC (CGA)	320 × 200	4	16
	640 × 200	2	16
PC (EGA)	640 × 350	16	64
	640 × 350	16	64
Atari ST	320 × 200	16	512
	640 × 200	4	512
Amiga	320 × 400	4,096	4,096
	640 × 400	16	4,096
PC (VGA)	320 × 200	256	262,144
	640 × 480	16	262,144
Mac IIci	640 × 480	256	16,777,216
	640 × 870	16	16,777,216

The first mode listed is the mode with the most available colors. The second mode listed is the mode with the highest resolution. Most computers have more modes than are listed here.

IFF

In 1985, Electronic Arts and Commodore got together to create IFF (Interchange File Format). This file format includes compression schemes and is flexible enough to satisfy just about everyone.

IFF isn't just for graphics—there are IFF formats for sound, text, animation, and other files. It's also not limited to the Amiga. *DeluxePaint* on the Apple IIGS and the IBM PC also use IFF.

Because of IFF, you usually don't have to worry whether a picture drawn with one paint program can be read by another paint program. There is one significant exception: *DeluxePaint* cannot read HAM pictures. To perform the conversion of HAM to other modes, you'll need an image-processing program like *PIXMate* or *Transfer-24*.

In this table, *held* means that these values are carried over from the pixel immediately to the left.

The most heartbreaking rule concerning bitplanes is that you can't have more than four bitplanes in hi-res mode. Hi-res screens are therefore limited to 16 colors. This means that HAM and EHB don't work in hi res. This was not an arbitrary decision on the part of the Amiga designers; there's just not enough DMA (Direct Memory Access) time to read more than four bitplanes in hi-res mode.

Sprites

Denise controls sprites. Whether you realize it or not, you already know a little bit about sprites: The Intuition mouse pointer is a sprite, unlike the mouse pointers on the Macintosh and Atari ST (which are drawn onto the bitmapped screen), but much like the GEOS mouse pointer on the Commodore 64.

The Amiga has eight sprites, each of which is three colors (plus transparent). Each sprite is 16 pixels across. Each sprite pixel is the size of a lo-res playfield pixel. A sprite can be any arbitrary number of pixels tall. Each of the eight sprites can be reused any number of times. There must be at least one vertical line between uses of the same sprite, though.

The sprites come in pairs—sprites 0 and 1, 2 and 3, 4 and 5, and 6 and 7. Each pair shares a set of colors—palette colors 17–19, 21–23, 25–27, and 29–31, respectively. You can attach the two sprites in a pair to make a combined sprite that can display 15 colors, plus transparent.

Sprites move over the background without disturbing it. Virtually all game machines have sprites, but sprites can be useful in nongame applications as well—for cursors, pointers, and so on.

The Two-Screen Trick

The Amiga is capable of displaying two screens at once, one overlaid on the other. One screen uses the odd bitplanes; the other uses the even bitplanes. The screens are individually scrollable.

Since each of the screens can use 8 colors, you'll get a maximum of 16 different colors on the screen. The name of this mode is *dual-playfield mode*. The odd bitplanes use color registers 0–7, and the even ones use registers 8–15. You'll probably see this mode only in games.

You can think of this mode as one big sprite overlaying a screen.

Palettes

The Amiga has a palette of 4096 colors. A color is chosen by specifying the red, green, and blue contents of the color. Values for red, green, and blue range from 0 to 15. That's 16 intensities each, for a total of 4096 colors (16 * 16 * 16). Red, green, and blue are the primary colors of projected light. Mix red and green to get yellow, red and blue to get magenta, green and blue to get cyan, and all three to get white.

Palette selection is critical. When you draw a picture from scratch with a paint program, start with the default palette and modify it according to your needs. Most paint programs choose the palette themselves when you're converting an image from one mode to another. If you have several images you want to combine, it's best if they all have the same palettes.

Palette and Resolution Changes

The palette and resolution can be changed "on the fly"—as the screen is being drawn. These changes are performed by the copper list. The operat-

Product Information

Datastorm
Visionary Design Technologies
45 Whitehorn Cres.
North York, Ont.
Canada M2J 3B1
(416) 497-0833

DeluxePaint III
Electronic Arts
1820 Gateway Dr.
San Mateo, CA 94404
(800) 245-8525

Digi-Paint III
(includes *Transfer-24*)
Digi-View
NewTek
115 W. Crane St.
Topeka, KS 66603
(913) 354-1146

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Space Ace
Readysoft
P.O. Box 1222
Lewiston, NY 14092
(416) 731-4175

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

Sculpt 3-D
Centaur Software
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Redondo Beach, CA 90278
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Shadow of the Beast
Psygnosis
2150 Executive Dr.
Addison IL 60101
(708) 620-4444

SimCity
Maxis Software
953 Mt. View Dr.
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Lafayette, CA 94549
(415) 376-6434

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

More Colors on the Horizon

Would you believe that a new monitor cable could give you three new graphics modes? Black Belt Systems has devised a gadget that plugs into your Amiga's RGB port and your Amiga monitor. It works with any model Amiga (and your current monitor) and gives you these new modes:

- 256-Gray-Scale Mode (colors: 256; palette: 256)
- 256-Color Mode (colors: 256; palette: 16 million)
- HAM-E extended HAM mode (colors: 16 million; palette: 262,144)

In the HAM-E mode you get up to 262,144 colors at once, with 236 true color registers available to eliminate the "banding" and "fringing" problems currently seen in some HAM images.

Each of the new modes takes a four-bitplane hi-res screen and makes it into an eight-bitplane lo-res screen. Since the screens are really hi-res screens, you can drag them just as you can normal Amiga screens. Overscan and interlace both work fine with the yet-unnamed gadget.

Display memory can be manipulated by the blitter normally, and the system software treats the screen like a 16-color hi-res screen. The display is as fast as the regular system display, making it possible to show animations in the new modes.

Although most display programs can show files that use the new modes without any problems, programs that generate graphics files (like paint programs, ray-tracers, and digitizer/scanner software) will need slight modifications to work. Black Belt has contacted all of the major manufacturers of such software so that hopefully these modifications could be made by the time the product is in general release.

Developers' units were expected to ship in January, with FCC-approved consumer units expected in February. Price? $300. Watch *Amiga Resource* for more news.

—Sheldon Leemon and Rhett Anderson

ing system takes care of these changes for you when you pull down Intuition screens. For instance, if you're using a HAM paint program, you can pull down the screen to show part of the Workbench screen behind. The operating system inserts some blank space between the lines so that it has time to change the resolution, colors, and pointers.

Programmers can also make copper-list changes. The most common are rainbow effects, but some new graphics modes change the palette to improve the appearance of Amiga screens. See "New Modes," below. Some games change the palette colors to get 128 or more colors on what would normally be a 16-color screen. Examples are *Datastorm* and *Shadow of the Beast.*

Dithering

Although hi-res mode is limited to only 16 colors, more can be achieved with the careful use of dithering. Hi-res pixels are small enough so that two colors placed next to each other blend into a single color.

Digi-View (and the similar *Transfer-24,* which comes with *Digi-Paint III*) does a good job of dithering hi-res screens. You can draw dithered screens in *DeluxePaint III* by setting the grid to 2 × 2 and using checkerboard patterns.

New Modes

In the summer of 1989, I developed Sliced Ham mode. Sliced Ham changes 15 color registers (the background color register, color 0, is set to black at the top of the screen) on every scan line of an otherwise-normal HAM screen.

Sliced Ham does a good job of getting rid of the fringes that are commonly found in HAM screens. Currently there are programs that convert GIF (CompuServe's common graphic format) pictures, Impulse's RGB4 format pictures (produced by *Turbo Silver*), and *Sculpt 3-D*/Mimetics framebuffer files to Sliced Ham. *V,* the *Amiga Resource* picture viewer, displays such Sliced Ham pictures, which you can find on many bulletin boards and online services.

Sliced Ham does cause your Amiga to run a bit slow—about 10 percent slower than normal. It does not work in overscan mode.

NewTek has added similar capabilities to its Digi-View 4.0. NewTek calls its modes Dynamic HAM and Dynamic Hi-Res.

Dynamic HAM is a derivative of Sliced Ham. Dynamic Hi-Res works in hi-res overscan mode. This mode requires so much bandwidth that multitasking must be turned off during the display.

ASDG has further improved the technique with AHam and ARes, which are based upon Dynamic HAM and Dynamic Hi-Res. Truly stunning overscan pictures can be made in these modes using the Sharp JX-100 color scanner.

Of Genlocking and Things

The Amiga has a host of other graphics capabilities. It can *genlock* (sync its graphics signal with that of television signals to overlay Amiga graphics over live or taped TV). It can smoothly scroll its bitplanes. It can detect collisions between graphics elements.

The book on Amiga graphics is being rewritten daily. You may have not learned *everything* that you ever wanted to know about Amiga graphics, but with the books listed below, you can.

Amiga Desktop Video, by Steven Anzovin—$19.95
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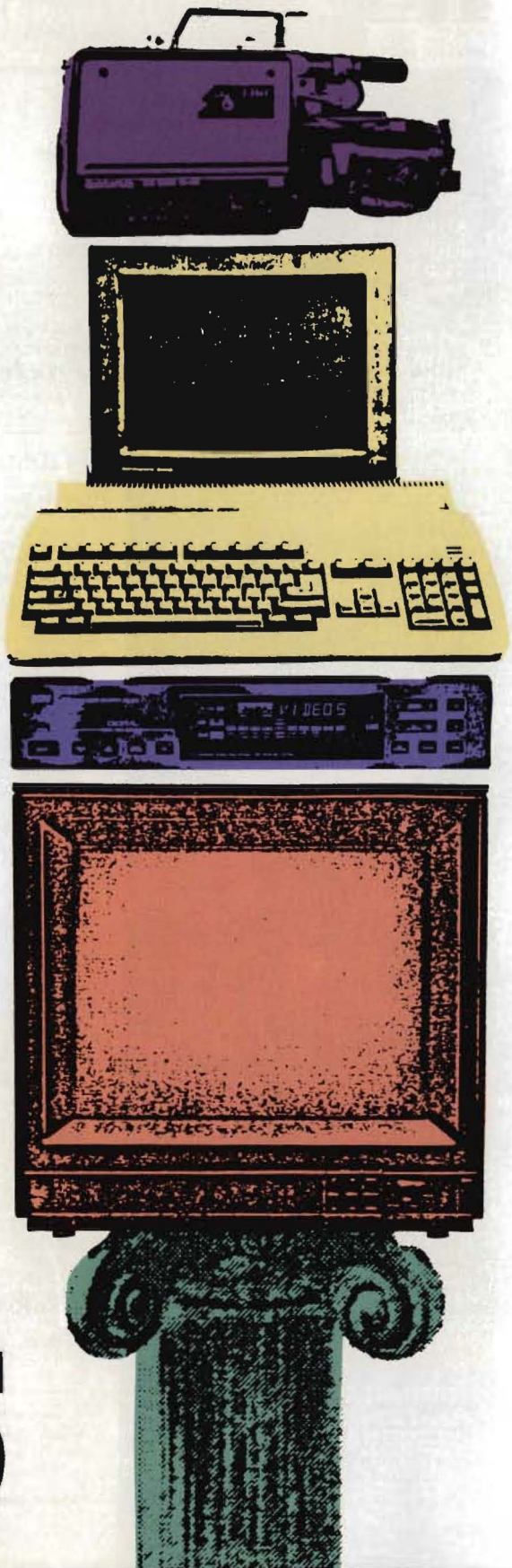
Fred Hurteau

Interested in desktop video but don't know where to begin? This article explains all of the important video terms—such as *interlace*, *genlock*, and *NTSC composite*—and provides some hints on what type of hardware you need to get started.

DESKTOP VIDEO FOR BEGINNERS



You might say that the Amiga created desktop video. It was the first truly affordable computer that delivered graphics good enough to be put down on tape. And with the recent explosion of inexpensive video equipment, such as VCRs and camcorders, it's no wonder that more and more people are interested in creating their own desktop video graphics—whether for professional use or simply for entertainment.

Understanding what desktop video can do for you isn't difficult. You don't need any formal training or in-depth knowledge. All you really need is an understanding of some basic terms. In this first installment of our two-part desktop video series, we'll discuss the key concepts and terms that are used in the video field. These concepts apply no matter what type of recording equipment you use (VHS, Super VHS, Beta, 8 mm, 3¼-inch Umatic, and so on). So, once you know what it's all about, a whole new world of entertainment, creativity, and imagination will be yours for the taking.

Television and Video Signals

You don't need to know how a TV creates its picture to do desktop video, but this knowledge will help you understand why video equipment works the way it does and why certain standards came into being.

To allow the screen to light up, TV picture tubes have a phosphorescent coating inside. When an electron beam strikes this coating, it excites the phosphorous and makes it glow. The electron beam, created from electronic information in the video signal, scans the picture tube in horizontal rows called **scan lines** in much the same way your eyes scan a line of print when you're reading a book. Starting at the top, it scans across row after row until it reaches the bottom of the tube. Then it goes back to the top again, just as your eyes jump to the top of the next page when you've finished reading a page. One complete scan of the video tube is called a **field**.

The tube is scanned from top to bottom 60 times per second, but only half of the scan lines are excited in one pass. The electron beam excites the odd-numbered scan lines on the first pass; then it excites the even-numbered scan lines on the next pass. It therefore takes 1/30 second for both scans to place the entire image on the screen.

This double scanning is called **interlacing** because the two scans are laced together to make a single complete screen image. (Your Amiga does the same thing to generate screens that are 400 or more pixels tall.)

Videotape and camera signals have the same characteristics as the TV picture has. Video signals contain 30 frames per second, where a **frame** is made from two video fields, and each field lasts 1/60 second. One field contains the video information for the odd scan lines, and the other field contains the even scan lines. The two fields make one frame, or one full screen image.

Your Computer

To be compatible with other video equipment, you should always run your Amiga in interlace mode. The computer will not use an interlaced screen mode unless you tell it to, so be sure to use the 320 × 400 or 640 × 400 screen modes when producing graphics that are to be recorded onto videotape.

Noninterlaced graphics will cause vertical squiggles in the middle of the screen when played back from tape, and some monitors and other equipment will not lock properly to noninterlaced signals. For Amigas with only 512K RAM, producing graphics in 640 × 400 mode will be a problem, but 320 × 400 mode should work fine. With a one-meg machine, using 640 × 400 is much easier.

Computers were originally designed for text and information processing. To keep text from running off the side of the screen where it can't be read, computer images are **underscanned**—that is, the electron beam starts and stops before reaching the screen's edge, leaving a blank border. But TV pictures go to the very edge of the tube, and computer graphics for video need to be compatible with this format.

Overscan takes care of this problem, allowing an image to be scanned past the screen's edge. You should almost always use an overscan screen mode for video graphics. All *good* video application software supports overscan screens. The 352 × 480 and 704 × 480 resolution screens have become today's accepted norm for Amiga overscan graphics.

Overscanned images use up more RAM than do underscanned images. Feature-packed graphics software also tends to take up more RAM. That's why a RAM expansion is the second most important purchase for the desktop video enthusiast.

RGB vs. Composite

Amigas have two kinds of video output: RGB and composite.

RGB stands for the primary colors of transmitted light rays: red, green, and blue. Your Amiga sends the RGB monitor a separate color signal for each of these colors, and the picture tube's colored phosphorous coating glows in various intensities according to these signals, making up all the possible color combinations in a color picture. Along with the color signals, the computer sends video **sync signals** to your monitor. These sync signals are important because they tell the electron beam when and where to begin drawing the scan lines.

Because each of the red, green, blue, and sync signal components are sent through individual wires in your RGB monitor cable, you get a very clean, crisp image. The composite video signal is a different story.

The **composite** video signal is a combination of the red, green, blue, and sync signals. All of this information is transferred via one signal over a single wire. But composite is inferior to RGB. Here's why: When the technology to produce and transmit color TV signals was developed in the late 1940s, all televisions were black-and-white. This meant a way had to be found to make the red, green, and blue color signals compatible with existing black-and-white TV sets. The NTSC (National Television System Committee) was formed to develop a new signal standard. And to make the new color signal work on black-and-white televisions, compromises were made in the picture quality.

The result was the NTSC composite video signal standard. NTSC composite is still the U.S. standard for video, so you must use a composite signal for videotaping. (Note: Super VHS and other non-composite formats differ in how

Desktop Video For Beginners

they are recorded on tape and transferred between equipment, but the image is put on the TV tube the same way. Many foreign countries use other standards like PAL and SECAM.)

Amiga 1000s provide color composite output which is quite acceptable for home video use. However, the Amiga 500's and 2000's/ 2500's composite output is black-and-white only. To get a color composite signal from these models, or a better quality composite output from the 1000, you must encode the Amiga's RGB signal.

Encoders

An **encoder** is an electronic device which takes your Amiga's RGB and sync signals and combines them into the proper NTSC composite signal which can be sent to your VCR for recording. Good encoders will allow the RGB signal to pass through so you can retain use of your RGB monitor.

There are several encoders made for Amigas ranging from $49 to $395. Some provide RF modulated signals (for direct connection to TV sets) and/or chroma and luma signals along with composite video. Some come as internal boards for the 2000, while others are external devices. Signal quality can vary also, though most will be quite acceptable for home video use. Be sure an encoder works with *your* model Amiga before buying. However, if you're already planning to get a genlock device, you may not need an encoder.

Genlocks and Keying

Many genlocks are also encoders, but an encoder is *not* a genlock. The reason for needing a genlock has to do with the sync signals discussed earlier. Remember, sync signals define the timing for the scan lines. To combine two video signals, such as mixing computer graphics with the images obtained from a videotape or a video camera, you *must* synchronize the signals from each source of video. The videotape or camera signal has its own sync component just as the computer has its own.

Think of sync signals as people marching: If they were all out of step it would look quite ridiculous, with heads bobbing up and down everywhere. But when all the marchers are perfectly in step (in sync), all the heads and arms and legs move in unison. The same is true for two different video signals. Their sync signals must be in perfect step with each other if you want to combine them. If they're not synchronized, there will be two different sync signals, and the electron beam won't know which sync to follow when scanning the screen, and the VCR won't know which sync signal to use to define the fields and frames on the videotape.

The **genlock** (generator locking device) takes care of this problem. It hooks to your Amiga and takes control of the computer's video sync signals. When you feed a second video signal into the genlock, such as video playing from your VCR, the genlock senses this and alters the computer's sync signal to beat in time with the VCR signal. When they are in sync, the genlock can combine the two signals with no problem.

A genlock's only true purpose is to synchronize the two signals, but most genlocks perform two other functions. One is to encode the Amiga's RGB signals into composite video. The second function is a *keyed* output.

Keying two video signals means superimposing the two images. Since the genlock already encodes the computer's RGB and synchronizes it with an external signal, it's not very hard for it to key them together. So for the price of a genlock, you can usually get both an encoder and keyer as well.

Things to Look For

There is more than one type of keying. The kind the weatherperson uses on TV to stand in front of a computer-generated weather map is **chroma keying,** where

Important Terms

Chroma Keying Replacing a particular color found in one video source with the image produced by another video source.
Chrominance The color portion in a video signal.
Composite Video A video signal where the red, green, blue, and sync signals are all combined. Used by standard TVs and VCRs.
Dissolve When one video image is gradually replaced by another.
Encoder A device that takes your computer's RGB signals and combines them into composite video.
Field Half of a video frame; the scan lines that are drawn every 1/60 second.
Frame A complete video image created by two interlaced fields.
Genlock A device that syncronizes two separate video sources into one stable signal or picture. Genlocks usually offer some form of keying as well.
Interlace To combine two separate fields into one frame or picture. The Amiga uses interlacing to generate screens that are 400 or more lines tall.
Keying Superimposing two video images by replacing part of one image with the other image.
Luminance The brightness level in video.
Luminance Keying Taking a video image and replacing the colors that are below a particular brightness level with the image produced by another video source.
NTSC (National Television System Committee) A group set up by the Federal Communications Commission to set standards for video broadcasting.
NTSC Composite The standard video signal used by the U.S., Canada, Japan, and several other countries.
Overscan Extending the video image out past the screen's edge.
RGB (Red, Green, Blue) The video signal used by the Amiga, where each color signal (red, green, and blue) is transferred on a separate line.
Scan Lines The horizontal lines that make up a picture on a TV or monitor, drawn by an electron gun scanning across the picture tube.
Sync (Synchronization) The signal that controls the timing in a video picture. Sync pulses control the horizontal and vertical movement of a TV's or monitor's electron gun.
Underscan Images that do not extend to the edge of the screen, thus leaving a border. By default, the Amiga's screen is underscanned.

Aux1, and Aux2—as are the outlets on the back, so it's easy to remember which switch controls which piece of hardware.

With a computer, a monitor, a frame grabber, two printers, and a modem, I was shy one outlet when I hooked up with AmiSound at home. In a not-so-ideal solution, I connected both printers to the same AmiSound outlet using my old, six-outlet power strip. For most people, however, I suspect five outlets is plenty.

As an amplifier, AmiSound is great. When connected to two fair-sized boom-box speakers, AmiSound's 12-watt amplifier (6 watts per channel) provided solid performance. (AmiSound does not come with its own speakers, but AmiTech does offer a set for an additional $29.95 plus shipping.) When cranked past the halfway mark, the controls let loose a respectable amount of volume (for the sake of your ears *and* your neighbors, I recommend that you keep the knobs below nine-o'-clock). There was some background noise, but most of that originated from the Amiga and not from the amp.

For convenience, AmiSound earns high marks. Having the power switch to all of your equipment plus the controls of a built-in audio amplifier placed directly in front of you is really nice. But is it worth the $99.95 suggested retail price?

Most mail-order catalogs offer the same basic product, minus the amplifier and decals, for only $29.95. To me, $70.00 seems too much to pay for the addition of an audio amplifier. If you're comfortable using a soldering iron and a drill, you could easily build one of these yourself (and probably do a better job; the holes for the RCA jacks are a bit ragged and off-center on my unit, and many of the soldering joints are burnt with rosin).

If you can get a better price or you don't mind paying the extra money, AmiSound is truly a useful item. But for a modified Taiwanese "Power Supervisor" (AmiTech didn't bother to change the unit's original packaging, which still tou identity), I th pay.

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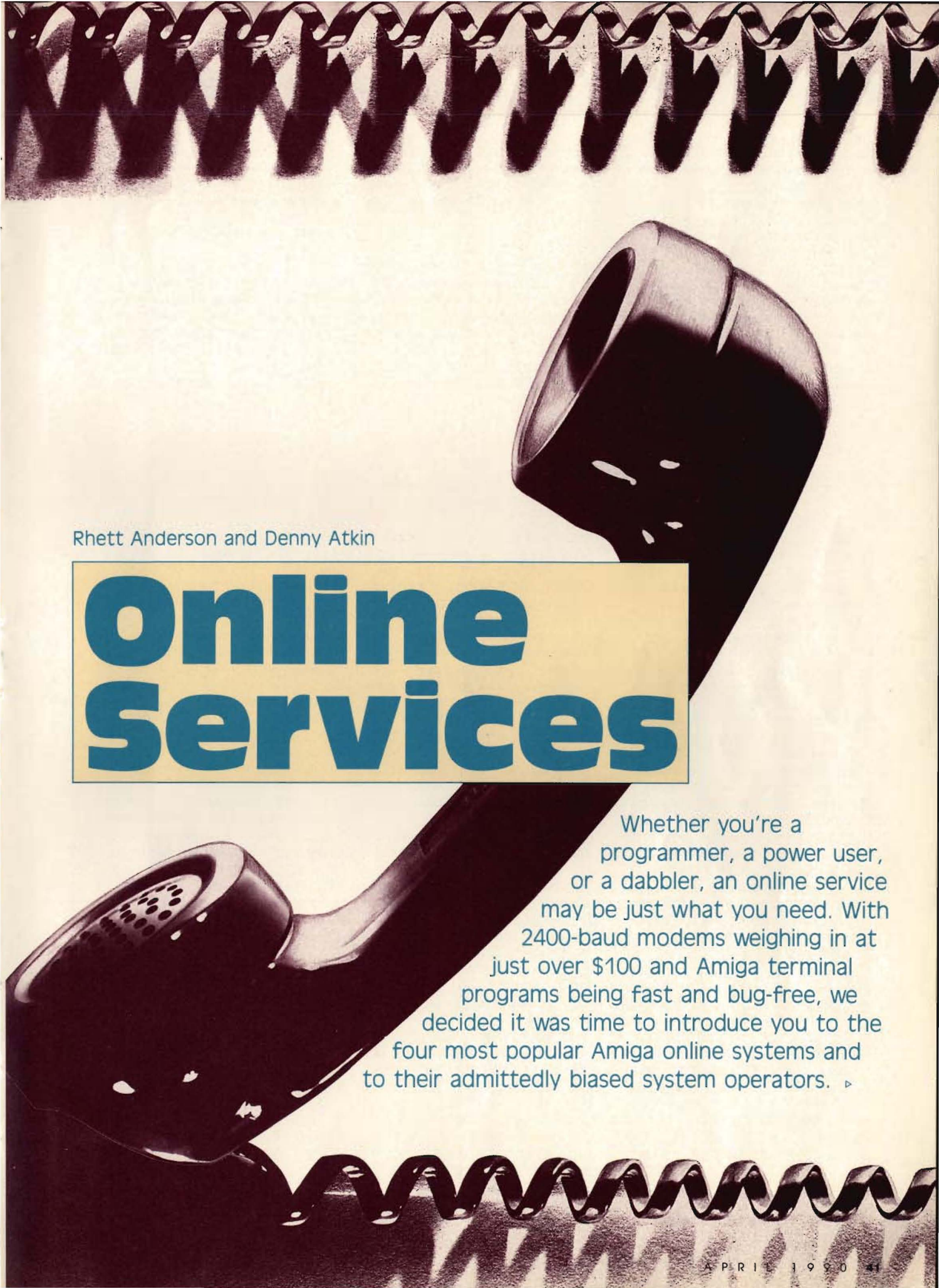

Rhett Anderson and Denny Atkin

Online Services

Whether you're a programmer, a power user, or a dabbler, an online service may be just what you need. With 2400-baud modems weighing in at just over $100 and Amiga terminal programs being fast and bug-free, we decided it was time to introduce you to the four most popular Amiga online systems and to their admittedly biased system operators. ▷

Computing is a great hobby, but it's also a very technical one. When you run into a tough spot, you may turn to books, magazines, your local Amiga dealer, or a user group for information. But there's another place to which you can turn—an online telecommunications service like BIX, CompuServe, GEnie, or Plink.

Online, you'll find the latest shareware programs, source-code and programming files, news, mail, and more. If you've just created a killer animation, a *Sonix* score, or a hot new directory utility, you can post it online and share it with thousands of other Amiga users. And in live online conferences, you can get hints, tips, and the latest news and gossip from well-known programmers and writers.

Let Your Fingers Do the Talking

To get online, the first thing you'll need is a modem. A *modem* (short for *mo*dulator/*dem*odulator) lets you connect your computer to your phone line. If you don't have a phone outlet near your computer, you'll have to either move your computer or have an extra phone line installed. Most modems have a pass-through jack on them. This means that you plug your modem into the phone line, then plug your phone into your modem. You can then use your phone normally when you're not online.

Your modem works by sending out and listening for specific sets of tones. Currently, modems are treated in the same way as phones; that is, you don't have to pay your phone company service charges for using your modem. However, the FCC occasionally considers adding a sur-

BIX
The Byte Information Exchange

BIX is an important resource for Amiga users, especially technically minded ones. BIX's main strength is its technical information base. But it has much more.

BIX's activities are built around conferences, separate message areas that deal with specific aspects of computing. Each conference supports a modest number of topics. Within each topic are many discussion threads that you can read in either date or reference order. I have recently arranged a lineup of conferences designed to enhance BIX's signal-to-noise ratio. Willy Langeveld has been moderating the amiga.user conference for several years. We've made his conference the flagship of the Amiga Exchange. We keep the less technically intimidating discussions there. Charlie Heath's amiga.sw and my own amiga.hw conferences cover the developer-level software and hardware details.

We discuss the tools and techniques of the Amiga artist in Dave Quick's amiga.arts conference. Dan Ten Ton's multilingual talents make amiga.int, our international Amiga conference, a natural place to discuss the many international issues surrounding the Amiga. We hold many of our special events in the amiga.special conference. And the old amiga conference is still online in read-only status for those interested in mining it for old lore and discussions. Our message base goes back to 1985 in many topics.

Commodore has made BIX its first line of public vendor support. Andy Finkel and Carolyn Scheppner of Commodore Amiga Technical Support (CATS) maintain the Commodore-sponsored conferences. Amiga.dev is open to anyone wishing to communicate with CATS to present ideas or get help. The amiga.com conference is the closed commercial-developers conference. And there is a small amiga.updates conference for certified developers as private download support for OS updates.

In addition, many other vendors maintain support conferences. Microsmiths, Lattice, Gold Disk, M2S, ASDG, Radical Eye, Microway, and Microbotics are a few of the shining examples.

Currently, the Amiga listings area is maintained in common for all the non–Commodore Amiga Exchange conferences. The Amiga.dev, amiga.com, and amiga.updates conferences have their own private listings areas for downloading CATS examples and new releases. We support XMODEM, XMODEM-1k, ZMODEM, and Kermit protocols.

You can access all this for only $39 per quarter if you dial directly into Lexington, Massachusetts. This is based on a $156 annual fee. If you elect to use Tymnet access, you can choose the subscription deal for Tymnet evening access and spend no more than $20 a month for unlimited access within the continental U.S. In Canada, the access fees through Tymnet run $6 per hour for evening hours. For prime-time Tymnet access, you will pay $6 per hour in the continental U.S. and $11 per hour in Canada. You also can access Tymnet from most data packet networks worldwide. Arrangements vary considerably depending on the country. (We are quite proud of our international access and membership.) Depending on availability of local Tymnet nodes, access is at 300 baud through 2400 baud, but some limited 9600-baud access exists. All of this is available at the same $20-per-month rate.

To join BIX and the Amiga Exchange, you log on through Tymnet to bix. Tymnet generally likes eight bits, no parity, and one stop bit if you strip off the high bit, or seven bits, mark parity, and one stop bit. (Many programs work with seven bits, even parity.) Once at BIX's *Name?* log-on prompt, type *bix.amiga.* BIX will then lead you through an online sign-up procedure. Have handy your credit-card number or materials to make other payment arrangements.

For more information about rates or help in gaining access to BIX from almost anywhere in the world (Moscow included!), call (800) 227-2983 from anywhere in the U.S. (except New Hampshire) and Canada or (603) 924-7681 from elsewhere. We'll be looking forward to BIXing with you on the service that doesn't nickle and dime you to death.

Joanne Dow

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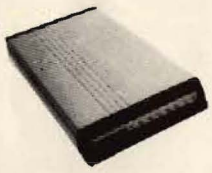

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CompuServe

With more than 15,000 members, CompuServe's three AmigaForums have the largest membership base of any of the networks. Any question you have about the Amiga, from programming to games and everything in between, can be answered by some of the most experienced sysops and users in the Amiga community.

Between them, AmigaTech and AmigaArts have over 25 separate message sections, and they are among the most active message bases of any of the networks. There are about 150–250 messages per day in AmigaTech alone. You can get advice on which hard drive is best, hints on the latest games, and tips on how to use your productivity software most effectively, or you can even just shoot the breeze.

AmigaVendor lets you talk to the vendors of some of your favorite Amiga products. Representatives from ASDG, Syndesis, Impulse, Brown-Wagh, New Horizons, and other companies are there to answer *your* questions. Vendors will tell you about new products and upgrades to existing products, and they'll help you make intelligent decisions about what products to purchase. Each company has its own file library, so you can get support files and patches.

Informal nightly conferences let you talk in realtime to people you've been exchanging messages with. Through conferencing, you can get instant answers to your questions. We have nightly conferences. Just drop in!

Regular formal conferences let you talk to industry leaders. Previous conferences have included speakers such as Mike Roth, of Lattice; Jay Miner, the father of the Amiga; Dale Luck, of the original Amiga design team; Bill Hawes, author of *ARexx;* and more. Many formal conferences even have door prizes.

The AmigaForum has an extensive library of public domain, shareware, and freely distributable software. There are over 25 different library categories with every type of software imaginable. We've even got a special section set up for updates of software from Commodore. Need the latest update to Workbench? If Commodore has released it to be distributed, we've got it. Uploading to CompuServe is free, so if you have something you want to share, it won't cost you anything to upload it.

CompuServe supports many downloading protocols including Kermit, XMODEM, YMODEM, CIS A, and CIS B+. The protocol of choice among members is CIS B+. It's the fastest protocol available and has a very important feature: resumable downloads. If you accidentally become disconnected, CIS B+ protocol will save the part of the file that you've received and start the download again.

You can make the most of your online dollar by using the program *WHAP!,* which was written by two of the sysops in the AmigaForums. It will automatically log you on, get any messages you want to get, upload messages or files you want to send, and download the files you want. *WHAP!* lets you decide exactly what you want to do before you get online.

And, of course, CompuServe has a lot of other services which might interest you: online news, stock reports, games, online shopping and much, much more. You might not use those services every day, but it's really nice to be able to use them if you'd like to.

In choosing an online service, you'll have to consider how much it'll cost you to be online. CompuServe's pricing is very competitive. Consider this: Other services make you wait to log on until a certain time to get special rates. If you log on during their prime time to get something new that you really want to have, it will cost you considerably more. On CompuServe, prices are the same 24 hours a day, seven days a week. And if you're using *WHAP!,* you'll get even more bang for your buck, because you'll be getting information faster than you can from any other service and you won't be wasting money needlessly.

You can think of the AmigaForums as a kind of giant user group—just the place to get great software, have your questions answered, and even help other folks. Our members are experts on every aspect of the Amiga. Most of all, our members are people just like you—just plain ol' regular folks, people who have a common interest in the Amiga.

Steve Pietrowicz

charge, which would likely be passed on to consumers.

Call waiting can be a problem for modem users. The clicking sound made by the call-waiting service can interfere with communication. In some exchanges, you can dial *70 before your number to disable call waiting—for example, *70,555-1234 (the comma is a half-second delay). Or better yet, if your terminal program lets you change your modem dial string (most do), change the string ATDT to ATDT*70, and it will disable call waiting no matter what number you call. If you find that call waiting is still a problem, you might consider dropping the service.

When you buy your modem, be sure it supports at least 2400 baud. The faster speed will save you time and money in the long run. Popular modems are made by Hayes, Supra, and Avatex. If you have a 2000 or 2500, consider the Supra 2400zi internal modem, which plugs into one of your expansion slots. This will let you keep your serial port open for MIDI interfaces and other serial devices. (Some older software does not work properly with the internal modem.) If you buy an external modem, be sure to get the proper interface cable. The 500 and 2000 both use standard IBM PC/XT cables, but the 1000 requires a custom one.

Software and Services

Next, you'll need some terminal software. First, try out a shareware program like *JR-Comm* or *Access.* You can get one of these programs from a user group software library or from one of the shareware disk libraries advertised in this magazine. You can also buy a commercial product. Some of the most popular are *A-Talk III, Baud Bandit,* and *Online! Platinum Edition.*

All of these programs allow you to upload and download software. When you upload, you're sending programs or text files from your Amiga to the online service. When you download, you're copying one of the many files from the service onto your disk drive (or ramdisk or hard drive). The transferring of files is one of the main reasons people subscribe to online services. Different services support different transfer protocols. Be sure your communications software is compatible with the service you choose. ▷

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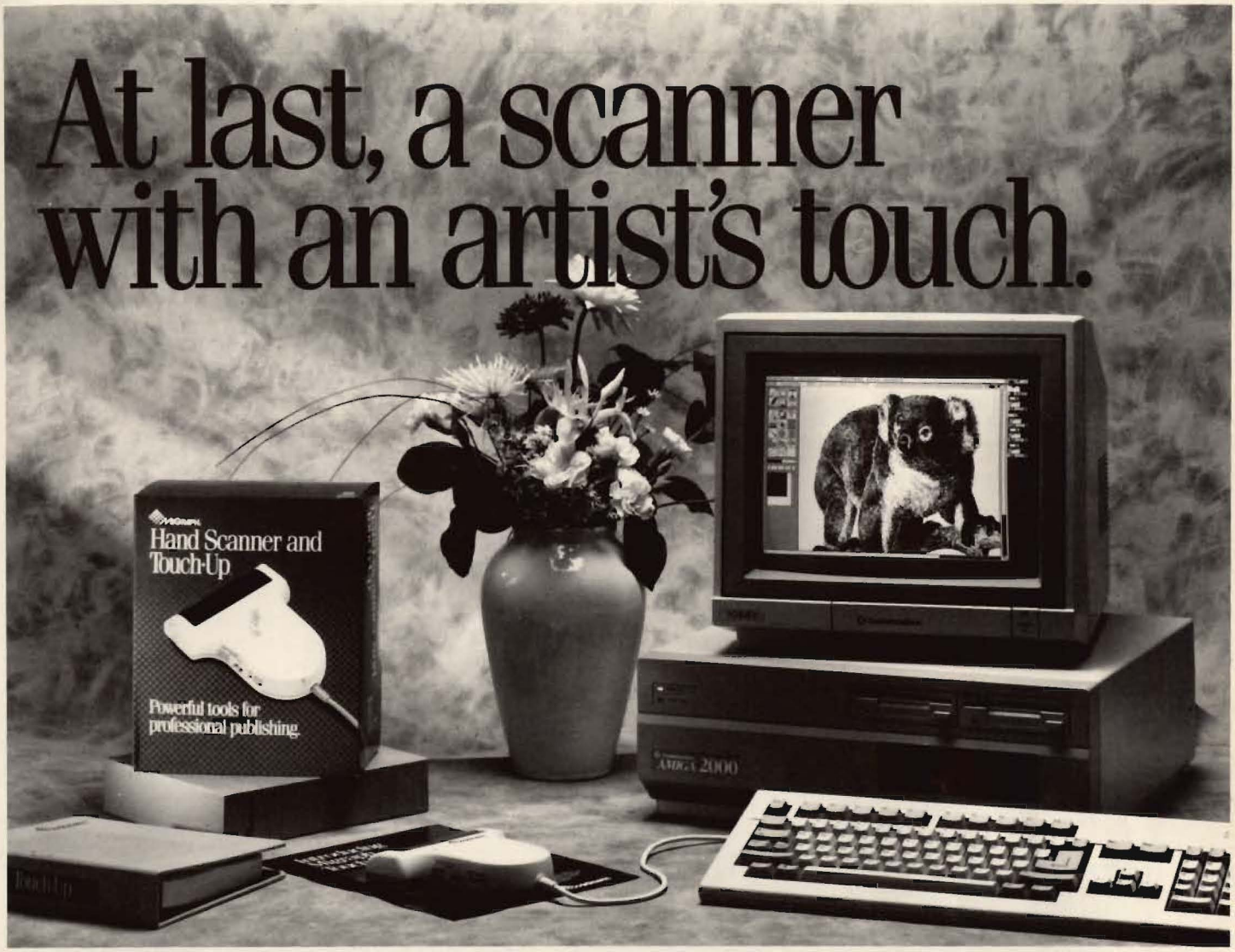

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And which service should you choose? That's what this feature is all about. On these pages, you'll read insider views of each of the four most popular Amiga services. The insiders will tell you all you need to know about logging on and getting up to speed. Each of the services has its own identity. If the first one you try doesn't meet your needs, try another.

Once you're online, be sure to say hello to the *Amiga Resource* staff. You'll find a list of our user names in "*Amiga Resource* Online," which accompanies this article. ▲

Amiga Resource Online

BIX		**CompuServe**	
Denny Atkin	DENNY A	John Foust	76004,1763
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Randy Thompson	RANDY	Rob Peck	ROB PECK

GEnie

Open that lamp and put the GEnie in it to work for you. GEnie gives you news, information, fun, and friends at an affordable price. GEnie is available through the private General Electric Information Services telecommunications network to locations throughout the entire United States. You'll also find people from Canada and Japan on GEnie.

Amiga owners will be pleased to find a large and active group of fellow Amigans in the Amiga RoundTable on GEnie, The *StarShip*. At the *StarShip*, you'll find a large library of Amiga software, an area for messages, and a realtime conference room for classes, special guests, and special-interest groups to meet. Pro/Am is the separate area set aside for Amiga programmers. In addition, GEnie offers a full range of electronic services. From financial information at Dow Jones or the Schwaab RoundTable to instant access to *The New Grolier Electronic Encyclopedia* or airline schedules at Easy Sabre or OAG, GEnie has something for you.

You'll find the newest experience in gaming on GEnie in the award-winning and popular multiplayer games. Join other real players and match your skills and wits in some of the newest applications of popular games. You're not playing against the computer or by yourself in these games, you're playing with others or against them, using the magic of telecommunications to bring your friends (and your foes) right to you.

One of the most popular games on GEnie doesn't require any emulation or special software to play. It is called *GemStone III: Shadow World* and is a multiplayer, realtime role-playing world. Simutronics has just redesigned it from the ground up. *GemStone* is a text game, based upon the popular gaming system by Iron Crown Enterprises, *Rolemaster*. *GemStone III* takes place in Iron Crown's *Shadow World* and lets you advance the character you play in your own time frame, with an electronically networked role-playing game.

Kesmai's *Air Warrior* gives you complete control of the airplane of your choice, while you battle other pilots from across the country in a graphic flight simulator. The very best pilots you find in the skies over *Air Warrior* are flying with Amigas. With a little practice, you'll be shooting down everyone, too. This is one of those amazing things everyone should try at least once.

You'll also be able to play backgammon, checkers, blackjack, and poker with clean graphics against other players at RSCARDS. Poker is my favorite, and—watch out!—I may not know much about playing, but I'm *very* lucky. Catch the *StarShip* poker night on the first Monday of every month and win some prizes.

GEnie has all the features you come to expect from a full-service network. You can leave private mail and public messages, download, talk to people at all hours of the day or night on the Chat Line or have your own personalized clipping service grabbing news items and sending them to your mailbox. GEnie recently announced ZMODEM downloading, which offers both speed and a fantastic recover option for properly written ZMODEM implementations. If your download is accidentally interrupted, you can call back and request the download again. It will start from the last good byte in your file.

GEnie is available 24 hours a day. United States rates are $5 per hour for 300 baud, $6 per hour for 1200 baud, and $10 per hour for 2400 baud, evenings (6:00 p.m. to 8:00 a.m.), all day on weekends, and all day on holidays. If you want to open up the lamp and put that GEnie to work for you, here's all you need to do:

- Set your terminal software to 300 or 1200 baud, with local echo (or half duplex) ON.
- Use your modem to dial 1-800-638-8369.
- When your modem has connected, enter HHH.
- At the log-on prompt, U#=, enter the special sign-up ID and password, XTX99642,AMIGA.
- Have your billing information ready. GEnie will bill to your credit card or to your checking account with CheckFree.
- Using the above special sign-up ID, the usual $29.95 subscription charge will be waived.

If you experience any difficulties, you may contact GEnie Client Services at (800) 638-9636 and talk to someone there.

When you get your personal GEnie membership, drop by the *StarShip* and introduce yourself.

Deb Christensen

American People/Link

"King of the Hill" is how one leading Amiga-industry analyst referred to People/Link's AmigaZone when comparing its resources to those offered by the other popular services. Other experts agree: The AmigaZone offers the Amiga telecommunications users more for their money than anyplace else.

The AmigaZone is designed as three main areas under one roof. First, there's Notices. This is a group of 15 special-interest sections, similar to a BBS, where members may read and post notices having to do with anything Amiga-related, from simple questions to intricate programming and hardware discussions. The notice areas are lively and informative and a great way to get help when you need it.

Next, there's Libraries. We have what we believe is the most complete and up-to-date national online library of Amiga files in existence. There you'll find files of every possible description, from games to graphics, animations and sounds, programmers' source code, icons, commercial demos, utility programs of all types, and a very large selection of *ARexx* programs. Many popular software authors upload their new creations to the AmigaZone first. Most files are archived using popular compression programs to make them as small as possible, saving you online time and money. *Every* file is sysop-tested to make sure it works before you can download it.

Downloading is simple and fast, owing to our slick WXMODEM file-transfer protocol which is implemented in most popular terminal software.

Next, there are the Live Conferences. In our 100-line conference area, you'll find something going on almost every night of the week. On four nights of the week, we have conferences with themes: Music & MIDI, Programming, Graphics & Video, and Games. These realtime live meetings attract dozens of industry leaders whose names you'll instantly recognize, all there to discuss their favorite topics, share hints and tips, and enjoy each others' company. Our Sunday night AmigaMania general conference is still the largest weekly gathering of Amigans in the world, often attracting up to five-dozen folks at once. Often we'll hold formal conferences with a special guest to discuss a hot new product. Once a month, we present a special *ARexx* Conference/Class hosted by Bill Hawes.

Manufacturer's reps, developers, artists, animators, magazine editors and authors, hardware wizards, and other illustrious Amigans visit the Zone daily. This gives you the chance to give feedback to the people who make your favorite hardware, software, and peripherals.

The Zone is run by a group of dedicated, longtime Amiga owners whose common philosophy is to treat our users with the respect that paying customers deserve. Online help comes fast and is very friendly. Among the sysops you'll find Dan James and John Hoffman, accomplished developers; Steve Tibbett, famous for *VirusX* and other utilities; Oran J. Sands III, Amiga graphics and video wizard; and Jim Meyer, former editor-in-chief of *AMnews*.

Besides the AmigaZone, People/Link has many other areas of interest to Amigans: The DEPOT specializes in desktop publishing discussions and files. The Official SuperBase Information Network (OSIN) is sponsored and staffed by Precision, manufacturer of powerful database software. The COMAL Users Group, U.S.A., recently opened its own Plink Club to support that language on all microcomputer platforms including the Amiga. And Lattice, Gold Disk, and SoftLogik will soon be online to support their own products.

It's easy to become a People/Link subscriber. Just call (800) 524-0100 between 9:00 a.m. and 6:00 p.m. Central time, Monday through Friday. Or, to sign up by modem, dial 1-800-826-8855 and then press Return slowly a few times. Payment is accepted by MasterCard, VISA, and American Express, or you can prepay any amount of online time by personal check or money order.

Once you're a member, there are many ways to reach Plink, including Telenet and REDI-Access. People/Link rates vary depending on your modem speed, access method, and time of day, but your hourly rate can be as low as $3.50 per hour (even at 2400 baud) using a combination of Telenet and a PCPursuit account, available separately by calling (800) TELENET.

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- MPS 1000	3.95	4.95	6.75
- MPS 1200/1250	5.00	6.00	7.95
- 1525	6.50	8.00	–
Epson MX80/LX800	3.75	4.25	6.75
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Star NX10/NL10	5.00	6.00	7.95
Star NX1000	4.50	5.50	6.75
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Robert Klimaszewski, Amazing V5.1

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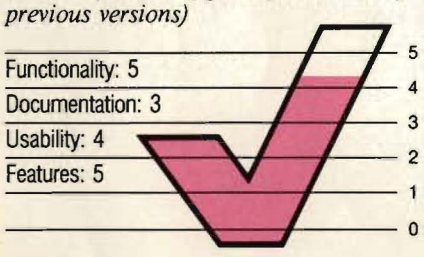
COMPUTE!'s Amiga Resource bases its review ratings on several self-explanatory criteria, using a scale of 1 (lowest) to 5 (highest). Obviously, not every software publisher places equal emphasis on each category. To accommodate this, we've derived an average overall rating, represented by the graphic check mark accompanying each review.

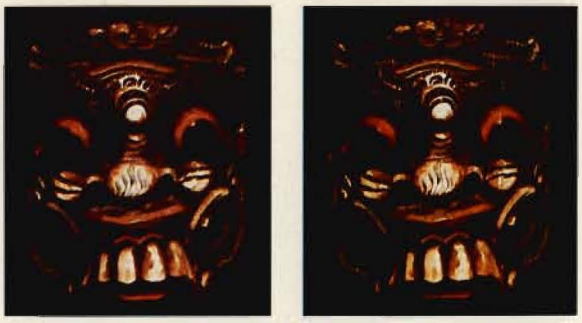
Digi-View Gold 4.0

NewTek
115 W. Crane St.
Topeka, KS 66603
(800) 843-8934
Requires 1MB for basic operation; 2MB to use the new dynamic modes; 2.5MB to work in overscan
$199.95 ($30.95 upgrade for owners of previous versions)



When Digi-View Gold 4.0 was announced at AmiEXPO in Santa Clara, I couldn't wait to get my hands on it. After all, I've been a satisfied user of the Digi-View video digitizer since it first arrived on the Amiga scene. I was especially eager to see NewTek's new Dynamic HiRes and Dynamic HAM modes, which promised to bring 4096 colors to high-resolution images and create fringe-free HAM pictures. Well Digi-View Gold 4.0 is finally out, and it's a winner.

Digi-View Gold 4.0 comes with the following items: a Digi-View Gold digitizer that plugs into the 500's or 2000's parallel port (1000 owners will need an adapter), a Digi-View color wheel (made from cardboard and cellophane rather than the original plexiglass), a disk containing the Digi-View Gold 4.0 software, a hardware manual, a user's manual, and a software addendum. The hardware manual is extremely detailed. The software manual is good, but not outstanding. The software addendum is slight, but useful.



Regular hi res (left) and Dynamic HiRes

Regular HAM (left) and Dynamic HAM

In addition to the dynamic video modes, NewTek has added a number of features and small improvements to this new version of Digi-View. In order of their usefulness, here are some of the things that have been added:

- A Smart-View file requester, with buttons that allow you to list devices, volumes, files, and the prior directory. The new requester also supports function-key shortcuts for those who prefer them.
- *Dyna-Show,* a picture-viewing program that handles the new dynamic modes as well as standard IFF.
- A Digi-Port option that allows you to import digitized images into *Digi-Paint3* if both Digi-View and *Digi-Paint* are running simultaneously. Currently, this is the only way to paint, cut, and paste dynamic-mode images. Without a 1MB Agnus chip, I was unable to port any Dynamic HiRes or overscanned Dynamic HAM images into *Digi-Paint*. NewTek says that future versions of *Digi-Paint* will be able to read dynamic images directly.
- LBJ noise reduction for filtering background noise out of the video signal. While I have had very little trouble with line noise, I found the noise-reduction option helpful when used in conjunction with the Sharpness slider. With high sharpness settings, images tend to get more pixelized and noisy. The new LBJ noise reduction can "reblur" the sharpened image. Working with both sliders, I can usually find a happy medium between the two.
- *ARexx* support. Several sample *ARexx*

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scripts may be found on the disk.

- 68020 support.
- The *No Video Signal Present* warning appears only when you try to digitize something—not at the start of the program.
- You can *finally* change screen resolution without quitting and restarting the program.
- Multitasking, memory management, 24-bit support, and Digi-Droid controls have all been improved.

The most important improvement, of course, is the inclusion of NewTek's Dynamic HiRes and Dynamic HAM video modes. Before you can start playing with either of these two modes, however, you'll need at least two megs of RAM. The dynamic modes use all the juice they can get from the Amiga, so there's no multitasking and you must keep the mouse still to display the image. If you move it, the image will break up.

The pictures accompanying this review show the differences between standard digitized images and those displayed in the new dynamic modes. All four pictures were digitized using an Amiga 2000 and a Panasonic 1410 camera with a standard fixed-iris 16mm lens. The fish was digitized from a photograph, and the mask was digitized from an actual three-dimensional mask.

On average, digitizing something in dynamic mode takes somewhere between three and five times longer than normal. For example, Fish took 2 minutes 45 seconds to complete in normal HAM mode and 10 minutes in Dynamic HAM mode. Since it's the displaying of the image that takes the most time, not the actual scanning, NewTek suggests that you scan in regular HAM or hi-res mode until your image looks suitable; then switch to the desired dynamic mode and select Display to convert and display the picture.

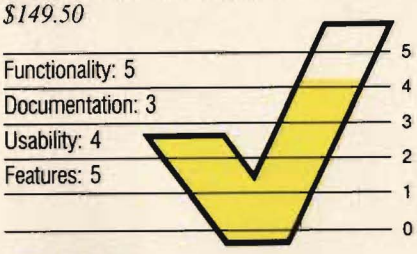
As a relatively new format, there's not much you can do with dynamic-mode images other than view them on the screen. Hopefully, paint and animation programs will be written to directly handle the new file structure. (Rumor has it that Zuma Group is already evaluating the dynamic modes for possible inclusion in its upcoming *TV*SHOW Professional* and that several other graphics and productivity developers are also talking with NewTek about supporting the new modes.)

If you're a stickler for the best resolution and color possible, you've got to get Digi-View Gold 4.0. And even if you're happy with the color and resolution of the nondynamic modes, Digi-View's new additions and improvements make it an upgrade worth having.

—Steve Jacobs

PixelScript Version 1.1f

Pixelations
P.O. Box 547
Northboro, MA 01532
(503) 393-7866
1.5MB RAM recommended
$149.50



Who among us has not been captured for long hours by the hypnotic cyclops glare of the computer screen? Surely, there must be some value to the time spent locked in ferocious battle with an obsidian-faced star slaver or to the interval lost in the programmer's unworld of fixed concentration. It's nice to know, however, that glazed eyes neatly framed with ruptured blood vessels and a still-made bed are not the only real-world manifestations of the personal computing revolution.

One obvious example of the concrete results being churned out by our amazing electronic obsessions is the ever-expanding field of desktop publishing. While this term means different things to different people, it usually refers to a process that starts with a personal computer and ends with an ultimate product that's generally a piece of paper with some ink marks on it. Real people can view this (without the aid of computers!) and gain information, be entertained, or rejoice in a rich range of graphic possibilities.

Rock of Pages. Much top-quality desktop publishing rests on the cornerstone of PostScript, the remarkably complete page description language from Adobe Systems. As might be inferred from the name, a page description language is a computer language capable of building up the image of some desired two-dimensional page. Naturally, the object of the exercise is to print the page after it's been imaged, and deliver it into the real world. Not too surprisingly, then, PostScript is usually found living inside a printer—and, almost invariably, it's a pricey laser printer.

PixelScript (known in earlier incarnations as *PrintScript*) is a software system that enables Amiga users to put a highly functional PostScript-compatible interpreter into their computers and, in the process, transform any Preferences printer into a PostScript output device. In addition to printing PostScript output, *PixelScript* also mimics that language's so-called Executive. By sending commands directly to the interpreter, the PostScript programmer can talk a line at a time to the printer's brain, slowly building a page image while, at the same time, receiving valuable information from the Executive. *PixelScript* functions identically, making it a programming tool as well as a printing one. Let's look at how *PixelScript* manages its dual personalities.

• • •

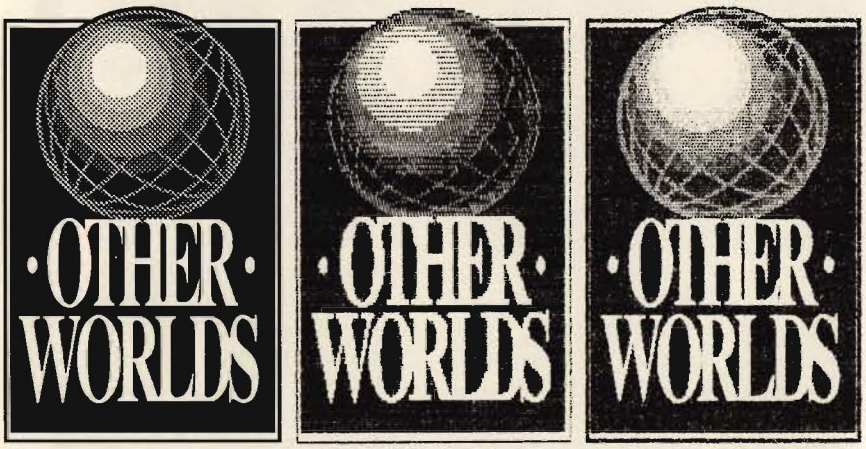
***PixelScript* transforms any Preferences printer into a PostScript output device.**

• • •

The Printer's Devil. *PixelScript* can behave just like the controller of a PostScript printer: You point a document at an unseen device and it causes the document to be printed. In this case, you can operate either from an Intuition/Icon environment or

from the CLI. Just select or enter the desired PostScript filename and it will be printed out for you. That's it.

PixelScript will process virtually any PostScript file. (The current version does not support color or dashed lines. Later editions will.) This means it will accept output from all major Amiga desktop publishing packages. The documentation contains program-specific information to help users adapt output from their software to *PixelScript*'s not-too-demanding requirements. As mentioned earlier, the program can drive any printer selected through Preferences. A number of special, speedier drivers are also supplied for selected printers, such as Hewlett-Packard ink-jet and laser printers.



The original 300-dpi PostScript LaserWriter output (left) is closely matched by the 36-dpi Star NX-1000 (center) and 180-dpi Hewlett-Packard PaintJet (right) versions.

In the printer-personality mode, I tested *PixelScript* with output from Gold Disk's *Professional Page* and Aldus's *Freehand.* Printing directly from *ProPage* to my Star NX-1000 (Epson 9-pin compatible) produced a sketchy, shorthandlike version of the test document. By printing to disk instead, and then processing the result through *PixelScript,* an accurate proof was obtained. A printout of this quality would enable the user to confidently send the same file to a service bureau for higher-resolution output. Reconfigured with one of the special non-Preferences drivers, *PixelScript* transmitted the same file to a Hewlett-Packard PaintJet connected to the Amiga serial port. This was a 180 × 180 dpi printout, and it was good enough to show to a fairly demanding client. At this point, I was, frankly, amazed; really turning an NX-1000 into an effective PostScript printer is a feat of sorcery, and the output from the PaintJet was nearly of laser quality.

To test *PixelScript*'s ability to handle non-Amiga-specific input, I made an Encapsulated PostScript (EPS) file using Aldus's *Freehand* drawing program on an Apple Macintosh IIcx. EPS files are a kind of universal PostScript clip art. A properly structured EPS file should work on any machine utilizing any program that recognizes this structure. From the Mac, this file went over the phone lines into a Toshiba portable PC and onto a disk, then into an Atari ST, and, finally, by null-modem cable, into my Amiga. The results are shown in this review.

This example is important because it shows how well *PixelScript* renders both type and tone. The letters making up the words *OTHER WORLDS* were heavily distorted in FreeHand, and *PixelScript* had no difficulty replicating them even on the NX-1000. To be honest, the earliest version of this graphic was never completely processed by *PixelScript*—my computer always ran short of memory first. That wasn't too surprising: the planet in that version was made up of about 27 radial and linear tone fills. It was after this that I discovered the developers of *PixelScript* recommend a 1.5MB minimum configuration. Scaling back somewhat on complexity, however, worked fine.

A useful variant to the drivers for real printers is the program's ability to print to a disk file for later processing. In this way, physical printing of PostScript files can be separated from the interpreting process, thus maximizing the speed of both operations.

Disk-O-Tech. One way to utilize the print-to-disk feature is to combine it with the stand-alone *PxSPrint* application that's a part of the *PixelScript* package. This program can select completed print-to-disk files and send them independently to any of the supported printers. Operation of *PxSPrint* is by icon and requester and couldn't be easier.

Users are encouraged to freely send *PxSPrint* and their files to other Amiga owners for outputting on their own printers. *PxSPrint* isn't a PostScript interpreter, but it can print any *PixelScript*-interpreted file. The only trick involved in setting up this type of remote printing job is, not surprisingly, to ensure that *PixelScript* is correctly configured for the eventual destination printer. With this setup, *PixelScript* users can act as PostScript brokers, creating multitudes of printer files from each original input document.

Clearly, *PixelScript* offers a full array of printing capabilities that operate smoothly and maybe even a bit miraculously: It really works.

The CLIncher. At first, I wasn't really too certain how useful a programming tool *PixelScript* would turn out to be. I'd recently begun using Emerald City Software's *LaserTalk* for the Mac to create PostScript-based mail-merge routines at work, and I had developed somewhat fixed expectations of how such programs should operate.

The *PixelScript* programmer's interface can operate either through the CLI or through the same Intuition environment used for mouse-driven processing of existing PostScript files.

In the user-friendly Intuition screen, programmers can enter PostScript commands in a single-line editing field. The resulting feedback from the interpreter appears in a window below. Both output and input can be scrolled up and down, enabling programmers to edit and reuse previously entered commands and to examine the full range of interpreter response from the current session. ▷

This is a workable arrangement. PostScript is wonderful, but it's an unusual language. It's stack-oriented and employs a reverse notation, both aspects making it somewhat like Forth. Novice programmers will appreciate the flexibility afforded by these scrollable windows.

Unlike Forth, PostScript operators are readable and self-explanatory—almost narrative—but they are designed to be easily assembled into procedures of universal application. PostScript is also a rigidly structured language, but its constraints are balanced by device-independence and the sheer joy (for top-down programmers) of being able to see rapidly printed material as the result of their efforts.

In this context, *PixelScript* functioned well for short bursts of experimentation, but since it offers no way to save the work users enter, I was looking for a way to combine some of its many features into a replica of *LaserTalk*'s fluid interface. At that point, I was using the program with just the A500's internal drive. (The developers recommend using the product with a hard disk, but a single drive is acceptable. Amiga hard drives are far too expensive for my wallet, and I'll gladly accept any spares readers may care to mail in.)

Wishing to spare you the details of many hours of tortured experimentation, I'll briefly describe what I worked out. After hooking up my new AIR Drive as DF1: (two floppies are close to being a necessity on the Amiga), here's how the system was configured.

A stripped-down Workbench disk was used in DF0: and a *PixelScript* disk in DF1:. Sufficient room was maintained on both disks to accommodate both input and output files. A ramdisk and two CLI windows were established. One CLI was used as a general-purpose command window, and the other was the gateway to the *PixelScript* interpreter. Two important points: I had to change the name of my *PixelScript* backup from PxSMaster to PxS and to insert the line ASSIGN PXSFONTS: DF1:PXSFONTS/ into my df0:s/Startup-Sequence for the *PixelScript* in df1: to be fully functional.

Prior to using the interpreter via the CLI, it's necessary to set up and SAVE *PixelScript*'s default printer configuration in the Intuition interface. This is the setting that will be active when the program is run from the CLI. Here, I chose to print the output to a file in the ramdisk. This is the other major application for the print-to-disk facility mentioned previously.

Serious RAMifications. Input files were also stored in RAM. More importantly, *DPS* was also kept there. *DPS* is a public domain *PixelScript* screen previewer written by Allen Norskog and supplied as an integral part of the package. *DPS* reads print-to-disk files and displays the resulting page image in superb 640 × 400 high-resolution format. Not only can *DPS* operate very quickly if it and its input are in RAM, it can also be modified very quickly. This is essential: When *PixelScript* writes files to disk (including the ramdisk), it adds a numerical extender, N, in the form FILENAME .N, where N is a number between 0 and 9, incremented with each file produced in the current session. N cycles back to 0 after ten files have been produced. For *DPS* to grab a file, the full filename must be inserted in the ToolTypes gadget displayed when Info is selected for the *DPS* icon. (This also applies when *DPS* is based in a physical disk, but speed is reduced and every change to ToolTypes has to be written back to disk.)

Now, to program, I'd use an editor that could save my typing and send my work to the ramdisk with backups going to physical disks. Both NotePad and Ed were used at various times, with the latter being run in the CLI window that was being used to give a general overview of the entire system. The other CLI was reserved for running *PixelScript*, which was pointed at the input file placed in RAM by the editor. Once the file had been processed, the overview CLI was used to check the new output file, and the DPS ToolTypes was modified accordingly.

The result was an efficient system that allows the programmer to quickly check page output before printing. Once the desired effect is achieved, the

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programmer can simply redirect the input file toward a suitable printer driver with reasonable assurance of success.

With this nifty setup, I quickly created a logo-producing routine that draws perfect sets of graduated lines and uses PostScript clipping operators to form them into words and letters. The resultant logos printed equally well on the NX-1000, PaintJet, and Linotronic L-300.

PixelScript turned out to be a highly viable programming tool, even if it did take quite a bit of work to build an environment I felt comfortable with.

P.S. There's little negative to say about *PixelScript*. The package's weakest point is the documentation. In places, it was obviously produced by people too close to the software. For example, it would have been helpful for me to have seen it spelled out somewhere that an input file must contain a SHOWPAGE or COPYPAGE operator for *PixelScript* to actually produce file output. (Otherwise, it processes without producing, a sort of computer false labor.) It might also have been more heavily stressed that the ENTER key must be hit before some configuration settings will stick. In this regard, give your various printer and file configurations clear, descriptive names; then reload them to check that the settings are as you intended.

On the other hand, the documentation is nearly perfect when covering how to interface with specific pagination and word processing programs. The discussion on PostScript fonts is excellent and provides a fine general introduction to the subject.

I haven't even touched on *PixelScript*'s internal font arrangements or its *ARexx* capability. I couldn't test all its many printer drivers and, naturally, didn't have a chance to use its hard disk installation utility.

I did take a brief look at Pixelations' *PostScript Series Sample Disk*, which contains a new font family, some Amiga-related EPS clip art, and a powerful utility that can create all kinds of 3-D zoom text in general EPS format. This last feature alone is worth the price of the disk. Additional font and art disks will be released in the future.

I bought the *PixelScript* package rather than being supplied with a review copy, and I found customer support to be excellent—even before the developers knew I was working on this review. Indeed, at the moment, customer support seems to be conducted by the writers of the software, and their information is correspondingly authoritative. In addition to supporting *PixelScript* well by itself, Pixelations has also lined up numerous developers who are following the trail these pioneers of Amiga PostScript are blazing.

It's important to remember that PostScript is real, and here, and now. It works, and it's the standard. Sure, there are other page description languages. And now that Microsoft and Apple have loosened their death grip on each other and together have turned their predatory eyes toward PostScript, there are sure to be more challenges to its primacy. However, just like English, while PostScript isn't perfect, it has turned out to be pretty darn useful. And with *PixelScript*, your Amiga and current printer can become an effective platform for utilizing and mastering this expressive new language of the printed page.

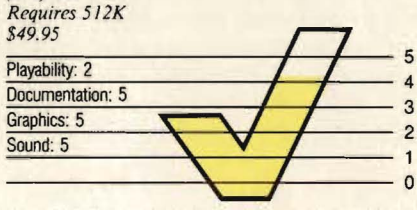
—Lee Noel, Jr.

MINI-REVIEWS

Mini-review contributors this issue include Rhett Anderson, Russ Ceccola, Bill Chin, Leslie Eiser, Gary Fields, Scott May, and Randy Thompson.

Shadow of the Beast

Psygnosis
P.O. Box 483
Addison, IL 60101
(312) 620-4444
Requires 512K
$49.95



Shadow of the Beast comes in a large box—large enough to hold the complimentary T-shirt, in fact. This latest Psygnosis game is impressive. It's a horizontally scrolling arcade-style game that comes on two disks. The graphics are superb, as is the music. Buy this game if you want to impress your friends.

I had fun with this game the first few times I played it. As far as polish goes, *Shadow of the Beast* really is good enough for the arcades. Unfortunately, it's so difficult that most players won't be able to enjoy it. I recommend this game only to those who consider themselves arcade pros. Others will be frustrated.

Shadow of the Beast has one other problem. It takes over a minute for you to start up a new game after you've died. The disk-loading time is simply unforgivable.

I did like the program's manual. The game's authors gave some of the details as to how *Shadow of the Beast* was programmed. It's a fun read, and I wanted even more.

We should thank Psygnosis for showing what can be done on the Amiga. But this is not the Amiga's finest game.

—R.A.

The Securities Analyst

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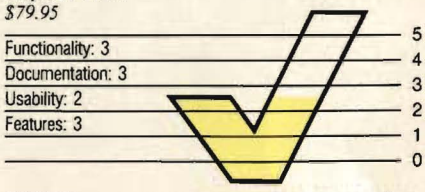

Wall Street pros use computers to give them an extra edge. *The Securities Analyst* lets you use your Amiga to help you beat the pros.

This program performs technical analyses on stocks using weekly data. ▷

Data must be entered by hand; there is no easy way to update from an online database. This makes it hard to enter historical data on a stock you just became interested in.

The forms of analysis include Moving Average, Accumulation/Distribution, Relative Strength, Performance, Point and Figure, Trailing Stops, Basic Chart, Momentum, and Price/Earnings Analysis. Graphs are displayed to the screen or printed out. The graphs are clear, but they don't allow overlays for easy comparison.

The concise 28-page manual includes a good primer on each form of analysis. The disk also includes several historical data files to help you understand how each indicator works. It takes several months of data for any meaningful patterns to appear, so be prepared to dig through back issues of Barron's for old data when you start using the program.

The Securities Analyst is fine for the patient investor tracking a moderate number of stocks. To make it suitable for the serious investor, it needs more indicators such as moving-average-convergence/divergence (MACD) and stochastics. I also wish for a daily-data option and an easy way to download historical data.

—B.C.

Indiana Jones and the Last Crusade, Action Game

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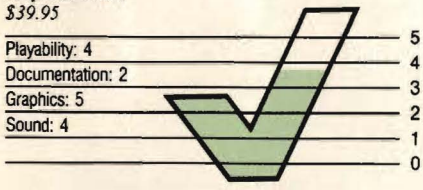
Requires 512K
$39.95



The idea of having two different games based on the same movie didn't sit well with me when I first heard about the plans for the *Indiana Jones and the Last Crusade* computer games. It seemed like a ploy to try to get even more money from the Indiana Jones fans.

After thoroughly playing both the *Action Game* and the *Graphic Adventure* [see the following review], I see why Lucasfilm designed two programs. Each appeals to a different segment of the public, and the film has enough in it to make both games feasible. In any case, Indy fans should be happy with either game—they're both fun to play and beautiful to watch.

The *Action Game* contains four levels of challenges lifted directly from the film. The first level sends a young Indy into a cavern looking for the Cross of Coronado and ends with Indy jumping across circus train cars, just as in the beginning of the movie. I found this to be the most difficult level. It requires a lot of timely jumping and maneuvering and wise use of whip and torch.

The second level has Indy searching the catacombs in Venice for the Crusader's Shield and then climbing the walls of Schloss Brunwald in Austria. The third level requires that he escape from an airship with the Grail Diary, and the final level throws three tests at Indy, with the Grail as a reward. Movement is fluid, the levels in the *Action Game* are meticulously drawn, and Indy looks and moves like our favorite adventurer.

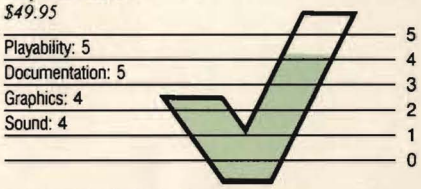
The documentation is rather flimsy, consisting only of a mockup newspaper with some basic descriptions for the levels and instructions on loading the game. People who aren't very familiar with arcade games may require more documentation. A small manual should have been included, with the newspaper kept as window dressing.

The only hopes I had for the game that weren't fulfilled were sequences with Dr. Henry Jones and levels that included riding the horse or the tank in the desert. Nevertheless, *Indiana Jones and the Last Crusade, Action Game* far surpasses the expectations that I had.

—R.C.

Indiana Jones and the Last Crusade, Graphic Adventure

Lucasfilm Games
Distributed by Electronic Arts
1820 Gateway Dr.
San Mateo, CA 94404
(415) 571-7171
Requires 512K
$49.95



This *Graphic Adventure* takes a unique approach to the *Indiana Jones and the Last Crusade* film. It allows you to live as Indy (and later as Dr. Jones) in all of the sequences of the film except for the opening one where Indy is a boy. There is so much to do in this

game that it may literally take you weeks to see it all.

Combining the Lucasfilm Games adventure system of clicking on action words and object names to make command sentences with incredible graphics, sounds, and music, the *Graphic Adventure* is a pleasure to play, even if you don't finish it.

Although I hate to say it, I recommend buying the hint book—not because the game is tough (because it's not), but so you can see all of the places, characters, and situations found in the game. It offers a lot of additional information that's fun to go back to and look at after you've finished the game.

The *Graphic Adventure* allows you to do things that Indy didn't do in the movie, such as retrieve the Grail from the crevasse at the end, save Dr. Elsa Schneider, and fight against a boxing instructor at Barnett College.

In order to rate your performance, you are awarded IQ (Indy Quotient) points that tell you how good an Indy

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you are. For each game, you are given an IQ score. If you save games to disk, a Series IQ score appears, telling you how many of the 800 total points you have earned as a result of all your games saved on that disk. This lets you know how many things you haven't seen. When I finished my first pass through the game, I had a game IQ score of only 550 or so. Keep on adventuring!

The *Graphic Adventure* is an all-around excellent game. Inside the package, Lucasfilm has placed a copy of the Grail Diary, which offers all kinds of clues to the location and history of the Grail. The puzzles in the game are not difficult, but very witty. They make you feel smart when you solve them.

The interface is excellent and plays like a film, with characters entering into revealing dialogue without your help. The music builds as the game goes along, and the sound effects are lifelike, from a growling dog to wet shoes. I can't say enough about this game, except that it's certainly one of the year's top five adventures.

—R.C.

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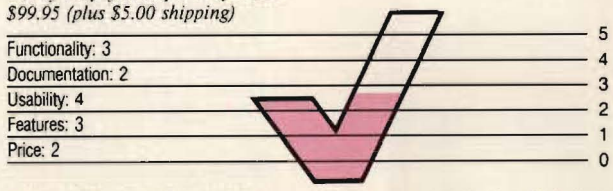

Take a five-outlet surge protector that's made in Taiwan, drill a few holes in the case, install a 12-watt stereo amplifier board, add four RCA jacks for audio in/out and two variable resistors for left/right volume control, apply some black stick-on lettering, and what have you got? AmiSound, the all-in-one monitor stand, surge-supressed power center, and stereo amplifier.

Physically, AmiSound sits perfectly atop an Amiga 1000, has plenty of breathing room when placed on the 2000, and fits well behind a 500, elevating the monitor screen just high enough to be seen over the 500's stout, but obtrusive, case.

As a monitor stand, AmiSound does not swivel or tilt, but it does fit nicely under most monitors, raising them by a little more than two inches. As a surge supressor, it provides minimal protection via a 150-volt varistor placed directly across the AC input lines (good for most AC line spikes, but don't leave this sucker plugged in during a lightning storm). AmiSound also comes with a 15-amp circuit breaker that keeps you from overtaxing your wall socket.

As a power strip, AmiSound provides five separately switched outlets with one master switch that controls the power to the entire unit. All six illuminated rocker switches are placed conveniently on the front of the case, with the master switch found at the far right. Each switch is labeled—Master, Computer, Monitor, Printer,

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everything of a certain color (the blue board on the wall, for example) is replaced with the external video image (the picture of the map). Unfortunately, these genlocks cannot put a live video picture over graphics; they only key graphics over live video.

With a genlock like the SuperGen from Digital Creations, you can adjust the amount of each signal you key (mix) by using a slide control or by selecting options from the computer's keyboard. This gives you full control of the speed and degree at which an image fades in and out. This fading is called a **dissolve.**

When investing in a genlock, take some time to decide what features you want. Not all genlocks do dissolves, and not all genlocks provide encoding and keying. There are genlocks that only work with certain model Amigas. Some go inside the 2000 and tie up the video slot, while some connect externally to the computer's RGB port. The Magni 4004 by Magni Systems plugs into the 2000 through both the video slot *and* an IBM slot.

Some genlocks provide input and output for other formats like Super VHS and Y/C signals. If you are using Super VHS, be sure your genlock offers both Super VHS output and input or you may find yourself caught between Super VHS and composite formats with no place to go. Professionals may need a genlock that works properly with black burst, to sync it into a studio environment.

Some genlocks key video over the Amiga's color 0 (the background color) or optionally over all colors other than color 0, and some provide **luminance keying** (only colors below a certain brightness level are replaced). The SuperGen provides an effect that is similar to luminance keying with its **interpretive dissolves,** where the rate of fade for individual colors is determined by that color's gray-scale value. This can be a very interesting effect once you learn how to apply it.

With fader/dissolve controls, you can do some wonderful effects, like the *Star Trek* transporter effect, making this feature well worth its cost. Without fader controls you can only "pop" your graphics on and off the video or use software wipes for transitions.

Genlock prices vary greatly, from $200 to $3,000, as do the features and options. Never choose a genlock by price. Choose it by your needs. You can quickly throw away money on a genlock that doesn't meet your needs. Whatever you do, be sure your genlock allows pass-through of the RGB signals to operate your RGB monitor. Purchasing a genlock for your Amiga is the single most important purchase you can make for desktop video. It is *the* link between the computer world and the video world.

Just the Beginning

So far we've talked about the hardware involved in using the Amiga for desktop video. Next time we'll discuss the software that you can use for titling, digitizing, and animation. We'll also mention some more terms that you should know and, most importantly, some things that you should look out for. ▲

Fred Hurteau, a professional commercial artist since 1973, owns and operates Micro Digital Graphics, a video and computer graphics production studio built around the Amiga.

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—*R.T.*

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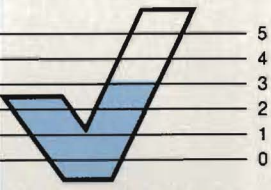

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ers. You can get better gossip from storekeepers.

Your adventure begins in a camp overlooking the walled city of Hillsfar. In the distance you can see ruins, a trading post, a forest that hides the wizard's labyrinth, and a hermit's hut.

Ride your horse to town to gather information, meet with your guild master, and get an assignment. Explore the town with the aid of two maps. In the center of the screen is a bird's-eye view of the city, but once you get the hang of moving around, a smaller 3-D view of the streets from ground level is easier to use.

If you're a member of the thieves' guild, you'll be spending a lot of time picking locks by matching patterns that get increasingly difficult. Decide to play a fighter, and you'll want to practice your archery skills at Tanna's Target Range before you enter the arena to fight with staves and poles. As a cleric, you'll be a holy crusader who fights with a sling in the honor of your cause. Magic users have their own guild as well. You can wield a wand at the target range—if you live long enough to learn to use it.

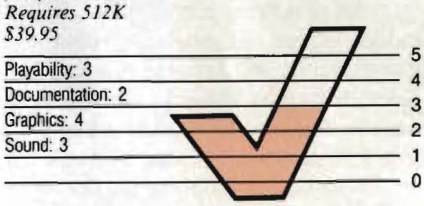
Most of your time will be spent searching for treasures in mazes. Every building you break into and every site you explore, from the ruins to the hermit's cave, yields more mazes. Each maze is unique, and its difficulty depends on how successful you've been at fulfilling previous quests assigned by your master. Do well and you'll be rewarded.

Hillsfar is basically an arcade game with a Dungeons & Dragons motif. AD & D people will find the lack of conversation and wit disappointing, and arcade aficionados may want a game with more action and sound. Nevertheless, *Hillsfar* offers something for everyone and does so with speedy graphics and decent animation.

—L.E.

Nightdawn

Innerprise Software
128 Cockeysville Rd.
Hunt Valley, MD 21030
(301) 785-2266
Requires 512K
$39.95



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and discover its purpose, origin, and power source—a potentially deadly task since the planet is swarming with defensive robotic forces.

Unlike many arcade games, *Nightdawn* is not simply an exercise in wrist and thumb reflexes. To survive, you must not only shoot fast and accurately, but also solve a massive puzzle that includes finding keys, toggling switches, and detecting traps.

To make success doubly difficult, when you first land on the planet you are defenseless. Opposing you is an impressive defense force, including hidden explosives, patrolling robots, locked doors, and homing missiles. To defeat these, you'll need to first find a weapon (hint: go north) and then locate a mine detector (hint: go east).

Nightdawn's graphics are precisely and realistically displayed, and they look as good as the best seen in quarter-eating arcades. As you would expect, screen scrolling is smooth and the user-controlled drone responds quickly to your joystick.

If you enjoy a challenge, *Nightdawn* offers plenty. The game is not so tough that you can't progress, yet completing the mission demands plenty of skill with both a joystick and your memory. I was happy to see that when you lose a life, you do not lose any of your acquired keys or weapons. But since there is no option to save a game, you'll need to remember where the minefields and key items are located once you bite the dirt for the sixth time, forcing you to begin again at level 1.

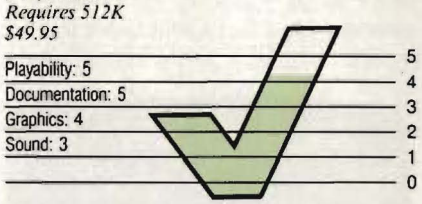
Three missing features I'd like to see are a save-game option, high-score records, and the ability to install the game on a hard drive. A more informative manual would have been nice, too, since the one supplied is a mere eight pages, with only one page supplying actual instructions.

Nightdawn is a handsome game with a nice mixture of what makes an arcade enjoyable—plenty of action and challenge without frustration.

—G.F.

Omni-Play Horse Racing

SportTime
3187-G Airway Ave.
Costa Mesa, CA 92626
(714) 966-1311
Requires 512K
$49.95



Taking its cue from the world of business software, *Omni-Play Horse Racing* trots onto the scene with a unique approach to computer gaming. Based on a modular format popular in productivity software, the game consists of an initial system disk and various optional modules.

At least that's how it sounds on paper. In reality, success of the entire package rests solely on the strength of the original program. If it bombs, all the high-concept marketing strategies in the world can't save the game from sinking in red ink.

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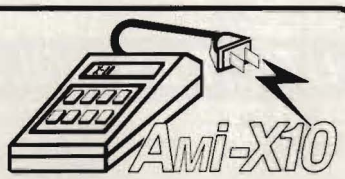

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sign is a sure bet. Ringler's winning formula, honed from such bestsellers as his *Superstar Soccer* and *Superstar Hockey,* merges arcade excitement with the power of an elaborate sports database. The results are magical, appealing to both statisticians and action fans alike.

Included in the *Horse Racing* package are The Handicapper's Tournament and two individual racetracks. Proposed modules include additional tracks, stable ownership, and historical racing.

Up to four players can compete with up to 16 seasoned computer bettors. View the past performance of each jockey and horse, culled from a stable of 128 available steeds. The program calculates and cross-references data for every statistic imaginable. From post position histories and track conditions to official odds and hot tips, all the information you need to place a bet is displayed in exacting detail. Load and save multiple user-defined tournaments.

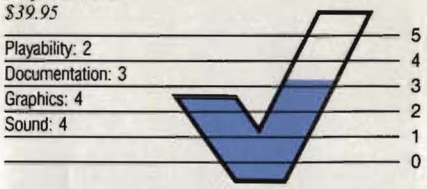
Hit the track with as much or as little graphic detail as you like. Statistical purists can bypass the pageantry and run the entire race offscreen, advancing straight to the toteboard and payoff window, but most players can't resist the thrill of tracking their horse as it breaks into the lead down the homestretch. Request a photo finish or claim a trophy in the winner's circle.

Beyond the thundering of hooves, there's not much in the way of sound. The graphics and animation, however, are outstanding in every respect. *Omni-Play Horse Racing* is a terrific simulation—the best interpretation yet of the sport of kings.

—S.M.

Pro Tennis Tour: The Ultimate Tennis Simulation

UBI Soft
Distributed by Electronic Arts
1810 Gateway Dr.
San Mateo, CA 94404
(415) 571-7171
Requires 512K
$39.95



I've always been one to shy away from real tennis courts, tending to prefer the electronic versions. After playing UBI Soft's *Pro Tennis Tour,* it might be time to go out and buy a racket.

The game looks great, sounds pretty good, and has a good tournament system, but it's way too tough. After playing the game for an hour straight and practicing for half an hour before that, I won only 1 set out of 18. Ridiculous. I expect to spend a reason-

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able amount of time learning any game, but this is pushing it.

To be fair, though, *Pro Tennis Tour* is the nicest tennis simulation I've seen. The graphics are detailed to the point of showing the players shifting their weight back and forth in anticipation of the serve. The court perspective is very good and the movement of players is fluid.

Sound effects—the ball hitting off the ground or a racket and an occasional "Fault!" shouted by a judge—are realistic.

Pro Tennis Tour's game system is very nice. You can play practice games against a human opponent, hit balls served by a machine in one of six programmed methods, or practice your serves on an open court. As far as games go, you start out ranked 64th in a tournament and try to advance by defeating higher-ranked opponents.

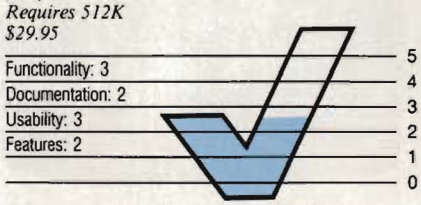
After playing a match, you can call up a ranking chart that narrows down to two players who play for the title at the end of the season. As you progress, you make it further on the chart. You can't understand how badly I wanted to compete in the tournament, but I couldn't because of the game's difficulty.

I was really expecting a better tennis game for the Amiga. If your local software store salesperson will let you try this game, give it a shot. Maybe you can figure it out and have more success than I did. If you get the hang of it, buy it. Until then, I'll stick to my Commodore 64 tennis games.

—*R.C.*

The Tarot Master

Empire Graphics
P.O. Box 964
Union, NJ 07083
(201) 964-7864
Requires 512K
$29.95



Interested in taking a quick glimpse into the future? I'm not referring to time travel. I'm talking about learning to read tarot cards. With *The Tarot Master* from Empire Graphics, you can transform your computer into an instructor and a soothsayer rolled into one.

Ask for the teacher, and the computer explains the meanings of each of the 78 cards in a traditional tarot deck. The 22 cards in the Major Arca-

"Here was the toughest guy I know–weeping sentimental tears."

"This old pal of mine, an ex-ballplayer, had open-heart surgery. I gave blood for the operation.

"Afterwards, I saw him. He held my hand for the longest time, not saying anything. And then I saw: there were tears in his eyes...

"I give blood often now. And I always think of him."

When was the last time *you* gave blood?

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na (individualized characters such as the Tower, Justice, the Fool, and the Magician) are taught using sound and animation sequences to reinforce the meanings of each card.

Knowing the meanings of the cards is not enough; you also have to know how to lay them out and interpret them. *The Tarot Master* explains how to do part of this job by providing tutorials on the classic three- and ten-card spreads. However, the program fails to teach you how to interpret the meanings of each card in terms of its relative placement in the spread, a critical part of the entire process.

But *The Tarot Master* is not just a tutorial, it's also a seer that attempts to perform readings. These normally begin with the questioner shuffling the cards, a task the computer does in this simulation. Instructions on the screen ask users to concentrate on the specific question to be answered, to allow their spirits to enter the simulated cards.

If you think of nothing but the question, the order of the cards is said to become aligned with your emotions. When you feel that your spirit has come into harmony with the cards, press any key or click the mouse to end the shuffle. The cards are then placed into a spread.

One at a time, the cards are turned over, and the summarized meanings of individual cards appear on the screen. It's up to you to interpret these meanings and to arrive at an understanding of what the cards are trying to say about your future. Of course, if you don't like what they say, you can always repeat the process until you get a reading you can interpret in a way that pleases you.

The Tarot Master probably will have its greatest appeal to those already converted. Coming up with a meaningful glimpse into the future for the uninitiated, however, may not be any easier than just guessing.

—*L.E.*

Vortex

Visionary Design Technologies
45 Whitehorn Cres.
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Canada, M2J 3B1
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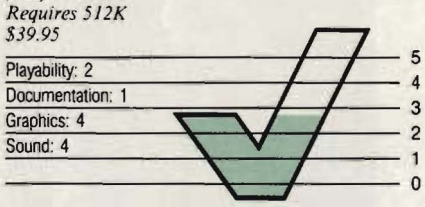

Visionary Design Technologies has a strategy unique among Amiga game producers: Take an arcade program and do it to the hilt. Its wonderful *DataStorm* was a takeoff of *Defender*. *Vortex* is a takeoff on the lesser-known *Reactor*.

My brother and I saved up some cereal box tops to get the Atari 2600 version of *Reactor* several years ago, so I eagerly awaited *Vortex*. Frankly, I'm disappointed. The scrawny four-page manual tells me nothing about the game. I have no idea of what to do with any of the various enemies I en-

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counter. All I know is that I'm supposed to keep things out of the swirling vortex in the center of the screen. That's quite a job when you

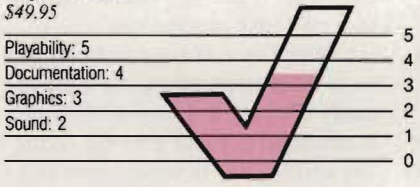
have to use a mouse to control your movements. It's tough just to avoid bashing yourself into a wall before even getting near an enemy. And if you want to play the two-player game, you'll need a spare mouse.

Still, with a good manual and a joystick option, this could be a great game. Just to show that my reaction to the game is typical, my brother, a *Reactor* champion if I ever knew one, tried *Vortex* during the holiday season. He fared no better than I did. After ten minutes, he popped the disk out and popped *Populous* back in. I spent considerably more time trying to learn the game. I wish I hadn't.

—R.A.

F/16 Combat Pilot

Electronic Arts
1820 Gateway Dr.
San Mateo, CA 94403
(415) 571-7171
Requires 512K
$49.95



If you're like me, you must be groaning, "Not another flight simulator!" Yes folks, it's true. They didn't get it right the first zillion times, so here we go again.

I'll admit my initial reaction to this British import was hardly one of exhilaration. Saturating the market with identical products is not my idea of innovation, a quality the software industry used to pride itself on.

In a highly competitive genre, *F/16 Combat Pilot* is bound to suffer comparisons to *Falcon*, Spectrum HoloByte's best-selling simulation. Yet close examination—beyond stale retail packaging—reveals *Combat Pilot* to be a game of much greater depth and strategic challenge.

The game can be played solo or head-to-head (dogfight mode) with another computer via null modem. You'll want to practice using the flight controls and executing landings before embarking on one of five missions, each designed to hone your skills in different areas of tactical combat.

Master the front-line tasks and then take off as squadron leader in the multimission Operation Conquest, a full-scale test of your accumulated skills. In this mode, *Combat Pilot* suc-

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"She had big brown eyes, the cutest laugh—and leukemia."

"Andrea was in preschool with my son.
"One day they rushed her to the hospital with leukemia. She needed blood urgently, so I went and gave... She's in remission now, but every couple of months I go and give blood.
"Because I know someone else's Andrea may need it."
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National Heart, Lung, and Blood Institute, National Institutes of Health, Public Health Service, U.S. Department of Health and Human Services

Circle Reader Service Number 144

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The cockpit and controls of the F/16 are rendered in amazing detail, jammed with five radar modes, ten weapon systems, and over 36 informational indicators. It's a bit overwhelming if you're a novice pilot, but stick with it—the rewards are worth the effort.

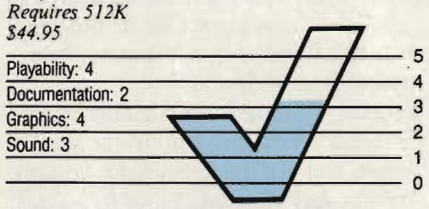
The graphics are clean and colorful but not outstanding. Sound effects are minimal and disappointing. The in-flight roar sounds like a vacuum trying to suck up a bowling ball. The controls utilize joystick, mouse, and keyboard commands. They're confusing to learn but responsive in the heat of battle.

Don't be fooled by the packaging—looks can be deceiving. Just another flight simulator? Hardly. *F/16 Combat Simulator* is the first of a new breed.

—S.M.

Super Hang On

Data East USA
470 Needles Dr.
San Jose, CA 95112
(408) 286-7074
Requires 512K
$44.95



The label on the box says it all: "Wanted: The Meanest, Fastest Racers on the Planet." Unless you're fast and a little bit mean, you're not going to get your money's worth from Data East's *Super Hang On.*

The plot is simple: ride a nitro-powered 200-mph motorcycle. The object is to go as fast as you can while hitting as few of the other bikes and objects lining the course as possible.

A game like this doesn't require much in the way of documentation, and that's good because Data East's directions are sparse and at times inaccurate. The instruction sheet says that

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pressing ESC will pause the game in progress, but in reality HELP does this. It also claims you can start the game over by pressing CLR/HOME, but I've yet to find any such key.

These complaints aside, the game is pretty much self-explanatory. You choose one of four different race courses, ranging from beginner to expert, each with its own unique scenery. When you see the green light, you hit the gas and hang on.

But the way to really see what *Super Hang On* can do is to hold down your joystick's fire button, igniting the motorcycle's nitro injection. This transforms your bike from just being insanely fast to being suicidally fast. Blasting through corners and around other bikes at 200 mph, *Super Hang On* becomes impressive.

The engine screams, the tires squeal, and the scenery flies past so smoothly that you can almost feel the bugs splattering on your helmet visor. More than once I found myself with my chair tilted up on two legs, trying to get that extra bit of body English to help me through a difficult turn.

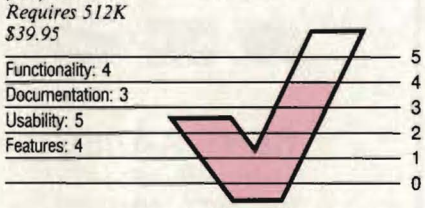
Occasionally, you may feel the need to be a little nasty and nudge slower drivers out of your way. You won't wreck no matter how hard you hit another motorcycle. However, any altercations with billboards or trees that line the track will result in you and your cycle lying in a sickly looking pile.

Though perhaps not the most original game concept, *Super Hang On* can definitely be entertaining. Just go fast, be mean when you have to—and be sure you don't tip your chair over.

—J.F.

Scene Generator

Natural Graphics
P.O. Box 1963
Rocklin, CA 95677
(916) 624-1436
Requires 512K
$39.95



I often forget the true power of my computer. If you're like me, your computer is used primarily for games and word processing (although lately I'm doing a lot of programming). Once in a while, I'll stumble upon a program that really impresses me. *Scene Generator* is just such a program.

I had never heard of Natural Graphics or this program until my editor assigned me the review. Boy, am I glad he did. I would strongly recommend this program to anyone who does art on the Amiga or who just likes to play around with graphics to impress friends. *Scene Generator* is no fool's gold.

This program generates fractal landscape images based on a seed of your choice or a random seed. Each seed creates the same landscape every time, so if you find a particular setup that you like, you can easily regenerate it.

Scene Generator allows you to modify the landscape to suit your needs. You can change the height of the land, water level, and depth of snow. Add or remove clouds and change their color to brown, green, or gray. You can have water in your landscape, texture its surface, and surround it with a beach. You can even change the placement of the light source to get different perspectives on your landscape. By varying the seed and the height of the land, you can come up with so many types of background scenery that it's tough to describe or predict what can happen until you try it.

Two features that particularly impress me in *Scene Generator* are the color palette and the three modes of rendering. By accessing the color palette, you can get rid of certain colors and add others. I was unhappy with the grayish-tan beach that *Scene Generator* rendered, so I changed all the gray to light brown, which looked more natural.

More importantly, instead of waiting a long time to see a picture that you may not want, you can preview it in unrendered block form in about ten seconds. Medium-detail rendering takes two minutes, and high detail takes a maximum of five minutes. And these pictures are of near-photographic quality! Certainly, *Scene Generator* is one of the nicest art programs I've ever seen.

—R.C.

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ON DISK

Your Guide to This Issue's Programs

Amiga Resource
Volume 2, Number 2
April 1990

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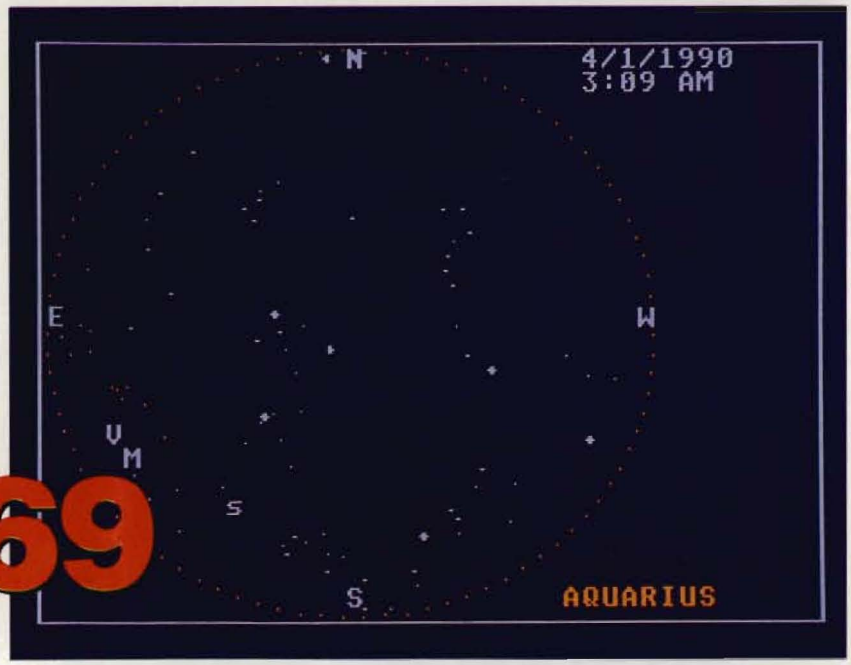

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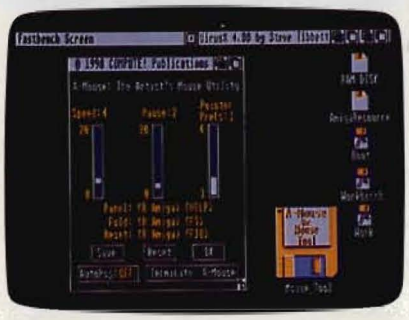

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Pitch

Steven Andrews

Pitch is an Amiga version of the card game auction pitch, where you play a two-player game against the computer.

Pitch is a battle of wits. The scoring and bidding rules, while a bit arcane, make this game a real challenge.

To play, double-click on the Pitch icon. You'll see the title screen with a Continue gadget. Click on Continue and the computer draws a card. Click on Continue again and you draw a card. The deal goes to the high card for the first hand and alternates between players thereafter. Each player is dealt a hand of six cards. The deck is a standard deck of playing cards (13 ranks of four suits).

At the beginning of the hand, both players must enter a bid. The bid is an estimate of how many points you believe you can make during the hand. Four points are possible. You get one point for having the highest trump card (the trump suit is the suit of the first card played). You get one point for having the lowest trump card. You get one point for having the jack of trump. And finally, you get one point for having the highest point sum of the following trump cards: ace (worth 4), king (worth 3), queen (worth 2), jack (worth 1), and 10 (worth 10). This last point is called the game point. If both players have the same sum (this can only happen if one player has the 10 and the other has the ace, king, queen, and jack), then the game point is not awarded.

The player who is not the dealer must enter his or her bid first. The dealer can then take control of the hand by matching or exceeding the other player's bid. If you bid 4, you win the bid automatically. The winner of the bid goes first. The first card thrown determines trump suit.

Throw a card by clicking on it. You must follow suit or throw a trump card if you can (unlike some card games, you don't have to follow suit if you have a trump card). If you are unable to follow suit, you may throw any card you have. When you follow suit, high card takes the trick. If you throw a trump card on a card of another suit, you take the trick. If you can't follow suit or play a trump card, you lose the trick.

The player that takes the trick throws the next card and so controls the game.

Scoring

At the end of the hand, points are totaled. If the winner of the bid matched or exceeded his or her bid, the player gets the points he or she scored. Otherwise, the bid is subtracted from the player's running total. The loser of the bid scores whatever points he or she made during the last hand.

The first player to get seven points wins the game. The winner of the bid is scored first, so if both players match or exceed seven points, the winner of the bid wins the game. If a player bids 4 and makes it, that player wins the game immediately, unless his or her score was negative, in which case he or she simply receives four points.

After each hand, *Pitch* will show its scoreboard. The game takes care of all the scoring. Take a close look at this screen if you want to get a better grasp of how scoring works.

The computer keeps track of the number of games won by each player.

SPECS

Pitch
PROGRAM SIZE: 14,328 bytes
MINIMUM CONFIGURATION
  512K RAM
  AmigaDOS 1.2
ENVIRONMENT
  Workbench
    Double-click icon
  CLI
    RUN PITCH

Stars II

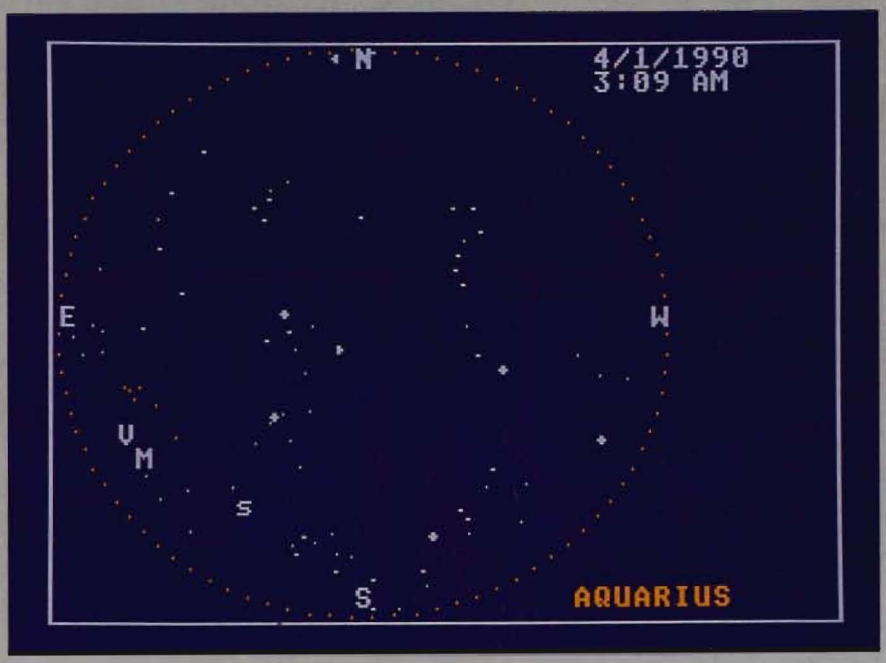
Robert A. Mulford
Amiga version by Tim Midkiff

Since ancient times, man has gazed upward and wondered about the points of light in the night sky. Astrologers tried to attach meaning to the motion of the lights, using them to predict the future. Today, thanks to pioneers like Galileo, Ptolemy, and Copernicus, we have a clearer understanding of the motions of the heavenly bodies. With our increased knowledge, the night sky is even more fascinating than before.

Stars II brings the fascination of the stars and planets to your Amiga. With it, you can learn the constellations, identify and study the movements of the wandering planets, and view the sky for any date and time from any point on Earth.

Have you ever seen the planet

Mercury? Jupiter? The constellation Aries? *Stars II* will show you when and where to look for visible planets, stars, and constellations. If you're curious about what the sky looks like from Australia or the North Pole, *Stars II* lets you travel there to observe. It even shows the daytime sky, with the sun positioned in front of the normally invisible stars.



Getting Started

Simply double-click on the *Stars II* icon to start the program. After a short delay, a blank screen appears. Hold down the right mouse button and you'll find three pull-down menus: Plot, Settings, and Info. Select the Overhead option from the Plot menu. In just a few seconds, an overhead view of the sky appears on the screen. By default, *Stars II* draws the sky as it would appear in Greensboro, North Carolina (the location of *Amiga Resource*'s editorial offices) on the date and time specified by your Amiga's internal clock.

Changing the location, date, and time from which you wish to view the sky is easy. For this you use the Settings menu. For example, select the Date & Time option from the Settings menu. A small requester appears displaying the current year. Hit Return to accept this date, or use the keyboard to change the year to any year between 0 and 9999. You must enter the complete year, as in 1991. Next you're asked to enter the month and day. Enter the month as a number from 1 to 12. For example, type 7 for July. Type the day as a number from 1 to 31. Although the program offers a wide range of dates that can be entered, it is most accurate for dates within 400 years of the present.

If you enter a month that is between April and October, *Stars II* asks whether the time is standard or daylight saving time. Type S for standard time or D for daylight saving. *Stars II* requests the hour and minute next. Enter the hour as a number from 0 to 23, where values 0–12 are the hours 12:00 a.m. (midnight) through 12:00 p.m. (noon) and values 13–23 represent the hours 1:00 p.m. through 11:00 p.m. Enter the minute as a number from 0 to 59.

Using the Location option found under the Settings menu, you can view the sky from any place on Earth. After you select this option, *Stars II* asks for the latitude, longitude, and time zone of the area from which you wish to view the sky. Latitude can be any number from −90 to 90 (−90 is 90 degrees south; 90 is 90 degrees north), longitude from 0 to 360, and time zone from −12 to 12. The time zone value is the difference, in hours, between local standard time and the time at 0 degrees longitude in Greenwich, England. The four time zones for the continental United States are 5 for Eastern, 6 for Central, 7 for Mountain, and 8 for Pacific.

After changing the location or the date and time, select Overhead from the Plot menu again to update the screen.

Overhead isn't the only view available to you, by the way. You could choose any of the Plot menu's first four options, and each one can be used to update your view of the sky.

Selecting Your View

As its name implies, the Overhead option gives you an overhead view of the entire sky. *Stars II* uses a sophisticated technique, called *stereographic projection,* to project the entire sky onto a flat circular map with minimum distortion of the star patterns. The outer circle of this map represents the horizon, while the center is the zenith (the point directly overhead in the sky). This option is especially useful for determining which constellations or planets are visible on a given night.

To concentrate on a particular area of the sky, select one of the Plot menu's three options: Eastern Horizon, Southern Horizon, or Western Horizon. When one of these options is selected, a portion of the sky is reproduced on the screen with the horizon at the bottom, similar to what you would see if you went outside and looked in that direction.

Stars are represented by white dots on a dark background. If it is night, the sky background is black. If the sun is near or above the horizon, the background changes to blue. Brighter stars appear as larger white dots on the display. *Stars II* accurately computes the positions of visible planets and marks them with distinctive symbols. Each planet, constellation, or star is named as it is plotted on the sky, allowing you to become familiar with the major star patterns. If an object is below the horizon, its name appears briefly, but the object does not appear onscreen.

Certain planets and the sun are displayed as letters. The sun is shown as an uppercase *S,* Mercury appears as a lowercase *m,* Venus appears as an uppercase *V,* Mars is represented by an uppercase *M,* Jupiter is represented by an uppercase *J,* and Saturn appears as a lowercase *s.* You can't see Uranus, Neptune, and Pluto, since these planets are not visible with the naked eye. ▷

Exploring the Heavens

Select the Info menu's Constellation option to list all the constellations visible in *Stars II*, with a brief description of each. There are many constellations in the sky, but most of them are faint. *Stars II* does not attempt to display them all. All the bright and important star patterns are here, however, including the 12 constellations of the zodiac. Learn these constellations and you'll have no trouble finding your way around the real sky.

The Solar System Data option found under the Info menu summarizes information about the sun and visible planets for the date you've selected. *Stars II* solves Kepler's equation to compute extremely accurate positions for each planet. The altitude above (or below) the horizon and the direction in which each planet is visible are displayed. If the altitude is negative, the object is below the horizon. In addition, the distance of the sun and planets from the Earth is also shown. The sidereal, or star, time is also displayed. (Sidereal time is most useful for experienced stargazers; it tells you which stars are directly overhead.)

Additional Options

Because the Amiga is so fast, it's often difficult to read the names of the stars as they are drawn onscreen. To slow things down, select the Wait for Mouse option from the Settings menu. When this option is activated, *Stars II* waits for you to press the left mouse button before it draws the next star or constellation. This allows you to read the star's or constellation's name and note its position in the sky. This menu option works as a toggle: Select it once to activate it; select it again to turn it off. A check mark appears next to the menu option when it's active.

If you press the space bar after the entire sky has been drawn for the selected date, *Stars II* computes and displays the sky at the same time for the following month. By continuing to press the space bar, you can watch how the constellations change with the seasons or watch the wanderings of the planets as the year goes by.

To exit the program, select the Quit option from the Plot menu.

SPECS

Stars II
PROGRAM SIZE: 72,556 bytes
MINIMUM CONFIGURATION
  512K RAM
  AmigaDOS 1.2
ENVIRONMENT
  Workbench
    Double-click icon
  CLI
    RUN STARSII

A-Mouse

Mark Brannon

A-Mouse is a mouse accelerator. It gives Amiga users control over the speed and acceleration of their mice. But it's more than that. It's also an artist's tool. It will allow you to change the speed and response of the mouse from 1 pixel of pointer movement per quarter-inch of mouse travel to 640 pixels of pointer movement per eighth-inch of mouse travel. *A-Mouse* also allows adjustment of the acceleration pause and the Preferences mouse speed value. You can set the parameters so that slow mouse movements let you perform precision work, while a quick flick of the wrist sends the pointer flying across the screen.

Adjusting your mouse's speed and response is easy with *A-Mouse*'s pop-up control panel. The panel is designed to safely pop up on any Amiga screen or window. That means you can change your mouse settings while in your favorite paint program. *A-Mouse* uses its own hot keys to activate and fold (deactivate) the control panel. *A-Mouse* will even save your changes to a disk file and load them automatically the next time you run your program.

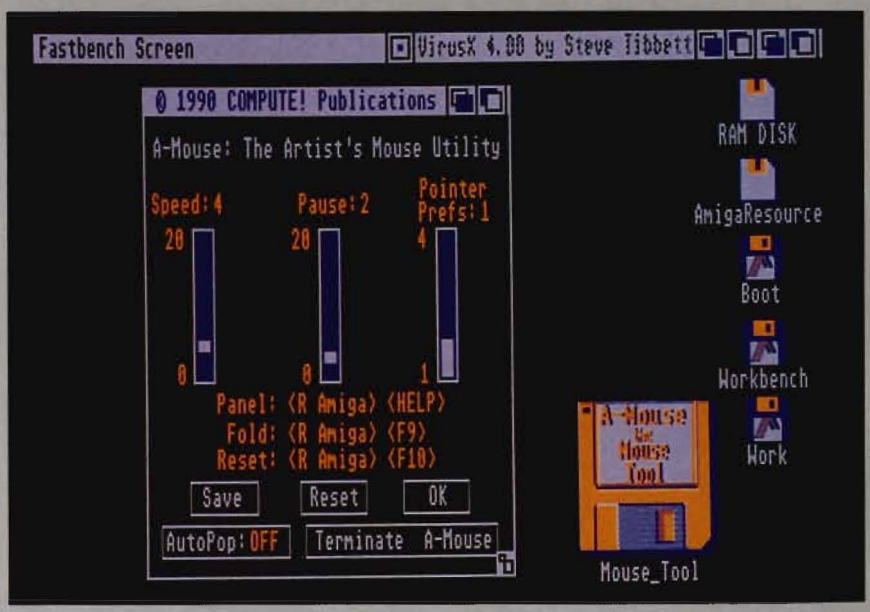
Total Control

A-Mouse can be run from either the Workbench or the CLI. You'll find the program in the root directory of the *Amiga Resource* disk. Double-click on the program to start it. From the CLI, type A-MOUSE. *A-Mouse* will automatically detach itself from the CLI that started it. You may wish to copy the program to your boot disk and make the A-MOUSE command part of your startup-sequence.

When the program starts, it will attempt to load its default file from the DEVS: directory. If this load fails, the screen will flash and *A-Mouse* will use its internal default values.

A-Mouse's control panel appears when you first run the program. On this control panel you'll see three sliders which control the pointer: Speed, Pause, and Pointer Prefs.

Speed represents the multiplier used to accelerate the mouse. The range is 0–20. The value 1 is neutral. Higher values speed up the mouse.



The value 0 slows it down.

Pause is the acceleration delay. Technically, it's the number of pixels per unit of time before the mouse is accelerated. This value falls in the range between 0 and 20. With the value 0, the mouse is always accelerated by the Speed value. With the value of 20, you must get the mouse going quite fast before the accelerated rate takes effect.

Pointer Prefs is the value of the pointer speed as kept by the system. You usually alter this value by using the Preferences program. This value ranges from 1 to 4. When you run *A-Mouse*, the program will use the system value as the default.

There are five buttons located near the bottom of the *A-Mouse* control panel: Save, Reset, OK, AutoPop, and Terminate A-Mouse.

Click on Save to save your mouse settings. The file will be saved as DEVS:AMouse-configuration. This file will be read the next time you run *A-Mouse*.

Click on Reset to restore the mouse settings to their last saved values.

Click on the OK gadget when you are happy with your mouse settings. This will cause the control panel to disappear.

The AutoPop button is a toggle. You can turn AutoPop on or off. If AutoPop is on, the control panel will appear immediately when you run *A-Mouse*. Otherwise, the control panel will not appear until you open it with the proper hot key.

Click on Terminate A-Mouse when you want to turn off *A-Mouse*. The control panel will disappear and the program will be removed from memory.

There are three hot keys that control *A-Mouse*. They are Right Amiga–Help, which brings up the control panel; Right Amiga–F9, which closes the control panel (just as clicking on OK would); and Right Amiga–F10, which resets the mouse values to their previously saved values (just as clicking on Reset would).

Using the Program

If the control panel is on a custom screen, be sure to close the control panel before you close that screen. You will almost certainly guru the Amiga if you ignore this advice.

Here are a few sample settings that give results.

	Speed	Pause	Pointer Prefs
General Usage	2	0	1
General Artwork	8	1	2
Precision Artwork	16	3	4

A-Mouse is written in *Lattice C*. You can find the source code in the source directory on the *Amiga Resource* disk.

SPECS

A-Mouse
PROGRAM SIZE: 6796
MINIMUM CONFIGURATION
  512K RAM
  AmigaDOS 1.2
ENVIRONMENT
  Workbench
    Double-click icon
  CLI
    RUN A-MOUSE

Boot Doctor

Foster Hall

If you want to avoid getting sick, you should eat right and get regular examinations. If you want to keep your computer from getting sick, you should make regular visits to *Boot Doctor*.

Boot Doctor can protect your valuable game software from virus attacks. Also, it has features to let you run games that don't take kindly to expansion memory and external disk drives.

Before you use *Boot Doctor*, you should understand a little about Amiga boot blocks. A boot block consists of code that is executed when you boot with a disk. For instance, your Workbench disk has a standard boot block. If you use the CLI command Install on the Workbench disk, you will simply rewrite the standard boot information. Many antivirus programs check the boot block to see if it has been altered.

But boot blocks are not all the same. Many copy-protected games have their own boot blocks. If you use the Install command on them, you'll render the games unusable. Games with custom boot blocks are particularly vulnerable to virus attacks. *Boot Doctor* isn't a replacement for antivirus programs. Instead, it's a utility that helps you manage boot blocks. Think of *Boot Doctor* as preventive maintenance.

Getting Started

Boot Doctor is easy to use. You'll find it in the root directory of the *Amiga Resource* disk. Just double-click on the program's icon to get started.

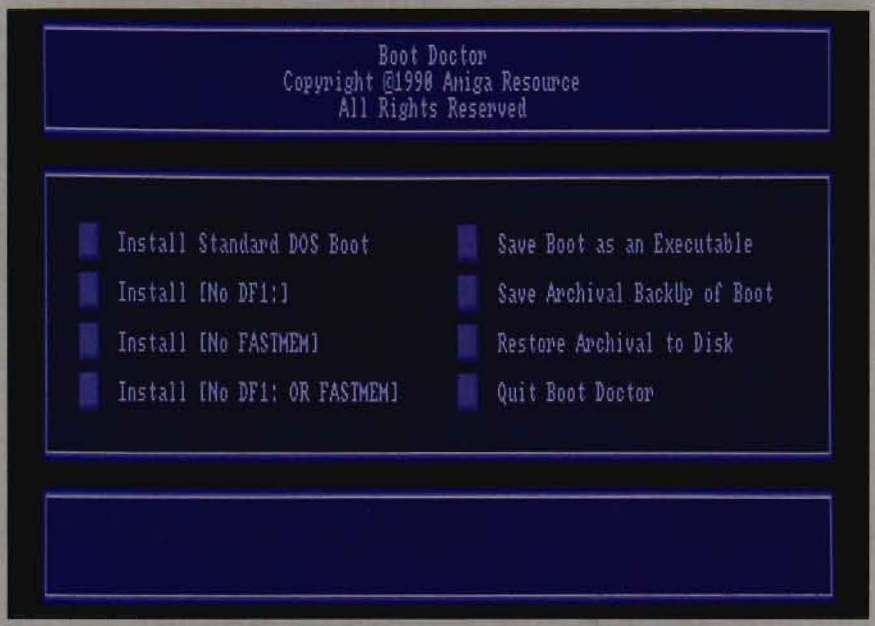
You'll see *Boot Doctor*'s eight options. Each option has a button next to it. When you click on a button, the message area at the bottom of the screen will tell you what to do. When you see *Press RMB to continue*, click the right mouse button. The first option is **Install Standard DOS Boot**. This option lets you eliminate boot-block viruses without using the CLI. Use this command when you want to be sure that the standard boot block is on your disk.

The second option is **Install [No DF1:]**. There are certain games which do not operate properly with a second disk drive connected to the system. This is usually because the drive uses up a certain amount of RAM for its disk buffers. You can choose to install disks with the option to "disconnect" DF1: without actually having to remove the drive from your system. Before trying this, be sure to use option 6, Save Archival Backup of Boot, just in case the game requires its own custom boot block.

The third option, **Install [No FASTMEM]**, allows you to "disconnect" any expansion RAM that you may have connected to your system. This is useful for fixing improperly written programs that fail when you have more than 512K of RAM. Symptoms of a faulty program include garbled graphics and sound (for instance, an arrow gadget that doesn't look like an arrow). Be sure that you've saved a copy of the original boot block before you attempt to use this option.

The fourth option is **Install [No DF1: or FASTMEM]**. It's a combination of options 2 and 3. Be sure to save the original boot block before you try this.

The fifth option is **Save Boot as**



Executable. This option is designed for programmers who are interested in boot-block programming and viruses. This is especially useful if you want to debug a custom boot block. For instance, you might want to create a boot block that plays a tune or draws a picture. When you click on this button, you'll see the message *Insert Source disk in drive.* Do so, and then click the right mouse button to continue. Boot Doctor will bring up a file selector. Choose a name for saving the boot block.

The sixth option is **Save Archival Backup of Boot**. This is your weapon against viruses. For every game you have, save a backup of the boot block. Use a reasonable naming system, such as ARCHANOID.BOOT, DENARIS .BOOT, POPULOUS.BOOT, and so on. To use this option, click on the option's button and then insert the disk. Some disks are not recognized by AmigaDOS, so you'll see system messages such as *Error validating disk*; *Disk is unreadable*; and *Disk structure corrupt. Use DISKDOCTOR to correct it.* Ignore these messages by clicking on CANCEL; then use the Workbench screen-to-back gadget (or press Left Amiga–M) to return to the *Boot Doctor* screen. Press the right mouse button to continue. Enter a filename into the file selector and click on OK. If you change your mind and decide not to save the boot block, click on Forget It.

If one of your games is knocked out because of a virus, use the seventh option, **Restore Archival to Disk**, to restore it. Click on the option's button, select the correct boot-block backup file, insert the disk, and click on the right mouse button to write out the block.

The eighth option is **Quit Boot Doctor**. Click on this button after *Boot Doctor* has saved the day.

Final Notes

Boot Doctor is a powerful utility. Use it with care. Misuse can result in a stack full of useless disks. If possible, always work with backup copies, not your original disks.

Remember, *Boot Doctor* is not a virus detector. For that, we recommend Steve Tibbet's public domain *VirusX*. The current version is 4.0.

Boot Doctor is programmed in machine language. You can find the source code in the source directory of the *Amiga Resource* disk.

SPECS

Boot Doctor
PROGRAM SIZE: 10,280
MINIMUM CONFIGURATION
  512K RAM
  AmigaDOS 1.2
ENVIRONMENT
  Workbench
    Double-click icon
  CLI
    RUN BOOTDOCTOR ▲

HOW TO GET THE DISK

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HOW TO USE THE DISK

Every issue of *Amiga Resource* has a companion disk that features the exclusive programs we offer each issue, as well as the "Best of the Boards" program and the "Art Gallery" screens. You can get this disk in three ways. First, you may buy *Resource* with the disk in a poly-bag at your bookstore or from your computer dealer. Second, you may subscribe to the magazine with the disk. Third, you may order single copies of this disk (see the back-issues/disk-order ad elsewhere). If you experience a problem with the disk, even after you've read the programs' documentation, please contact us at (919) 275-9809 between 9:00 a.m. and 4:30 p.m. Eastern standard 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 Workbench disk, but the icons will not be as colorful as they are when you boot with the magazine disk.

You run programs by double-clicking on 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 you copy all the 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 on its icon. When the painting appears on-screen, 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, and 1988, Commodore-Amiga, Inc. all rights reserved. All other disk contents are copyright 1990, 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 can slide the write-protect tab to the closed position to allow writing, but there may not be enough room on the disk for any more files. If this is true, copy the offending program to another disk to use it.

On Disk This Issue

There's one program on the disk that runs from the CLI only. This program is *ViewDir* from Jim Butterfield's "CLI Clips." It's located in the disk's c directory. To use *ViewDir*, you'll need to boot with a Workbench disk that has a CLI or Shell. (Because of space limitations, we did not have room to support a CLI or Shell on our disk.)

ViewDir works a lot like the DIR command, except that instead of just listing filenames, it lists each file's type (text file, executable file, Workbench object, and so on); it also lists the file's size, in blocks or bytes. Subdirectories are listed as well and are followed by the number of files that they contain.

ViewDir has three options which can be used individually or in combination. The first option, -b, shows the file sizes in blocks instead of bytes. The second option, -i, causes *ViewDir* to ignore .info files. And the last option, -t, tells *ViewDir* not to show file types.

With the exception of Jack Radigan's *JR-Comm* program and Jim Butterfield's *ViewDir* program, the source code for all of the programs on disk may be found in the disk's source directory. Within the source directory are separate directories for each of the programs. For example, the source code for *Stars II* may be found in source/StarsII. The source directory does not have an icon and cannot be accessed via the Workbench.

Stars II was written in Amiga Basic and then compiled using MichTron's *HiSoft Basic Professional* version 1.05. Because *HiSoft Basic* creates stand-alone programs, you do not need a copy of Amiga Basic to run *Stars II*. All you have to do is double-click on its icon. In fact, the BASIC source code for *Stars II* is so long that it will not run from the Amiga Basic interpreter—you must run the compiled version. ▲

On Disk Directory

```
c (dir)
   Colorbench                    EndCLI
   FileRead                      LoadWB
   V                             ViewDir
system (dir)
   DiskCopy
l (dir)
   Disk-Validator                Port-Handler
devs (dir)
   serial.device                 system-configuration
s (dir)
   startup-sequence
source (dir)
      Pitch (dir)
        itoa.a                      linkfile
        pitch.h                     p_logic.c
        p_main.c
      AskRobPeck (dir)
        DualPlayfield.c
      StarsII (dir)
        StarsII.bas
      BootDoctor (dir)
        BootDoctor.a
      ProgPage (dir)
        NewGads.c                   Smiley.c
libs (dir)
   arp.library                   diskfont.library
   icon.library                  info.library
   mathieeedoubbas.library       mathieeedoubtrans.library
   version.library
BestofBoards (dir)
   .info                         JR-Comm
   JR-Comm.doc                   JR-Comm.doc.info
   JR-Comm.info                  Readme
   Readme.info
ArtGallery (dir)
   Bippy                         Bippy.info
   Galaxy                        Galaxy.info
   Leopard                       Leopard.info
ProgPage (dir)
   .info                         NewGads
   NewGads.info                  Smiley
   Smiley.info
.info                         A-Mouse
A-Mouse.info                  ArtGallery.info
BestofBoards.info             BootDoctor
BootDoctor.info               Disk.info
DualPlayfield                 DualPlayfield.info
Pitch                         Pitch.info
ProgPage.info                 StarsII
StarsII.info
```

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1990 OFFICIAL SPRING

GUIDE TO AMIGA USER GROUPS

EDITED BY LIZ CASEY

The following is our "Guide to Amiga User Groups" for Spring 1990. If your group supports Amiga computers and does not appear in this list, send your club name and address to

Amiga User Groups
Amiga Resource
P.O. Box 5406
Greensboro, NC 27403

Your group will then be listed in our next guide.

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.

Note: COMPUTE! Publications does not condone the use of its user group lists by individuals or user groups for the purpose of buying, selling, or trading pirated software. Should we discover any group participating in any such illegal and unethical activity, the club's listing will be permanently deleted from our files.

UNITED STATES

ALABAMA

Birmingham Commodore Computer Club (BCCC), P.O. Box 59564, Birmingham, AL 35259-9564
Scottsboro Commodore Users Group, Rt. 5 Box 255, Scottsboro, AL 35768
Coosa Valley Commodore Club (C.V.C.C.), P.O. Box 1893, Gadsden, AL 35902-1893
Montgomery Area Commodore Komputer Society (MACKS), P.O. Box 210126, Montgomery, AL 36121-0126
Amiga/Commodore Club of Mobile, 3868-H Rue Maison, Mobile, AL 36608
Commodore Mobile Users Group (CMUG), P.O. Box 9524, Mobile, AL 36691-0524

ALASKA

Anchorage Commodore Users Group (ACUG), Box 104615, Anchorage, AK 99510
Sitka Commodore User's Group, P.O. Box 2204, Sitka, AK 99835

ARIZONA

Arizona Commodore Enthusiasts (ACE), P.O. Box 46227, Phoenix, AZ 85063
Catalina Commodore Computer Club, P.O. Box 32548, Tucson, AZ 85751
Prescott Area Commodore Club (A.Z.C.C.), P.O. Box 4019, Prescott, AZ 86301

ARKANSAS

Commodore Information Association (CIA), Rt. 1 Box 103 F, Mayflower, AR 72106
Triple-D 64, P.O. Box 301, Reyno, AR 72462

CALIFORNIA

Los Angeles Amiga Users Group, P.O. Box 947, Culver City, CA 90230
Orange County Commodore Club (O.C.C.C.), 7950 Puritan St., Downey, CA 90242
Westside Amiga Users Group, 1814 W. 242nd Pl., Lomita, CA 90717
Amiga Users Group of Long Beach, 5155 Via Veranada, Long Beach, CA 90805
Amiga Tech Users Group (ATUG), 2227 Canyon Rd., Arcadia, CA 91006
Famous Amy in the Hills (FAITH), 4463 Commonwealth, LaCanada, CA 91011
San Fernando Valley Commodore Users Group, 7017 Geyser Ave., Reseda, CA 91335
Valley Video Workshop, 2013 Los Feliz #3, Thousand Oaks, CA 91362
San Fernando Valley Amiga Users Group (SFVAUG), P.O. Box 8183, Van Nuys, CA 91406
South Bay Commodore Users Group, P.O. Box 1899, Chula Vista, CA 92012-1899
San Diego Amiga Users Group, P.O. Box 80186, San Diego, CA 92138
Club-64 (San Bernardino), P.O. Box 514, Patton, CA 92369
Victor Valley Commodore Interest Association (VVCIA), P.O. Box 385, Victorville, CA 92393-0241
Amiga Friends, P.O. Box 4186, Huntington Beach, CA 92605
South Orange Commodore Klub (SOCK), 25401 Champlain Rd., Laguna Hills, CA 92653
Ventura Amiga Users Exchange, P.O. Box 2738, Ventura, CA 93010
A Bakersfield Area Commodore Users Society (ABACUS), P.O. Box 40334, Bakersfield, CA 93306
Central Coast Commodore Users Group, 4237 Plumeria Ct., Santa Maria, CA 93455
CWEST Bay Area Commodore Users, P.O. Box 146731, San Francisco, CA 94114-6731
PETCETERA-on-the-Air, 525 Crestlake Dr., San Francisco, CA 94132
Access Computer Club, P.O. Box 3175, Livermore, CA 94550
North Bay User's Group (NBUG), P.O. Box 7156, Vallejo, CA 94590
Amiga Addicts Anonymous, P.O. Box 4669, Walnut Creek, CA 94596
The Amiga Users Group of the Silicon Valley, 1572 Los Padres Blvd., Suite 209, Santa Clara, CA 95050
Computer Room of Scotts Valley (S.V.A.U.G.), 220 Mt. Herman Rd., Scotts Valley, CA 95066
64/More Commodore User Group, P.O. Box 26811, San Jose, CA 95159-6811
Valley Computer Club, P.O. Box 310, Denair, CA 95316
Lake Country Computer Users Commodore SIG, P.O. Box 385, Clearlake, CA 95422
North Valley Commodore Users Group (NVCUG), P.O. Box 7658, Chico, CA 95927
Hub Area Commodore Club (HACC), 10734 Mooney Flat Rd., Smartsville, CA 95977
Commodore Owners Users Group of Redding (COUGOR), 1012 Layton Rd. #20, Redding, CA 96002
Redding Commodore User Group, P.O. Box 493762, Redding, CA 96049

COLORADO

Rocky Mountain Amiga Users, P.O. Box 280403, Lakewood, CO 80228
Ft. Collins C3, P.O. Box 2051, Ft. Collins, CO 80522
The Commodore Club, P.O. Box 25851, Colorado Springs, CO 80936
WesCAUG, 522 29 Rd., Grand Junction, CO 81501

CONNECTICUT

Capital Region Commodore Computer Club (CRCCC), P.O. Box 2372, Vernon, CT 06066
Eastern Conn Commodore Users Group, P.O. Box 136, Hebron, CT 06248
Computer Users Group, 6 Saner Rd., Marlborough, CT 06447
The Naugatuck Valley Commodore Users Group, P.O. Box 622, Waterbury, CT 06720
Fairfield County Amiga Users Group (F.C.A.U.G.), Suite 315, 57 North St., Danbury, CT 06810-5638
Stamford Area Commodore Society (SACS), P.O. Box 2122, Stamford, CT 06906-0122

DELAWARE

Amiga Network, P.O. Box 5940, Newark, DE 19714-5940
Lower Delaware Computer Club, P.O. Box 5344, Nassau, DE 19969

FLORIDA

Port Orange Commodore User Group (POCUG), 1244 Thomasina Dr., Port Orange, FL 32019
Commodore Computer Club of Jacksonville, 6956 Mauldin Ln., Jacksonville, FL 32244
Titusville Commodore Club, 890 Alford St., Titusville, FL 32796
Charlotte County Commodore Club (CCCC), P.O. Box 512103, Punta Gorda, FL 33951-2103
Sarasota Manatee Amiga Users Group (SMAUG), P.O. Box 36057, Sarasota, FL 34233
Ram-Rom 84 Commodore Users Group, P.O. Box 3880, Venice, FL 34293-3880
Clearwater Commodore Club, P.O. Box 11211, Clearwater, FL 34616

GEORGIA

Metro Atlanta Commodore Klub (MACK), P.O. Box 813481, Smyrna, GA 30081
Commodore Club of Augusta, P.O. Box 14337, Augusta, GA 30919
Savannah Commodore User Group, P.O. Box 1171, Savannah, GA 31402-1171
The Pioneer League Amiga User Group, P.O. Box 8114, Columbus, GA 31908

HAWAII

Mililani User Group, 276 Olive Ave. #6, Wahianwa, HI 96786
Maki Commodore User Group (MCUG), P.O. Box 6381, Honolulu, HI 96818

IDAHO

Pocatello Commodore Users Group (PCUG), Rt. 2 Box 48E, Pocatello, ID 83202
Banana Belt Commodore Users Group (BBCUG), P.O. Box 1272, Lewiston, ID 83501
Amiga Users of Southwestern Idaho (AUSI), P.O. Box 691, Boise, ID 83701-0691

ILLINOIS

United Northern Computer Learning Exchange (U.N.C.L.E.), 533 N. 4th Ave., Des Plaines, IL 60016
Fox Valley PET (Commodore) Users Group, 833 Prospect Ave., Elgin, IL 60120
Computers West, P.O. Box 3357, Glen Ellyn, IL 60138-3357
Amiga Computer Enthusiasts (A.C.E), P.O. Box 591, Oak Forrest, IL 60452
The Chicago Computer Society, P.O. Box 8681, Chicago, IL 60680
CCR Commodore Club, P.O. Box 10022, Rockford, IL 61131-0024
Champaign-Urbana Commodore User Group (CU-CUG), 802 N. Parke St., Tuscola, IL 61935
The Trading Inn, 1525 Andrews, Cahokia, IL 62206-2402
Gateway Computer Club, P.O. Box 1839, Fairview Heights, IL 62208
Western Illinois Programmer's User Group (WIPUG), Rt. 5 Box 75, Quincy, IL 62301-9314
Southern Illinois Commodore-Amiga Club, 1707 E. Main St., Olney, IL 62450
Lincoln Area Commodore Users Group, P.O. Box 131, Lincoln, IL 62656
Jacksonville Area Commodore Users (JACUG), c/o Greg Simpson, #4 Purcell St., Murrayville, IL 62668
Capitol City Commodore Computer Club (5 Cs), P.O. Box 2961, Springfield, IL 62708
SPUG Computer Club, P.O. Box 9035, Springfield, IL 62791

INDIANA

Indianapolis Computer Club, P.O. Box 11367, Indianapolis, IN 46201
Logansport Commodore Club, P.O. Box 1161, Logansport, IN 46947
Richmond Area Computer Users Group (RACUG), P.O. Box 1332, Richmond, IN 47375
Commodore Computer Club, 819 Treelane Dr., Newburgh, IN 47630

IOWA

Capitol Complex Commodore Computer Club, P.O. Box 212, Des Moines, IA 50301
Ft. Dodge Commodore Users Group, P.O. Box 63, Moorland, IA 50566
Product Engineering Center Commodore Users Group (PECCUG), 319 Ivanhoe Rd., Waterloo, IA 50701
Plymouth County Commodore User's Group (PLYC-CUG), 508 1st St. SW, Le Mars, IA 51031
Washington Area Commodore Users Group, P.O. Box 445, Washington, IA 52353
Commo-Hawk Commodore Users Group, P.O. Box 2724, Cedar Rapids, IA 52406-2724
Quad Cities Commodore Computer Club, P.O. Box 3994, Davenport, IA 52808

KANSAS

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Newton Area User Group, 112 Brookside, Newton, KS 67114
Salt City Commodore Club, P.O. Box 2644, Hutchinson, KS 67504
High Plains Commodore Users Group, 1307 Western Plains, Hays, KS 67601

KENTUCKY

Louisville Users of Commodore of Kentucky (L.U.C.K.Y.), P.O. Box 19032, Louisville, KY 40219-0032
Purchase C64 User's Group, Rt. 1 Box 209A, Calvert City, KY 42029
Glasgow Commodore Computer Club, P.O. Box 154, Glasgow, KY 42141
Muhlenberg County Commodore Users Group (M.C.C.U.G.), P.O. Box 12, Greenville, KY 42345

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PAGE U.G., P.O. Box 7703, Alexandria, LA 71306-7703

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Amiga Users of Southern Maine (AUSM), P.O. Box 10237, Portland, ME 04104
Commodore Users Society of Penobscot (CUSP), c/o 101 Crosby Hall, University of Maine at Orono, Orono, ME 04469
Island/Reach Computer Users Group, P.O. Box 73, Deer Isle, ME 04627
Southern Aroostook Commodore User's Group, P.O. Box 451, Houlton, ME 04730
Northern Maine Commodore User's Group, P.O. Box 493, Loring AFB, ME 04751
P A C E, 27 Cedar St., Belfast, ME 04915

MARYLAND

Southern Maryland Amiga User Group (SMAUG), 1866 Bay St., Huntingtown, MD 20639
Laurel-Bowie User Group (L-BUG), P.O. Box 924, Bowie, MD 20715-0924
Rockville Commodore Users Group, P.O. Box 8805, Rockville, MD 20856
Capital COMAL User Group, 10200 Leslie St., Silver Spring, MD 20902
Montgomery County Commodore Computer Society, P.O. Box 2689, Silver Spring, MD 20902
CUM-BACC, 1427 York Rd. at Seminary Ave., Baltimore, MD 21093-6014
BAYCUG, 110 Danbury Rd., Reisterstown, MD 21136
Baltimore Amiga User's/Developers (BAUD), P.O. Box 2432, Baltimore, MD 21203-2432
Annapolis Commodore User's Group, P.O. Box 3358, Annapolis, MD 21403
Frederick Functioneers, P.O. Box 1913, Frederick, MD 21701-1010

MASSACHUSETTS

Pioneer Valley Computer Club, 6 Laurel Terr., Westfield, MA 01085
Worcester County Amiga Users Group (WCAUG), P.O. Box 192, W. Boylston, MA 01583-0192
Commodore Users Group of Cape Cod, P.O. Box 1490, Cotuit, MA 02635
Fall River Commodore's Club, 117 Lewin St., Fall River, MA 02720

MICHIGAN

Michigan Commodore Users Group, P.O. Box 539, East Detroit, MI 48021
Computer Owners of Marysville, Port Huron, 2937 W. Woodland Dr., Port Huron, MI 48060
Washtenaw Commodore Users Group, P.O. Box 2050, Ann Arbor, MI 48106-2050
Downriver Commodore Group, P.O. Box 1277, Southgate, MI 48195
Soft-Type Users Group, 20231 Westmoreland, Detroit, MI 48219
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Midland Computer Club, 4702 Jefferson, Midland, MI 48640
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Tri-County Computer Club, 607 E. Dowland St., Ludington, MI 49431
West Michigan Commodore Users Group, P.O. Box 88191, Kentwood, MI 49508
Traverse Area Commodore Club, 404 Bates St., Fife Lake, MI 49633
Northern Michigan Commodore Club (NMCC), P.O. Box 3066, Gaylord, MI 49735

MINNESOTA

Commodore Owners Area Computer Club (COACC), 2380 4th Ave. NW, Owatonna, MN 55060
Minnesota Commodore Users Association, P.O. Box 22638, Robbinsdale, MN 55422

MISSISSIPPI

Software Source, 4550 W. Beach Blvd. #12 Edgewater Village, Biloxi, MS 39531

MISSOURI

McDonnell Douglas Commodore Users Group, c/o Bruce Darrough, 28 Redwood, Florissant, MO 63031
Gateway Amiga Club, P.O. Box 811, Bridgeton, MO 63044
Commodore Users Group of St. Louis, P.O. Box 28424, St. Louis, MO 63146-0984
Heartland Users Group, P.O. Box 281, Cape Girardeau, MO 63702-0281
AUGKC, 9014 Central, Kansas City, MO 64114
Amiga Users National Tribe (A.U.N.T.), 3813 S. 11th, St. Joseph, MO 64503
Barton County Computer Users Group (B.C.C.U.G.), 611 West 10th, Lamar, MO 64759
Joplin Commodore Computer User Group, 422 S. Florida Ave., Joplin, MO 64801
Columbia Commodore Users (CCU), P.O. Box 7633, Columbia, MO 65205
Ozarks Amiga Computer Enthusiasts Society (OACES), P.O. Box 10903 GSS, Springfield, MO 65804

MONTANA

Commodore Classic User Group, P.O. Box 3454, Great Falls, MT 59403

NEBRASKA

Greater Omaha Commodore Users Group, P.O. Box 241155, Omaha, NE 68124
Mid-Nebraska Users of Commodore (MUC), 1920 N. Huston Ave., Grand Island, NE 68803
McCook Commodore Users Group, 1010 E. 2nd St., McCook, NE 69001
Platte Valley Computer Users Group (PVCUG), P.O. Box 367, Gering, NE 69341

NEVADA

Clark County Commodore Computer Club (5 C's), 5099 Eldora, Las Vegas, NV 89102
Southern Nevada Amiga Group (SNAG), 1973 N. Nellis Blvd., Suite 224, Las Vegas, NV 89115

NEW HAMPSHIRE

Southern New Hampshire Amiga Users Group (SNHAUG), 160 Mystic St., Manchester, NH 03103
Commodore Help and Information Network (CHAIN Gang), P.O. Box 654, Laconia, NH 03247
Seacoast Area Amiga Users Group, P.O. Box 878, Rochester, NH 03867-0009

NEW JERSEY

Garden State Commodore & MS-DOS User's Group, 89 Stratford Rd., Tinton Falls, NJ 07724
Commodore User Group of Central New Jersey, 112 Old Bridge Rd., Matawan, NJ 07747
Morris Area Commodore User Group (MACUG), P.O. Box 492, Mt. Tabor, NJ 07878
Amiga Users' Group of South Jersey, P.O. Box 3761, Cherry Hill, NJ 08034
Data Exchange-Beneficial Users Group 64/128 (D.E.-B.U.G. 64/128), 713 Second St., Dunellen, NJ 08812
The Jersey Amiga Users Group (JAUG), P.O. Box 1986, New Brunswick, NJ 08901

NEW MEXICO

New Mexico Commodore User Group, P.O. Box 37127, Albuquerque, NM 87176
Taos Area Commodore User's Group, P.O. Box 5686, Taos, NM 87571

NEW YORK

New York Commodore Interest Group (NYC=ig), 115 Essex St. Box #146, New York, NY 10002
The Bronx Users Group (BUG), P.O. Box 523, Bronx, NY 10475
Folklife Terminal Club, Box 555-R, Co-op City Station, Bronx, NY 10475
Queens Commodore Users Group, 37 Skillman Ave., Brooklyn, NY 11211
N.C.C.C., 151 DuBois Ave., Sea Cliff, NY 11579
Commodore Long Island Club, 15 Rochelle Ct., Amityville, NY 11701
Amiga-64 User Group, P.O. Box 280, Lindenhurst, NY 11757
Long Island Commodore Amigans (L.I.C.A.), P.O. Box 158, Mill Neck, NY 11765
ShADow Amiga User Group, P.O. Box 2265, Patchogue, NY 11772
Latham Amiga User Group, 893 New Louden Rd., Latham, NY 12110
Mohawk Valley Computer User Group, c/o William Nowak, 3818 Stinson Ave., Tribes Hill, NY 12177
The Capital District Amiga Users Group (CDAUG), P.O. Box 14353, Albany, NY 12212
Amiga Users Group/Hudson Valley (Amicus/H.V.), Box 327 Willowbrook Rd., Clinton Corners, NY 12514
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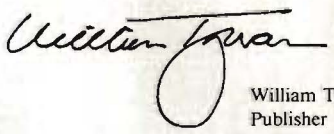

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AMIGA® RESOURCE

Mark Brannon

New Workbench Gadgets

The Amiga has been with us for some four years now, and although the operating system has undergone a few major revisions, the personality of the Workbench has remained the same.

The Workbench gets its look from Intuition, a library of functions that handle virtually all of the user interface operations, like screens, windows, menus, gadgets, and so on. And although Intuition is stored in ROM, it's possible for programmers to twist its tail a bit. With a little ingenuity, you can redesign almost all of Intuition's imagery.

Smiley

Smiley, the program listed at the end of this article, demonstrates how you can change the look of Intuition's close-window gadget. This particular program makes the close box appear as a smiling face. It also uses gadget animation to change the smiling face into a not-so-happy face when the close box is selected.

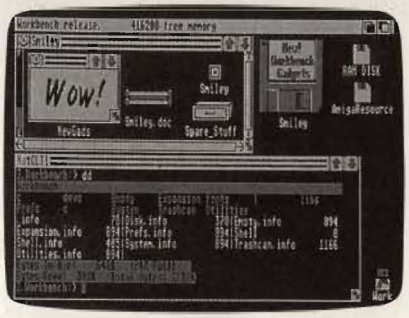
Smiley's source code and ready-to-run executable code may be found on this issue's *Resource Disk.* To run the program, simply double-click on its icon. Because the program changes the templates that Intuition uses to create system gadgets, any window that is opened after *Smiley* has been run will have a smiling face for a close box. Try closing and then reopening the *Resource Disk*'s window, for example.

To understand how *Smiley* works, first we must discuss Intuition's Gadget and Image structures as defined in the intuition.h include file.

```
struct Gadget {
   struct Gadget *NextGadget;
   SHORT LeftEdge, TopEdge;
   SHORT Width, Height;
   USHORT Flags;
   USHORT Activation;
   USHORT GadgetType;
   APTR GadgetRender;
   APTR SelectRender;
   struct IntuiText *GadgetText;
   LONG MutualExclude;
   APTR SpecialInfo;
   USHORT GadgetID;
   APTR UserData;
}
```

The three fields that are of interest to us are Flags, GadgetRender, and SelectRender.

One of the functions of the Flags field is to tell Intuition how a gadget should be highlighted when it's selected. Some of the flags that can be used in this field are GADGENONE, for no rendering (nothing happens to the gadget's image); GADGECOMP, if that gadget's colors should be complemented (the default for all close-window gadgets); GADGHIMAGE, if an image or border is to be drawn in or around the gadget's selection box; and GADGIMAGE (note the slight spelling difference between this and the previous flag), if the pointers found in the GadgetRender and SelectRender fields point to an Image structure and not to a Border structure.



GadgetRender and SelectRender are the key to altering the appearance of Intuition's gadgets. GadgetRender points to the border or image that defines a gadget's appearance in its normal state. SelectRender points to the border or image that decides what the gadget looks like when it is selected. By setting these two pointers to our own Image structures and by setting the appropriate flags, we can customize, and even animate, a window's close gadget (or any other gadget, for that matter).

The Image structure looks like this:

```
struct Image {
   SHORT LeftEdge;
   SHORT TopEdge;
   SHORT Width;
   SHORT Height, Depth;
   USHORT *ImageData;
   UBYTE PlanePick, PlaneOnOff;
   struct Image *NextImage;
}
```

Intuition's Gadget structures point to Image structures that define how the system gadgets are supposed to look. The size and location of the gadget's imagery is defined by the LeftEdge, TopEdge, Width, and Height fields. The ImageData field points to an array of type UWORD that contains the gadget's raw bitmapped image data.

To replace the standard close-box image with one of a smiling face, we must tell Intuition to use *our* image data instead of Intuition's ROM imagery. And to animate that gadget, we have to tell Intuition to render an alternate image when the gadget is selected, instead of simply complementing its colors as Intuition normally does. But before you can change any of these things, you must first know where Intuition keeps its Gadget structures.

Invasion of Privacy

One of the first lines in *Smiley*'s source code contains the declaration **#define INTUITIONPRIVATE.** This statement gives the program access to a private section in the system structure IntuitionBase (IntuitionBase is defined in the intuitionbase.h include file). It's here that you'll find Intuition's system Gadget structures. Commodore doesn't recommend that you fiddle with this area—in its own words, "Don't even think about changing any of these fields." As a pri-

vate area, this section of IntuitionBase is likely to change with each new upgrade to the operating system. This means that *Smiley* may not work with future versions of the Workbench.

IntuitionBase's SysGadgets field points to a linked list of Gadget structures that define all the gadgets used by Intuition for both high- and low-resolution screens. To access the close-window Gadget structure for high-resolution screens, for example, you can use the code **IntuitionBase->SysGadgets[HIRESGADGET][CLOSEGADGET]**.

One thing that you should take special note of is *Smiley*'s use of the LockIBase( ) and UnLockIBase( ) function calls. The only safe way to read or modify IntuitionBase data is to first lock the library with a call to LockIBase( ) and then call UnLockIBase( ) when you've finished. Be careful not to lock IntuitionBase for too long since this operation, in effect, freezes the computer.

Program Details

To design *Smiley*'s new gadget imagery, I used *DeluxePaint III* in conjunction with the public domain utility *Brush*, by Bob Cox. *Brush* converted the IFF brush file produced by *DeluxePaint* into C source code data. This data appears in the static arrays newcloseUP[ ], newcloseDN[ ], newcloseUPLR[ ], and newcloseDNLR[ ] at the beginning of the source code. (The *LR* in the last two array names stands for *Low Resolution.*)

The program's MakePublicImage( ) function takes the data found in the newclose arrays and stores it in chip RAM so the Amiga's custom chips can make use of it (image data must always be stored in chip RAM). If we had used *Lattice C* 5.0's _chip keyword to place the data in chip RAM, problems would occur when the program ended. You see, all chip memory allocated with the _chip keyword is automatically freed when a program exits. If this happened with *Smiley,* Intuition's Gadget pointers would still point to, and try to use, the freed memory, creating a somewhat volatile situation.

Once the image data for both high- and low-resolution gadgets are copied into chip RAM, the corresponding chip RAM addresses are placed into the ImageData fields of Image structures declared near the beginning of the program. Next, IntuitionBase is locked via LockIBase( ), and the pointers to our Image structures are plugged into Intuition.

If all we wanted to do was replace the close gadget's image and still use color complementing to highlight the image, we could now clean up and exit. Because we want to use an alternate image when the close gadget is selected, however, we must set the appropriate flags in the close-window Gadget structure. We must also set the Gadget's SelectRender field to point to our alternate image. Once this is done for both the high- and low-resolution close-window gadgets, *Smiley* calls UnlockIBase( ) and exits.

On Disk

As a further example of how you can manipulate Workbench gadgets, the *Resource Disk* contains a program called *NewGads* that not only redefines the close-window gadget, but also the window-sizing, the window-to-back, and the window-to-front gadgets. Both the source code and the executable code may be found on disk. Simply double-click on the NewGads icon to run the program; then open up some new Workbench windows to see the results.

Both *Smiley* and *NewGads* can be called from the CLI as well as from the Workbench. In fact, I include *NewGads* early on in my computer's startup-sequence so that all windows and screens have the distinction of using my own unique, personalized gadgets.

Mark Brannon is a freelance software developer with 14 titles currently in international distribution. His most recent Amiga release is *Ami . . . Alignment System,* published by Free Spirit Software.

Smiley.c

```
/*********************************************************************
* Smiley.c
* Program to replace the standard Intuition close-window gadget
* with a smiling face. Smiling face becomes a Bronx cheer
* when the gadget is 'selected.'
*
* History: Created 30 Oct 89
*
*
* compile: (Lattice 5.0x) lc -L -O smiley.c
*********************************************************************/



#ifndef INTUITIONPRIVATE
#define INTUITIONPRIVATE
#endif

#include <exec/types.h>
#include <exec/memory.h>
#include <intuition/intuition.h>
#include <intuition/intuitionbase.h>


#define HIGAD IntuitionBase->SysGadgets[HIRESGADGET][CLOSEGADGET]
#define LOGAD IntuitionBase->SysGadgets[LOWRESGADGET][CLOSEGADGET]

extern struct IntuitionBase *IntuitionBase;

/* NEW CLOSE GADGET */
static UWORD newcloseUP[]={
/*--------------- plane 0 ---------------*/
0xffff,0xff00,0x957e,0xa900,0x3cff,0x3c00,0x3fe7,0xfc00,
0x3be7,0xdc00,0x3fdb,0xfc00,0x31ff,0x8c00,0x3e00,0x7c00,
0x9fab,0xf900,0xffff,0xff00,
/*--------------- plane 1 ---------------*/
0x0000,0x0000,0x6a81,0x5600,0xc300,0xc300,0xc018,0x0300,
0xc418,0x2300,0xc024,0x0300,0xce00,0x7300,0xc1ff,0x8300,
0x6054,0x0600,0x0000,0x0000
};

static UWORD newcloseDN[]={
/*--------------- plane 0 ---------------*/
0xffff,0xff00,0x9d7e,0xb900,0x34ff,0x2c00,0x3fe7,0xfc00,
0x3fe7,0xfc00,0x3fff,0xfc00,0x3f81,0xfc00,0x3f3c,0xfc00,
0x9fbd,0xf900,0xffff,0xff00,
/*--------------- plane 1 ---------------*/
0x0000,0x0000,0x6281,0x4600,0xcb00,0xd300,0xc018,0x0300,
0xc018,0x0300,0xc000,0x0300,0xc07e,0x0300,0xc0ff,0x0300,
0x607e,0x0600,0x003c,0x0000
};

static UWORD newcloseUPLR[]={
/*--------------- plane 0 ---------------*/
0x8010,0x7fe0,0x6f60,0x79e0,0x79e0,0x7fe0,0x6f60,0x70e0,
0x7fe0,0x8010,

/*--------------- plane 1 ---------------*/
0x7fe0,0x8010,0x9090,0x8610,0x8610,0x8010,0x9090,0x8f10,
0x8010,0x7fe0,
};

static UWORD newcloseDNLR[]={
/*--------------- plane 0 ---------------*/
0x8010,0x7fe0,0x6f60,0x59a0,0x79e0,0x7fe0,0x70e0,0x6f60,
0x7fe0,0x8010,
/*--------------- plane 1 ---------------*/
0x7fe0,0x8010,0x9090,0xa650,0x8610,0x8010,0x8f10,0x9090,
0x8010,0x7fe0,
};

static struct Image newcloseUPImage={
0,0,                    /* LeftEdge, TopEdge */
0x18,                   /* Width (in pixels) */
0xa,                    /* Height */
0x2,                    /* Depth */
NULL,                   /* Pointer to Image data */
0x3, 0,                 /* PlanePick, PlaneOnOff */
NULL                    /* Pointer to next image */
};

static struct Image newcloseDNImage={
0,0,0x18,0xa,0x2,NULL,0x3, 0,NULL
};

static struct Image newcloseUPLRImage={
0,0,0xc,0xa,0x2,NULL,0x3, 0,NULL
};

static struct Image newcloseDNLRImage={
0,0,0xc,0xa,0x2,NULL,0x3, 0,NULL
};

struct Image *CloseUPImage;
UWORD *CloseUPData;

struct Image *CloseDNImage;
UWORD *CloseDNData;

struct Image *CloseUPLRImage;
UWORD *CloseUPLRData;

struct Image *CloseDNLRImage;
UWORD *CloseDNLRData;
```

```
/****************** Open library ***********************************/
BOOL Open_Libs()
{
IntuitionBase = NULL;

if((IntuitionBase =
   (struct IntuitionBase *)OpenLibrary((char *)"intuition.library",0L))==NULL)
            return(FALSE);
return(TRUE);
}

/****************** Close open libraries ***************************/
VOID Close_Libs()
{
if(IntuitionBase)  CloseLibrary((struct Library *)IntuitionBase);
}

/***** Take an image structure and copy it to public memory ********/
struct Image *MakePublicImage(image)
struct Image *image;
{
struct Image *public_image;

if((public_image=(struct Image *)AllocMem(sizeof(struct Image),
      MEMF_CLEAR|MEMF_PUBLIC))==NULL) return(NULL);

movmem(image,public_image,sizeof(struct Image));

return(public_image);
}

/******  Take a pointer to a uword data array and the size of   ******/
/******  the array and return a pointer to a chip memory array. ******/
UWORD *MakeChipData(olddata,size)
UWORD *olddata;
int size;
{
UWORD *newdata;

if((newdata=(UWORD *)AllocMem(size,MEMF_CHIP|MEMF_PUBLIC))==NULL)
return(NULL);
movmem(olddata,newdata,size);

return(newdata);
}

/* A memory allocation failed, free up
   previously allocated memory and exit */
VOID WrapUp()
{
   int size=0;
   size=sizeof(struct Image);

   if(CloseUPImage) FreeMem(CloseUPImage,size);
   if(CloseDNImage) FreeMem(CloseDNImage,size);
   if(CloseUPLRImage) FreeMem(CloseUPLRImage,size);
   if(CloseDNLRImage) FreeMem(CloseDNLRImage,size);

   if(CloseUPData) FreeMem(CloseUPData,sizeof(newcloseUP));




   if(CloseDNData) FreeMem(CloseDNData,sizeof(newcloseDN));
   if(CloseUPLRData) FreeMem(CloseUPLRData,sizeof(newcloseUPLR));
   if(CloseDNLRData) FreeMem(CloseDNLRData,sizeof(newcloseDNLR));

   if(IntuitionBase) CloseLibrary((struct Library *)IntuitionBase);

   _exit();
}
```

```
void _main()
{
   ULONG lock;
   struct Image *MakePublicImage();
   UWORD *MakeChipData();
   ULONG gadflags;

      if(!Open_Libs()) {
         printf("Error on open library\n");
         _exit(0);
      }
/*
First we'll copy the static Image structures and data arrays into
allocated memory. If all goes well, we'll tell Intuition where
to get its new gadget templates. Then, we exit. We do NOT free
the memory for the Image structures and data arrays.
*/


    /* Make the Image structures public. */
   if((CloseUPImage=MakePublicImage(&newcloseUPImage))==NULL) WrapUp();
   if((CloseDNImage=MakePublicImage(&newcloseDNImage))==NULL) WrapUp();
   if((CloseUPLRImage=MakePublicImage(&newcloseUPLRImage))==NULL) WrapUp();
   if((CloseDNLRImage=MakePublicImage(&newcloseDNLRImage))==NULL) WrapUp();

    /* Put the data in chip RAM. */
    /* Hi res */
   if((CloseUPData=MakeChipData(&newcloseUP[0],sizeof(newcloseUP)))==NULL)
      WrapUp();
   if((CloseDNData=MakeChipData(&newcloseDN[0],sizeof(newcloseDN)))==NULL)
      WrapUp();

    /* Lo res */

if((CloseUPLRData=MakeChipData(&newcloseUPLR[0],sizeof(newcloseUPLR)))==NULL)
      WrapUp();

if((CloseDNLRData=MakeChipData(&newcloseDNLR[0],sizeof(newcloseDNLR)))==NULL)
      WrapUp();

    /* Set the image-data pointers of the new Image structures. */
   CloseUPImage->ImageData=CloseUPData;
   CloseDNImage->ImageData=CloseDNData;
   CloseUPLRImage->ImageData=CloseUPLRData;
   CloseDNLRImage->ImageData=CloseDNLRData;
    /* Lock IntuitionBase, so we can poke around. */
   lock = LockIBase(0);

    /* Tell Intuition where to find its template imagery. */
      HIGAD->GadgetRender=(APTR)CloseUPImage;
      HIGAD->SelectRender=(APTR)CloseDNImage;

    /* Get the template gadget flags variable that defines how
       the gadget is (was supposed to be) displayed. */
         gadflags=HIGAD->Flags;

    /* AND the old flag value with our flags to indicate alternate images. */
      HIGAD->Flags=(gadflags|GADGIMAGE|GADGHIMAGE);

    /* Do it again for the lo-res gadget. */
      LOGAD->GadgetRender=(APTR)CloseUPLRImage;
      LOGAD->SelectRender=(APTR)CloseDNLRImage;
         gadflags=LOGAD->Flags;
      LOGAD->Flags=(gadflags|GADGIMAGE|GADGHIMAGE);

    /* Let life continue. */
UnlockIBase(lock);

Close_Libs();

_exit(0);

}
```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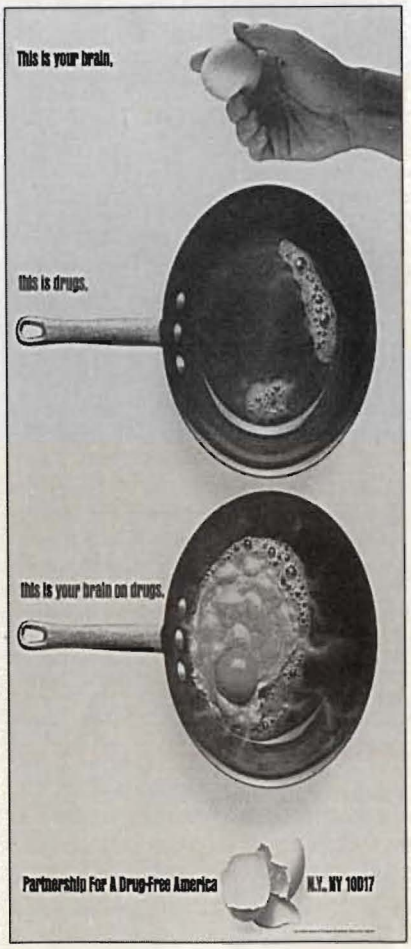

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1. The upper left corner of the first page of your article should contain your name, address, daytime telephone number, and the date of submission.

2. The following information should appear in the upper right corner of the first page: the language in which your program was written and the maker of that language, if applicable (for example, if your program was written in C, which compiler was used—Lattice, Manx, or another company); the size, in kilobytes, of both your source code and executable object code; and any special requirements for your program (memory size, printer, modem, and so on).

3. The underlined title of the article should be placed about one-third of the way down the first page.

4. Following pages should be typed normally, except that in the upper right corner there should be an abbreviation of the title, your last name, and the page number—for example: Memory Map/Thompson/2.

5. All lines within the text of the article must be double- or triple-spaced. A one-inch margin should be left at the right, left, top, and bottom of each page. No words should be divided at the ends of lines. And please do not right-justify. Leave the lines ragged.

6. Please use standard typing paper (no erasable, onionskin, or other thin paper), and type on one side of the paper only (upper- and lowercase).

7. Sheets should be attached with a paper clip, not with a staple.

8. If you are submitting more than one article, send each one in a separate mailer with its own disk.

9. Short programs (under 20 lines) can be included within the text. Longer programs should be stored twice on disk and submitted with the article. For compiled programs or machine language, include the executable object code, source code, and any files needed to recompile the program. Compiled object code must be a self-standing runtime file that can be used by readers who do not own a copy of the language in which the program was written. In addition, we must be able to legally distribute the runtime code without incurring licensing fees or other obligations to the maker of the language. Check with the maker if you aren't sure about licensing fees. If your article was written with a word processor, we also appreciate a copy of the ASCII text file on the disk. The disk should be labeled with both your name and the title of the article. For their safety, disks should be enclosed within plastic or cardboard mailers (available at photography, stationery, or computer supply stores).

10. For greater clarity, use all capitals when referring to language commands (LIST, GOTO, CASE OF, SWITCH) and languages which are acronyms (such as BASIC, PILOT, and FORTRAN, but not Forth, Pascal, or Logo). Headlines and subheads should, however, be initial caps only. Do not capitalize words for emphasis; instead, underline words you wish to emphasize, thus indicating *italics.*

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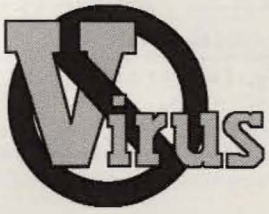

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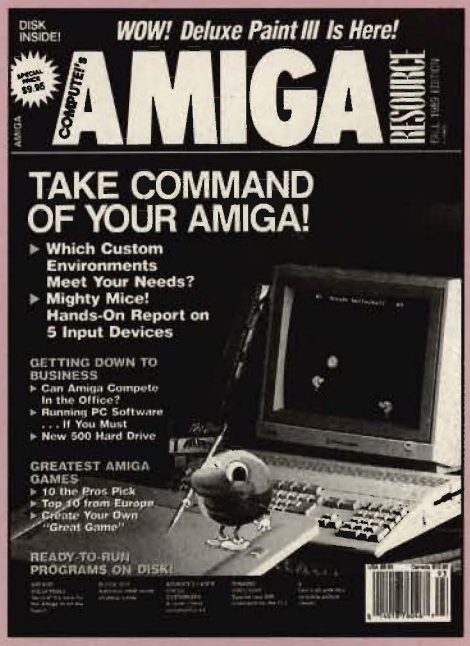

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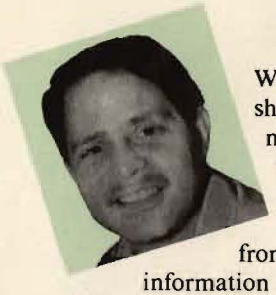
BEST OF THE BOARDS

Sheldon Leemon

JR-Comm



We connoisseurs of public domain and shareware software are usually also connoisseurs of telecommunications software. That's because one of the main ways in which we acquire our nearly-free treasures is over the phone lines, from bulletin boards and commercial information services. It's hardly surprising, therefore, that terminal software is among the largest and most active categories of freely distributable software. Michael Mounier's *AmigaTerm,* for example, was one of the very first pieces of useful public domain software for the Amiga, appearing on disk 1 of the then-fledgling Fred Fish collection.

As connoisseurs, terminal program users are a finicky lot. They tend to spend a lot of time (and money) online, so they have very specific ideas about what they want their software to do. Often, they're willing to go so far as to write a new terminal package themselves, if that's what it takes to get exactly what they want. Jack Radigan's *JR-Comm,* for example, was inspired by his need for a terminal program that could keep up with 9600-bps modems. Along the way, however, it grew into a full-featured program that users could customize to suit their individual tastes.

JR-Comm was inspired by its author's need for a very fast terminal program.

Take the screen display in *JR-Comm,* for example. It allows you to choose whether you want the program displayed on the Workbench screen or on a custom 2-, 4-, 8-, or 16-color screen. If you log on to boards that support color and ANSI graphics, you might select the 8- or 16-color modes, but if you're interested in maximum speed and memory conservation (as I am), you'll probably pick the 2-color mode. Whatever your choice, you can set the screen's palette to whatever colors you like. If you like to get a lot of text on the screen at once, you can select an interlaced screen; if you prefer a certain font, you can specify the type style of your choice. You can turn the title bar on or off, and you can use part of the bottom line as a status and time display or a "chat window" that lets you edit each line you send until you hit the Return key (a very handy feature for online conferencing). All of these display preferences can be saved to a file, so the program always starts up with your choice of display.

This flexibility also extends to communications and modem parameters. The program supports all parity types (none, even, odd, mark, and space), all handshaking types (XON/XOFF, CTS/RTS, both, or none), and even lets you specify the duration of the "break" signal in microseconds. It also supports transfer speeds of up to 38,400 bps, which the manual suggests are necessary to maximize your throughput with modems that use the MNP error-correction protocol. Modem settings allow you to customize the program for use with any modem. There are serial-device settings that allow you to use alternative serial ports or internal modems. Filters allow you to strip out nonprinting characters and to convert incoming and outgoing end-of-line characters. Even if you have no idea what any of these features do, it's nice to know that the program can cover whatever unusual communications setup you might encounter.

One of the nicest features of *JR-Comm* is the wide variety of file-transfer protocols that it offers. These protocols are systems for ensuring that the program file you receive is exactly the same as the one being sent, without any errors introduced by phone line noise. This is necessary because the alteration of a single number is enough to render useless the program you get. The XMODEM protocol was one of the first in widespread use, and it's still quite popular, but many remote systems use one of the newer protocols that have been developed to make file transfers faster and more convenient. There are several XMODEM variants, such as XMODEM-1K and Windowed XMODEM. The YMODEM protocol adds batch-transfer capabilities to XMODEM, allowing the remote system to send several files with one request. YMODEM-g lets you maximize transfer speed when using error-correcting modems. The ZMODEM protocol adds the ability to start transfers automatically and to resume a transfer that was not completed (due to a phone disconnect, for example). The CompuServe information service uses its own proprietary B+ protocol. *JR-Comm* supports all of these protocols and includes some settings that allow you to fine-tune them.

JR-Comm's phone directory is also outstanding. It allows you to create and edit entries for each number that you call on a regular basis, using standard Amiga gadgets. Not only can you enter the name of the bulletin board or service and the phone number, but you can also specify complete serial settings, display settings, protocol-transfer settings, and a custom set of keyboard macros for use with each entry. Once you create a phone entry, you need only double-click on its name to dial the service and change your settings. *JR-Comm* also provides for automatic redial

at user-determined intervals if the number is busy.

For all of its features, *JR-Comm* is still not quite the "ultimate" terminal program. Its biggest disadvantage is that is doesn't support a script language for unattended operation as do some of more powerful commercial terminal programs. This means that instead of using an automatic log-on script that calls a bulletin board, waits for prompts, and enters your name and password at the appropriate points, you've got to use macro keys to send your log-on information manually. While this is no big deal, it is generally conceded that the "perfect" terminal program would have automatic log-on capabilities. Another popular feature that is missing is support for *ARexx*. *JR-Comm* also is limited to ANSI terminal emulation. It cannot act like a DEC or Tektronix terminal, as some of the more sophisticated programs can. And it does not support the Kermit transfer protocol used for exchanging files with some mainframe computers.

Jack Radigan plans to address many of these limitations in future versions of *JR-Comm*. The version we've reviewed (and included on the magazine disk) is "preliminary version .94a." As of this writing, Jack intends to follow a shareware distribution system under which the most current version of the program (in this case, version 1.0) will be available only to users who send in a $30 registration fee. As newer versions become available, the previous version will become freely distributable.

Although Jack intends to add scripts, *ARexx* support, Kermit, and terminal emulations, the size of the program is becoming a problem. The version that we've included on the disk runs comfortably in a one-megabyte system, but it may not run in 512K if you use some of the display options that take up a lot of memory (like a 16-color interlaced screen).

Jack Radigan's speedy *JR-Comm* grew into a full-featured program that users could customize to suit their tastes.

Breaking in a new terminal program can be intimidating, since there are so many settings that you can change. In fact, sometimes it seems as if serial communications is a game in which there are hundreds of different settings, only one combination of which is correct. To start out, however, it's best to assume that the default program settings are correct and change nothing except perhaps the transfer speed. The default transfer speed is 2400 bps, so if you are using a 1200-baud (or, shudder, a 300-baud) modem, you'll need to select the Serial item from the Options menu and change to the proper speed.

Once you've done this, try logging on to a bulletin board or information service manually. When you start the program, your modem will be in command mode, which means that it will interpret anything you type as a command, rather than as data to send to the remote service. Give it the command to dial your phone by typing "ATD 555-5555", remembering to replace the 5s with the actual phone number you want to dial. Once the remote system answers and sends you a carrier tone, you'll see a Connect message, which means that you're online. At this point, some services may require you to send a couple of carriage returns to determine what communications settings you're using. That accomplished, they will usually send you prompts to sign on and give your password. If you're a new user, they'll also send you complete instructions on how to use the system.

If the service you're using has a download section, you may want to try receiving a file. Use the service's options settings to select a file-transfer protocol; then use the Parameters item from the program's Transfers menus to set the same protocol. When you've given the remote system the signal to start sending the file, you can begin the process of receiving by selecting the Download item from the Transfers menu and entering the name of the file to receive, if necessary.

When you have figured out how to work the program manually, you may want to automate things a bit. Select the Directory item from the Phonebook menu and use the Add gadget to enter information about the services you want to call. Only the name and phone number are essential, but if you want to change the serial settings, display terminal settings, or transfer setting, or key in some macros to help send your name and password, you can click on the appropriate gadgets to do so. When you've finished adding an item, close the phone-directory entry window by clicking on the close gadget and save the phone-directory file by activating the Save gadget.

To get started with *JR-Comm*, just double-click on its icon. You'll find it in the BestofBoards folder on this issue's *Amiga Resource Disk*. Be sure to read the documentation first (just double-click on the JR-Comm.doc icon). If you copy *JR-Comm* to your own disk, be sure to copy the entire folder.

Terminal programs, like most shareware software, begin as a labor of love. But we all know how hard it is to live on love alone. If you find *JR-Comm* useful, be sure to send Jack the $30 registration fee in order to receive future updates. Registering your shareware is the only way to make sure that it will be improved to incorporate the features that *you* want. For more information on *JR-Comm*, and for technical support, try calling Jack's Atlantic Country BBS at (609) 625-2453. It's open 24 hours a day, 7 days a week, and supports speeds up to 9600 bps (with an HST modem). ▲

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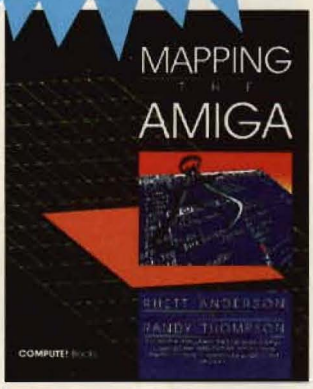

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art gallery

Bippy

Kevin Lude

Luckey, OH

Kevin Lude holds a Bachelor of Arts degree in drawing and painting from Bowling Green State University. During his last year at college, he discovered the incredible potential of the Amiga computer and has since laid aside his traditional media in an attempt to pursue the computer from a unique point of view. *Bippy,* which Mr. Lude describes as a "fanciful abstraction depicting a cyber-clown," was drawn using NewTek's *Digi-Paint.*

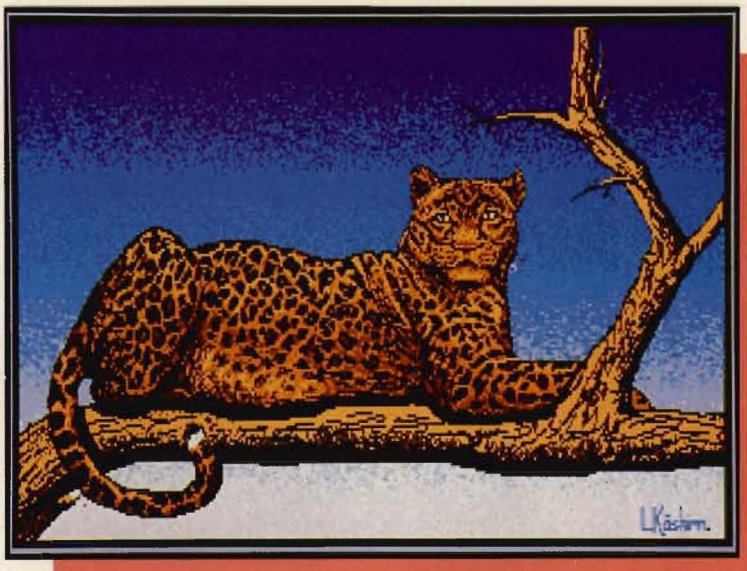
Welcome to "Amiga Art Gallery." On these pages, in each and every issue of *Amiga Resource,* you'll find the best Amiga artwork around. The pictures in this issue may also be found on the magazine's accompanying disk.

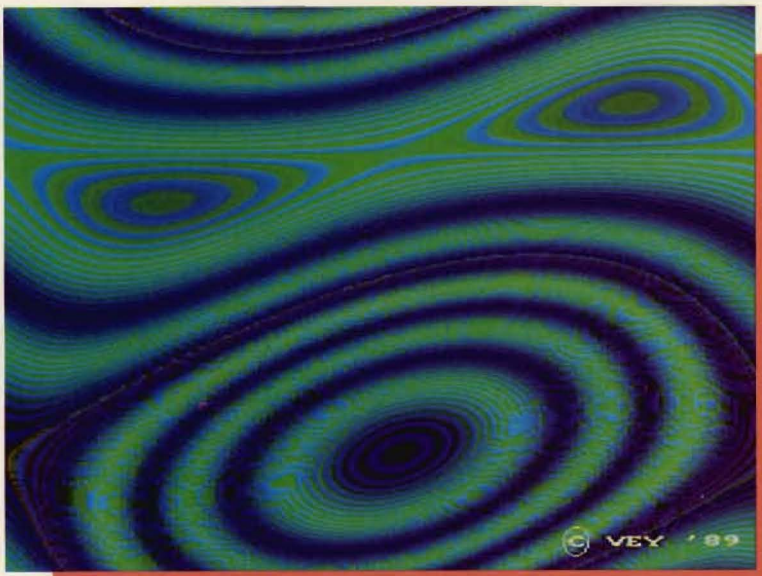
Leopard

Laurel Kāshinn

Port Washington, WI

Leopard was drawn in 16-color 640 × 200 mode using *DeluxePaint II*. Laurel Kāshinn is a former graphics artist and has studied computer art under the direction of renowned Amiga artist Jim Sachs.





Galaxy

Geoffrey Vey

Brooklyn, NY

Geoffrey Vey had to write his own software to create this hypnotic picture. Using a program that he wrote in *Aztec C*, Mr. Vey generated two HAM screens and then merged them using *Digi-Paint*. "I've been programming in FORTRAN and COBOL for more than 12 years—almost exclusively in banking. For many of those years, I've drawn colorful abstracts without the use of a computer. Recently, I bought an Amiga 2000 to try my hand at C and computer graphics. I couldn't be more pleased with the Amiga and the images it allows me to generate."

If you'd like to see your art in these pages, send it to us on disk at the address below. We pay $100 for each piece of art we accept. Rejected submissions are returned only to artists who enclose a self-addressed, stamped envelope.

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TAKING **SIDES**

Rhett Anderson vs. Randy Thompson

Bridgeboards vs. Rolling Your Own

ROLL YOUR OWN! Home computing has moved too far away from its roots. Back in the early days, there were few application programs. If you actually wanted to do something with your computer, you had to write your own program (usually in BASIC or assembly language) to do it.

Back then, it looked as if everyone would learn to program eventually. Even if you only learned the rudiments, you would know enough about how programs and data structures were designed to be able to better use the programs that you bought to perform useful tasks.

But now, the majority of computer users know nothing about programming. Worse, they have no interest in learning. These are people who choose to play by the rules of others. It's ironic. Computers, once considered the last chance to liberate the common man, have become yet another way to oppress him.

The resistance against programming is odd. Programming allows you to give instructions to the computer and have it carry them out at tremendous speeds. It's a captivating hobby that should appeal to the creator in us all.

Prepackaged solutions are rarely effective solutions. There's something to be said for building an ap plication from scratch. First of all, no one but you can know exactly what you want. If you write your own software, you have control over its features. You'll know the program inside and out. If you need a new feature, you can get into the code and add it yourself.

But the picture is not as bleak as I have painted it. Some new applications, like SuperBase, CanDo, and UltraCard, have built-in scripting languages. These products, and ones like them, may turn a whole new generation of computer users into computer programmers. At least we can hope so.

Before you complain about an application missing on the Amiga, you should consider writing the program yourself. Even if you never finish the product, the means will be worth the end. But if you are successful and you do finish it, other Amiga users will benefit, too.

Looking over at Mr. Thompson's side, I can't help but notice that he got his wires crossed. He was supposed to argue that not everyone should be a programmer.

It seems like a convenient mistake for Mr. Thompson (a programmer) to make. Obviously, he was not up to the task at hand. Mr. Thompson has taken advantage of you, me, and this issue's April cover date. Don't ever believe a word the guy says—he's devious.

THINK ABOUT IT! I know I'm not going to make too many friends with what I'm about to say, but if you want to run MS-DOS software (you know, the stuff IBM PCs use), buy a stand-alone MS-DOS computer. Forget the Bridgeboard. It's not worth it.

Now that I've offended all current and future Bridgeboard owners, let me explain my seemingly antisocial attitude. I have nothing against MS-DOS (well . . . not too much). And it's certainly understandable why some people want MS-DOS compatibility. After all, MS-DOS is what over 80 percent of the computing public uses. It's just that the Bridgeboard is not a practical MS-DOS computer.

First of all, Bridgeboards are difficult to work with: They require a lot of troublesome setup time; they have no built-in serial port; they must share a parallel port with the Amiga (you can't have a separate printer for the Bridgeboard and the Amiga, unless you like swapping cables); they have no speaker for sound; and while their microprocessor speed is up to par with most PC clones, text and graphics appear to leap onto the screen at slow, random intervals because the Bridgeboard's video data must be converted into something the Amiga can understand. As a result, text often scrolls off the screen before the Amiga even gets a chance to display it. It's like computing under a cheap strobe light.

There are many work arounds to the Bridgeboard's problems (such as installing a separate monitor and video card for speeding up the display), but these second-purchase solutions take up time, money, and slot space. The headaches involved in marrying two such diverse computer systems as the Amiga and the IBM PC are simply not worth the trouble.

Don't get me wrong: The Bridgeboard would be a great product if it cost less than your average PC clone, but it doesn't—it costs more! For the price of a bare-bones Bridgeboard setup, you can buy a ready-to-run 512K PC clone complete with a disk drive, serial and parallel ports, monochrome and color graphics adapters, and a 20MB hard disk. Save yourself the hassle and buy one of these instead. The only thing you'll save with a Bridgeboard is desk space.

Looking over at Mr. Anderson's side, I can barely believe my eyes. I said *Bridgeboards vs. MS-DOS Clones*, Rhett, not *Buying vs. Rolling Your Own*. Here I am trying to present some serious commentary, and you're over there arguing with yourself. Boy, Mr. Anderson, you really are an April fool. ▲

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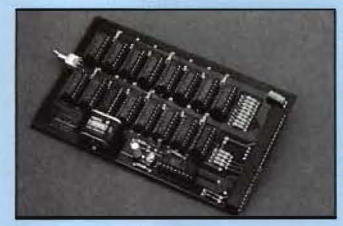

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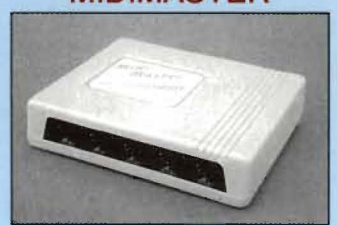

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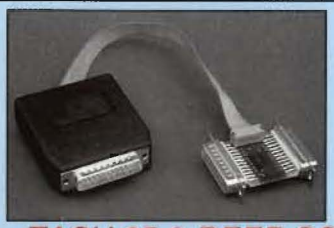

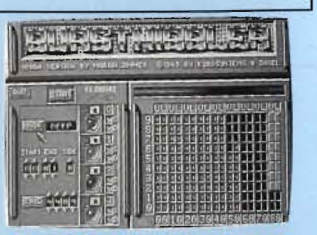

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