

Over 500 Amiga Games—Buyer's Guide p. 39

# AMIGA

## WORLD

November 1989

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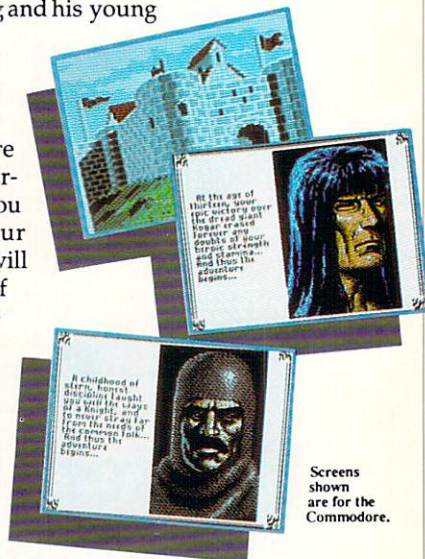
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### ACCENT ON GRAPHICS *By Joel Hagen* ..... 74

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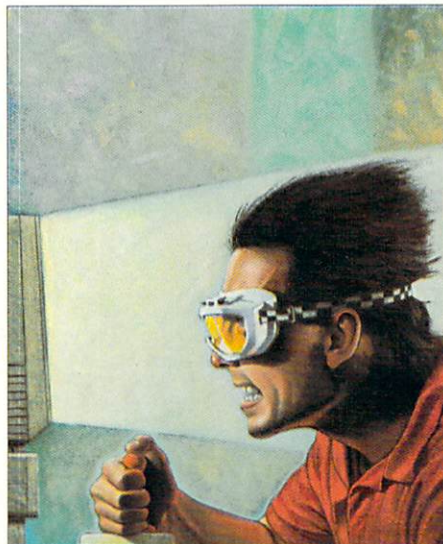
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Write it, stamp it, send it. . . it's that easy.



*Amiga entertainment software has grown so fast that it is, literally, almost impossible to keep track of it. To help all Amiga game enthusiasts, AmigaWorld has added a separate Games Buyer's Guide (covering more than 500 titles) to our annual November Games Special—just in time for the Holiday shopping season!*

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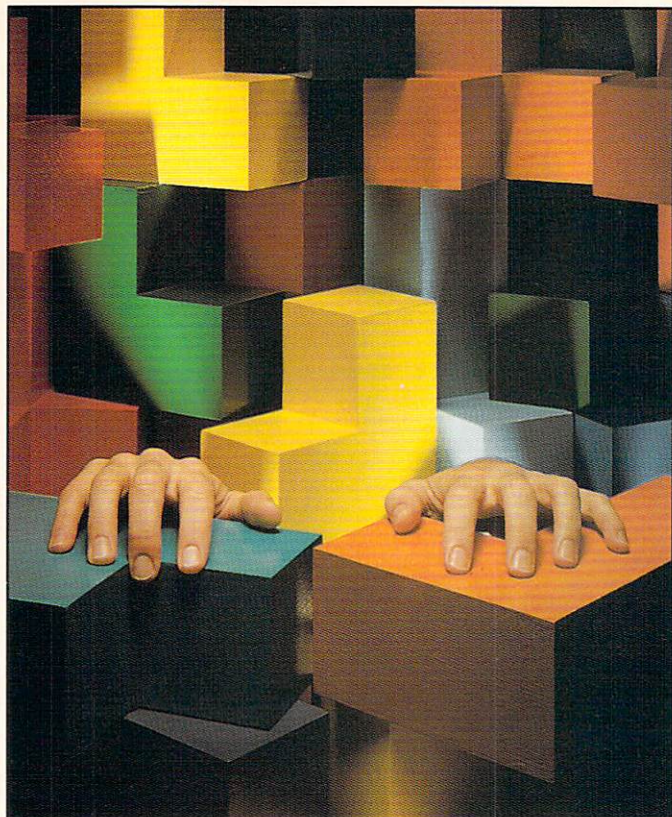
### GRAND PRIX CIRCUIT (Accolade) ... 94

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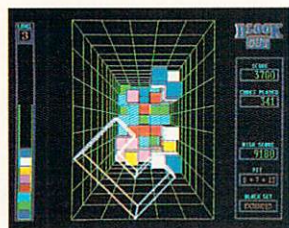
### MYSTERY SWEEPS CONSOLATION WINNERS

If you weren't one of the Finalist Prize winners (see last month's issue) in our **Mystery Sweepstakes**, maybe you did win one of the more than 140 Consolation Prizes. You might just get lucky and see your name on **page 76**.





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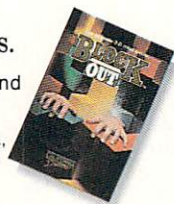
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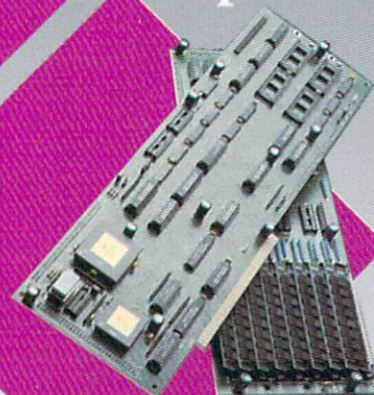
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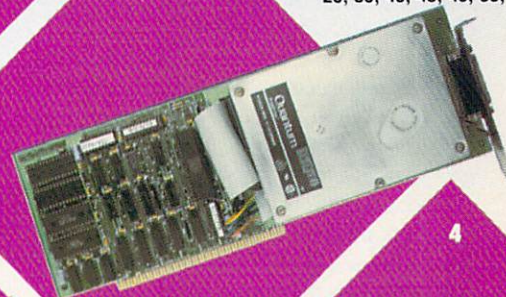


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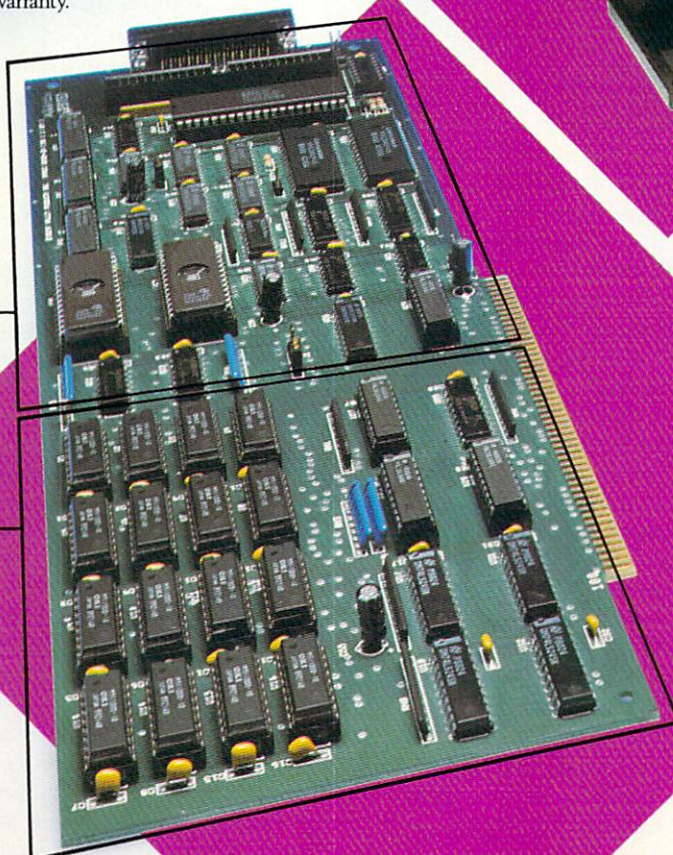


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# CHIEF CONCERNS

*A call to action.*

IT HAS BECOME a familiar and all too disturbing adage: "Commodore has the best engineering and the worst marketing." Everybody, it seems, knows what Commodore has done wrong, and not suprisingly, most of these same folks have advice for Commodore.

Everybody is right. Commodore needs help, and it ain't their engineering department that's ailing. The company has utterly failed to give the best PC in the business adequate visibility. The one million Amiga owners were resourceful enough to find out about the machine on their own, and made the wise choice to buy one.

The noises that are starting to come from Commodore are encouraging. The firm is committed to increasing the Amiga's visibility, working with third parties to make sure important half-finished products make it to market, and is working on some exciting new technologies that will keep the Amiga clearly ahead of the PC pack.

The firm also has a new, highly motivated crew with impressive resumes. These guys have been hard at work. They are planning an expanded and more consistent ad campaign, are insuring that dealers are competent, and are committed to gaining the ever-precious customer mindshare.

I think it will work. I wouldn't have left the safe confines of the general PC market if I didn't believe that Commodore has a real shot at the big time.

The time is now for Commodore to make its move. The IBM and Apple PR machines are cranked up, and are attacking areas that the Amiga dominates, such as multimedia, desktop video, and animation. Unfortunately, the naive computer press is giving the world the impression that these firms are inventing these categories, and that



these are "future" technologies.

Hogwash! We all know that the Amiga has been excelling in these areas for years. It is up to Commodore to let the rest of the world in on this secret. If it doesn't, then customers will buy Macintoshes for advanced applications such as video. Then they'll watch helplessly as the machine sucks up all their cash reserves, only to bog down while processing the simplest of images.

Here's what Commodore needs to do more of. Fortunately, it is already starting to crackle. President Harry Copperman recently paid personal visits to the major trade publications that are now discovering these new application areas. You may be wise enough not to read these magazines, but about a zillion potential customers do.

He also went armed with a strategy. He brought a long list of customers (maybe even you!) who can demonstrate that the Amiga is the best machine ever made. Loaner machines are being sent out so these newshounds can see for themselves how pathetic other machines are when compared to the Amiga.

Commodore also needs to respond every time the press ignores the Amiga when writing about applications that

originated on the Amiga. It makes me sick to see Apple get the credit for inventing multimedia. It is even more sickening to hear some PC review lunkhead froth at the mouth over a black-and-white animation package for the Mac.

We reached the height of ridiculousness when the NEXT machine from Steve Jobs was introduced. Here was an example of hero worship at its worst. Jobs spends years developing a machine that is a blatant rip-off of the Amiga, and proceeds to get more press coverage than Gorbachev.

The only difference between a NEXT machine and an Amiga is that the Amiga has color, software applications, users, and actually works. The NEXT machine, meanwhile, costs five to ten times as much, has an installed base of about 25, and, let's face it, really isn't finished yet.

The most painful instances, though, involve more generic technologies like multitasking. IBM and Microsoft grabbed countless gobs of headlines with OS/2. After years of hype, OS/2 proceeded to fall flat on its multitasking face. Where was the Amiga during all this? Patiently and quietly multitasking away.

Commodore also has to convince the major PC software vendors that one million machines equals opportunity. Some of these jokers are writing for true niche machines like Sun workstations (no more than 200,000 installed, I'd bet) and the NEXT machine (you could fit its installed base in a Volkswagen Beetle). Participation by major vendors would mean mainstream software for the Amiga, and a shot at the huge general-purpose business market that continues to suffer under the yoke of IBM PC tyranny.

Come on, Commodore. The Amiga deserves better. Fortunately, we think with the new crew, it is starting to get it! ■

—Doug Barney



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# REPARTEE

*Comments, complaints, and concerns*

*from AmigaWorld readers.*

## DISKMASTER DEVOTEE

I WAS SHOCKED and disappointed to see Bill Catchings' and Mark Van Name's haphazard and misleading review of DiskMaster, one of the best Amiga disk-utility programs available, in your September '89 issue [info.phile, p. 56].

The authors state that DiskMaster cannot display a file in hex. This is not true. By clicking the right mouse button on the READ command, the command is switched to HEXREAD, which displays a file in hex with ASCII interpretation at the right. Both the regular file reader and hex file-reader functions provide convenient, smooth mouse scrolling as well as scrolling with the up and down keys.

While it is true that DiskMaster does accept the convenient "\*" wild card for pattern matching (as ARP does), it also accepts the strange AmigaDOS "?" and "#?" pattern definitions, too.

The authors also state that DiskMaster is less robust than CLIMATE, because they found themselves "losing control" of DiskMaster while the program hung. I will admit that I have seen this bug, but as a very heavy user of DiskMaster, I have only seen this problem about three or four times in almost a year of use. I don't consider it a serious problem. I think it is misleading to

characterize DiskMaster as a buggy, unreliable program.

I admit that the documentation could stand some improvement. No doubt this is why the authors missed the HEXREAD function and did not realize that the program can use wild cards.

DiskMaster provides a great deal of easy user programmability of its many features, functions, and device gadgets. It has greater display capacity with real-time scroll gadgets in both vertical and horizontal directions than any other similar program I've seen. It gives you a one-stop source for almost any disk and file operations imaginable.

**René LeBlanc**  
Scottsdale, AZ

*We have heard from a number of users who like DiskMaster. We also agree that it has a lot of complex features. The problem with DiskMaster, as René LeBlanc concedes, is that the six-page manual does not adequately describe these features.*

*We also view bugs that cause utility programs to hang as very serious. These two factors make DiskMaster unsuitable for the average user.*

**—Bill Catchings and  
Mark Van Name**  
Contributing Editors

## AMIGA GRAPHS

IN THE REPARTÉE section of your August '89 issue, Dr. Fred Klein notes the lack of

scientific plotting and graphics packages for the Amiga ["Scientific Graphics, p. 8]. I would like to point out that it is not simply a null field.

MaxiPlan Plus, an Amiga spreadsheet, can produce graphs. Graphics files created by MaxiPlan conform to the Amiga's Interchangeable File Format (IFF) protocol, and hence are portable to all conforming programs, such as DeluxePaint, excellence!, or PageStream.

MaxiPlan Plus has much greater graphing capability than the Macintosh program Excel (v. 1.5). Yet, I know of no Amiga equivalent to the Macintosh program Cricket Graph. Hence, I would like to second Dr. Klein's call for more scientific word processing, plotting, and data-analysis software for the Amiga. After all, it is the capability of the Amiga as a function of cost that makes the machine attractive for scientific work.

**Frank Murray, Ph.D.**  
Claremont, CA

## THE MISSING LINK

YOUR ARTICLE ON AREXX ["AREXX: The Missing Link," Aug. '89, p. 30] was right on target. The Amiga is perfectly suited to hypermedia, and if Commodore can act quickly to implement AREXX in the system software, I think that the Amiga will enjoy a new level of

recognition by professional non-Amiga users.

**Robert Anderson**  
Hamilton, Ontario  
Canada

## KEYBOARD ENTHUSIAST

I APPRECIATE THE benefits of having both a Command Line and Graphic User Interface. I would like to make a recommendation that I believe would make Amiga applications easier to use: allow keyboard selection of options in requester boxes. For applications that rely on the keyboard, this would prevent having to take your hand off the keyboard to select an option with the mouse.

One example is IBM's Common User Access (CUA) method, which is their interface guideline for the Systems Application Architecture (SAA). It is very similar to the Apple Macintosh interface; operations can be performed with either the mouse or the keyboard.

I believe that giving users the alternative of keyboard selection would improve the Amiga interface.

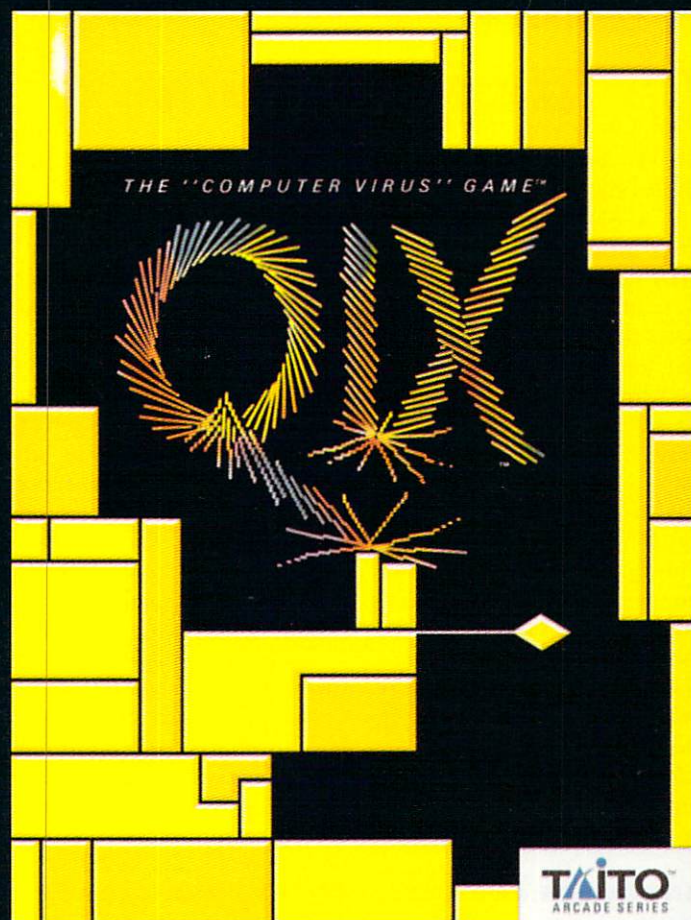
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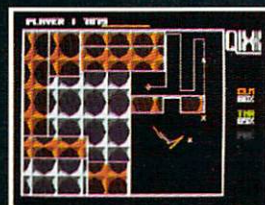
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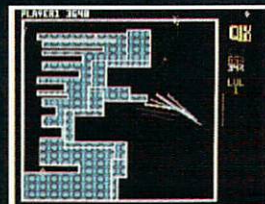
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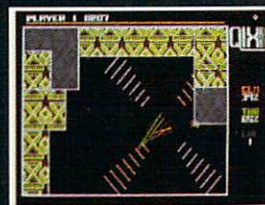
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Actual Atari screen.



Actual C/64 screen.



Actual Amiga screen.



# NOTE PAD

Compiled by Linda Barrett



Even lasers need Amiga control.

EVERY EVENING AT dusk, visitors to Sea World of Texas file into the park's circular amphitheater. Here, where just hours earlier guests thrilled to physical feats of water skiers in the lake below, they now prepare to witness the technical power of the Amiga. Most, however, never even realize the multitaskers are in charge. They have come to enjoy a laser light show and musical performance.

From the island in the center of the lake, a pair of two-meg Amiga 500s direct the production. The show begins when audio tape, embedded with

SMPTE time code (a frame-numbering system), begins to roll. A SMPTE-to-MIDI converter reads the code into a MIDI interface, which sends it on to the Amiga. The Amiga passes the signal to a digital-to-analog converter, and on to two specialized pieces of hardware developed by Laser Entertainment Technologies' Randy Johnson: a scan amplifier and a scan head. The scan head houses a group of mirrors and a tiny control motor called a galvanometer. When a laser beam is directed into the scan head by a state-of-the-art 32-watt argon Coherent Innova laser, it bounces from mirror to mirror and then out into space.

Software running on the Amiga triggers the galvanometer to adjust the mirrors' posi-

tions and thus change the direction of the beam. Programmed with tables of data representing the x and y positions on a grid, the software puts together sequences of positions (depending on time-code specifications) to form shapes. The Amiga outputs these sequences in rapid succession, triggering the galvanometers to line up each mirror with any x, y positions specified by the computer. Tracing shapes faster than the eye can detect, the beam projects images onto the clouds. The laser can draw letters and fairly complex pictures—even animations.

Software developer Adam Harris said that he and partner Randy chose the Amiga for this project for a number of reasons. They wanted their system to be

easy to use, and felt that the Amiga's environment was ideal. Fast processing capabilities, color, and an easily accessible bus were other drawing points. The Mac, says Adam, offers nothing more than the Amiga, and costs twice as much.

Although the Sea World system is set up with SMPTE tape to allow for an automated presentation, the MIDI interface makes it possible for a musician to control the laser simply by playing a synthesizer. Nicholas MacConnell, president of MindLinks in Del Mar, California, which distributes Laser Entertainment's system, is excited about its possibilities. "The Amiga is at the head of a revolution," he said, "a breakthrough in the performing arts." —BGT

## Amiga Upon Avon

THE TEMPEST OPENED at Sonoma State University with howling winds, thrashing waves, and an impressive cast. Unlike Shakespeare's original production, Associate Professor of Theater Arts Judy Navas' starred an Amiga 1000, an A500, two video cameras, three eight-foot by ten-foot rear projection monitors, Mandala (Very Vivid), Invision (Elan Design), the LIVE! digitizer, a Casio synthesizer, in addition to live actors.

The production was a group effort. Judy prepared most of the special effects herself on her Amiga. Consultant Rob Terry created the opening storm sequence using Invision, LIVE!, and clips from B-grade seafaring movies.

In the play's eight performances, actors triggered music and images via Mandala to enhance their lines. "This technology has genuine magic," Navas says. "It's a revolution that's going to change the way we look at performance."

Mandala is an unsupported, buggy, but extraordinary software and hardware

interface for multimedia, interactive performance art. Mandala allows an on-stage performer, while in a video camera's field, to trigger animations, sound effects, and music, "paint" on the screen, or even be imposed themselves into other live, taped, or computer-generated environments.

Unfortunately for other performers, Very Vivid has taken Mandala off the market. "This is a major loss to the Amiga," says Judy. "I've always been frustrated by the clunkiness of the theater in presenting the ethereal. With this technology, for the first time on stage, you can actually see the process, in action, in the moment. For the first time in my 20 years of college productions, my imagination could find concrete images that others could see."

Her next Amiga/Mandala production will be an interactive-surrealist performance combining T.S. Eliot's "The Love Song of J. Alfred Prufrock" with photographs of the French painter, Magritte.

—Sue Albert



# RAMBO III

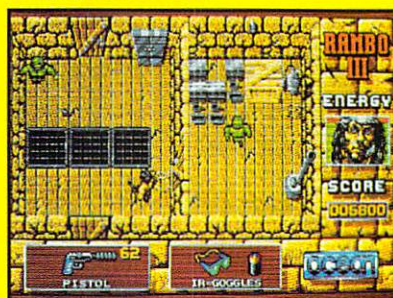
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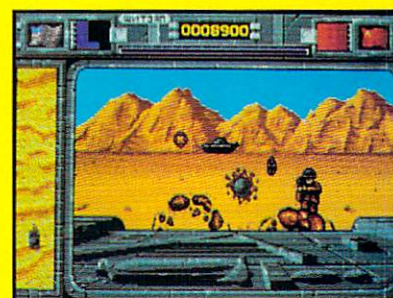
*Amiga game screens.*



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electronic gates, cross treacherous  
mine fields, and find the keys to Traut-  
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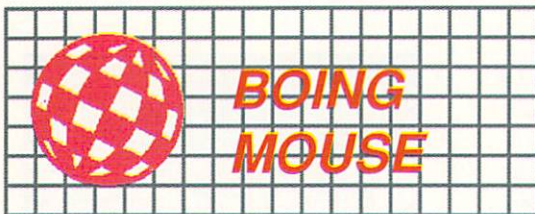
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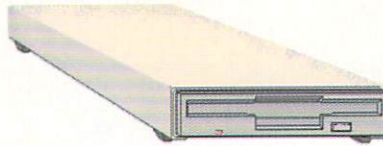


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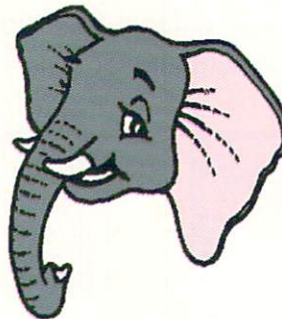
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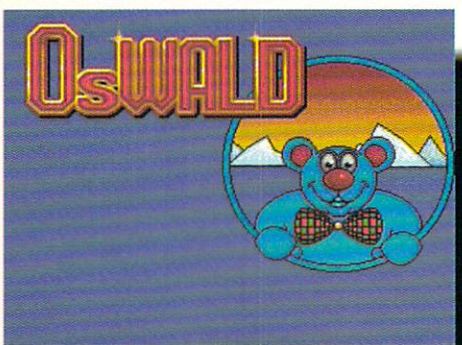
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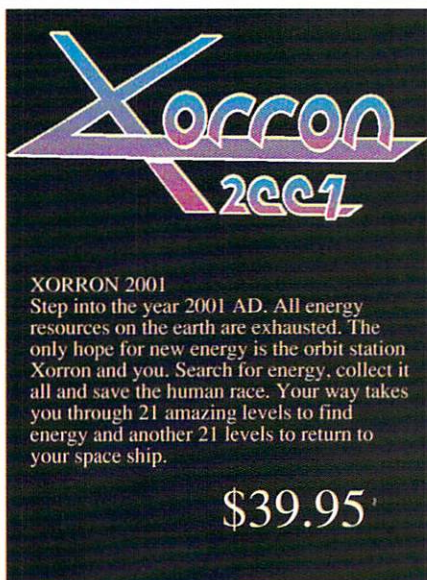
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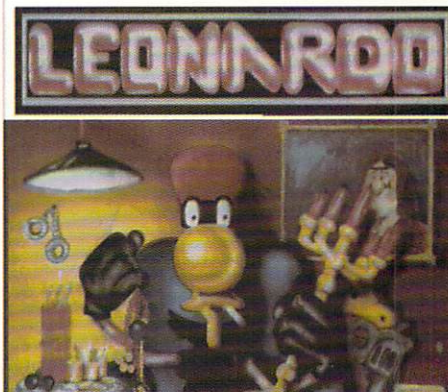
With this one hour video tape of tutorials, tips and techniques, the new user, as well as the seasoned professional, is easily shown how to best utilize Deluxe Paint® III's tools to achieve spectacular effects with professional results. Amiga artist Jeff Bruette will guide you step by step through DPaint's features including:

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- the "Move" Menu
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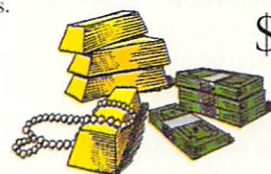
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# REVIEWS

## DIGI-PAINT 3

*Number three—the second—is first rate.*

**By Roger Goode**

IT'S TIME TO tune up your imagination and set your creativity free, kids, because Digi-Paint 3 is here, and it brings such power and ease to Hold-And-Modify (HAM) painting that it will quickly become a trusted friend.

NewTek's original Digi-Paint was the first program to break the color barrier, allowing simultaneous use of all of the 4096 colors available to the Amiga. It also introduced us to some of the now-familiar headaches associated with HAM painting: color fringing, huge demands on memory, and long waits for some operations. Since that time, a number of competing products have been introduced, each making more impressive claims than the last. Now, those competitors may want to head back to the drawing board, because Digi-Paint 3 is hard to beat.

No, there never was a Digi-Paint 2: the 3 in Digi-Paint 3 refers to the number of man-years that went into developing the program. From the look of things, it was time well spent. With the addition of new tools, modifications to the old tools, and a new interface—designed by Amiga artist Jim Sachs—that makes the program a joy to use, Digi-Paint 3 is an entirely different package. (NewTek offers

a \$29.95 upgrade deal to Digi-Paint users, and a \$49.95 trade to owners of other paint programs.)

### IT'S IN THERE

Written entirely in assembly code, Digi-Paint 3 is compact, and its support of 60820 processors makes it the fastest HAM program yet. New features include 3-D texture mapping, improved colorizing, super bitmaps, overscan and ARexx support, anti-aliased fonts, and compatibility with Haitex's stereo-vision gogs, X-Specs 3D.

In the package are two non-copy-protected disks: the program disk plus another containing some tutorial art and an image-processing utility called Transfer 24 that Digi-View (NewTek) users will recognize. Transfer 24 is great for making overall changes (such as contrast, brightness, and saturation adjustment), and for making color separations, changing file formats, and resizing pictures.

The expanded 127-page manual is filled with useful tutorials, tips and techniques, and a complete set of references and appendices. It is broken down to nine fully illustrated chapters that detail the use of all tools and menus, and provides useful discussions on everything from how HAM works to programming compatibility with ARexx. While the program requires just 512K to run, at least one megabyte of RAM is preferable.

### IN ONE BOX AND OUT THE OTHER

The default toolbox occupies the lower quarter of the working screen. Along with its strip of 16 basic (register) colors, a current color bar, and an area for defining color ranges along the top, this toolbox provides basic tools for most of the usual paint operations: freehand draw, straight lines, polygons, rectangles, circles, and ellipses. There's a fill button

that works with each of these, and a full range of brush shapes with a flexible, easy-to-use sizing option. Beneath these tools are buttons for the custom-brush grabbing tool, a magnifying option for detailed work, and the indispensable undo and repeat options.

The nicest features on the toolbox are buttons that call up the other three toolboxes: the Palette, Text Rendering, and Controls boxes. Each of these toolboxes occupies the same portion of the screen that the default box does, and each has gadgets that allow you to toggle between them quickly and easily. This is a particularly nice design feature; it keeps your work space uncluttered and provides a logical and intuitive method for dealing with the complexities of HAM painting. All of the boxes contain undo and repeat buttons and the color strip, so you need not return to the default toolbox every time you use them.

Digi-Paint 3's Palette box is the nicest I have seen on a HAM program. While retaining the 16-color register strip at the top, it expands to display a full-value range of each color directly below the register. A standard RGB slider control to the immediate right, with a numeric value readout of the currently selected color, makes precise color adjustment a breeze. To the right of that are the 4096 color-selection panels from the original Digi-Paint that change dynamically as you move around in them, allowing you to quickly choose a color for fine tuning in the RGB sliders. Finally, there is a Pick button that lets you choose a color directly from the picture screen so you do not have to waste time trying to duplicate colors you have used.

The Text Rendering toolbox lets you add titles and captions to your graphics.



Just type letters into the bar on the right side of the toolbox, choose a font and point size from the menu, pick a color, and click on any of three buttons for Bold, Italic or Underlined styles. When you are all set, click the Text to Brush icon and watch the string (or as much as will fit) render at the top of the screen and then attach itself to your brush. Then, simply place the text brush where you like it and click. Two degrees of smoothing help give your text a professional look, and best of all, once the text is attached to your brush it can be enhanced and modified with any paint mode and with the options in the controls toolbox.

### TAKE CONTROL

Controls is the largest of the four toolboxes. Most of its display is devoted to two major functions, Transparency and Texture Mapping, both of which are wonderfully conceived and surprisingly easy to use. The Transparency control is centered around a large boxed display of a ball, representing the shape that will be drawn to the screen. Above this box are four icons (labeled Point, Vertical, Horizontal, and No Hotspot) representing the types of hotspots you can apply to a paint operation. Clicking on one of these icons causes a hotspot locator to appear on top of the red ball. (If you choose No Hotspot, the ball graphic is blanked out to represent an overall tint.) You can move the locator around in the box to determine where the center of transparency or opacity will spread from. To determine the degree of transparency at the designated hotspot and at the edges of your drawn shape, you adjust the two sets of sliders on either side of



Get on the ball in the Controls toolbox to determine the transparency of objects in your picture.

the ball. The sliders offer calibrated degrees of transparency for fine tuning, and both are flanked by three icons that deliver 100%, 50%, and 0% transparency. These icons, well-designed graphics that show the ball with various degrees of transparency at either the center or the edges, give the interface an intuitive feel. Once you have set your transparency parameters, just paint to the screen. If you don't like the effect, click undo, make some adjustments, and click the repeat button to try again. This tremendous flexibility is found throughout the program.

### A BRUSH WITH EFFECTS

The Warping and Texture Mapping control is a two-in-one tool. To use it, you must first grab a custom brush from the screen, copy it to the brush buffer, and select TxMap from the Modes menu. This sequence enables Warping. The Warping control is set up similar to the Transparency control, with a boxed graphic of a grid-mapped ball, a slider on the left to set the degree of warp, and three icons on top for choosing vertical, horizontal, or point warping. Selecting an icon places a bar or point, which you can move to determine where the warping will be the most pronounced, on the grid ball display. The slider lets you set the amount of warping to the brush in-

crementally from none to extreme, and each of the three buttons alongside it graphically depict how much warping they will induce. This well-designed interface allows for the most intuitive use of an option that could otherwise be confusing.

Once you have set the Warping controls, you can move on to the fun part. Texture Mapping works with any custom brush, including text brushes, and with all shape tools, filled and unfilled. Choose a shape tool—freehand, circle, rectangle, or any other—and draw on the screen at any size. In a few moments your texture-mapped figure is rendered to the screen, complete with as much or as little warping effect as you chose. For powerful perspective effects, draw a simple polygon, wide at one end and narrow at the other, and your brush will seem to fall back into the third dimension. To ensure that the final effect is polished and convincing, there are two buttons to control smoothing. I tested these controls on a couple of drastically enlarged brushes, and was amazed at the amount of detail retained and the minimum of jagged transitions. ►



Along with these two major effects-producing functions, the Controls toolbox includes buttons for setting the type of dithering used. Random dithering, the default, produces the most natural look; Pattern gives a more ordered appearance, and turning the dithering off produces a banded look. Using the Random setting adds more colors to the screen by mixing two colors to simulate a third. According to NewTek, Digi-Paint 3 uses 30 bits per pixel accuracy (over 1 billion colors) to calculate dither patterns.

The Controls box also has a Tile function that works with TxMap mode to produce a repetitive pattern using the current custom brush. The number of tiles can be set from one to nine both vertically and horizontally.

### IN THE MODE

The Modes menu, a significant source of the program's vast power and flexibility, has been cleaned up and streamlined since Digi-Paint's first incarnation. Gone are some of the obscure entries like ADD and SUBTRACT, as well as the familiar TINT, BLEND, and SHADING. They have been replaced by or revamped into

the more intuitive NORMAL, RANGE, LIGHTEN, DARKEN, COLORIZE, RUBTHRU, BLUR, and TxMAP, all of which are pretty self-explanatory and perform as expected. I particularly like COLORIZE, which takes the place of ADD and TINT. Used in conjunction with the Transparency function, COLORIZE allows an unparalleled degree of control for tinting and overlaying color washes. The range of tint colors has become more natural, as well. AND, OR, and XOR are still on the Mode menu for producing a number of interesting, if sometimes unpredictable, false color effects.

All of the Modes menu functions are capable of interacting with the full array of options in the different toolboxes. In fact, most everything in this program interacts with everything else for seemingly endless combinations (and combinations of combinations).

### FULL SWING

I spent many, many hours testing all the options listed in the manual as well as many that are undocumented. Never did I find the program wanting. I designed

a few exacting projects to put the program through its paces, and for the most part, the results surpassed my expectations. Digi-Paint 3 is very fast, and very easy to learn and understand. The manual is a great help, but the tools and controls are so well thought out and intuitive that after a while, I hardly needed it. The sheer number of settings available is a potential source of confusion; a few times I came up with surprising effects when I had forgotten to turn off an option or two. That is, until I discovered that pressing the Tab key restores Digi-Paint 3's default settings. This clearing mechanism is a valuable inclusion, because it is easy to get tangled up in a creative frenzy. There is no default palette setting, however, which would be equally helpful, and a flood-fill tool is conspicuously absent.

The one thing I look for in any paint program is down-to-earth practicality. I want something that lets me realize the ideas and images that bubble up in my head, and develop without having to refer to the manual continually, and without having to use lots of complicated procedures. Digi-Paint 3 is that kind of ►

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## MUSIC-X

*It's all here, at last.*

By Steve Quinzi

AFTER A PAINFULLY long period of pre-release advertisement, Music-X has finally hit the stands. If you've been paying attention, you might already know that Music-X has two main applications. It is an open-ended MIDI sequencer

with features like synchronization to SMPTE and MIDI Time Code, graphic and text editing of MIDI events, and IFF sample support. Also, it is a self-configuring patch librarian that can store sounds from MIDI synthesizers.

The package comes with three disks: the program disk, one with utilities, and another filled with examples. Music-X is not copy protected, and although it requires just 512K to run, one megabyte or more is strongly recommended. If you intend to use Music-X with MIDI devices, then you will also need a MIDI interface and some kind of controller keyboard and sound source.

### PAGING DR. MUSIC


Music-X is divided into eight "pages," or screens. The first of these, the Sequencer page, appears on boot up. At the top left of this screen is the Transport window, which contains Play, Record, Pause, Fast Forward, and Rewind buttons to emulate the functions of a tape recorder. It also has auto-locate buttons that cue instantly to the beginning, end, or to any one of four predetermined points of a sequence.

Below the Transport window is the Clock window with its two displays: a musical counter, which expresses elapsed time in terms of measures, beats, and clock pulses (192 per quarter note), and a real-time counter, which reads out hours, minutes, seconds, and frames. Below this, the Tempo Display window indicates the current tempo and the number of MIDI events that have been recorded. Just to the right is the Time Signature window, which shows you the current meter.

At the bottom of the screen is the Sequence List, a database display that accommodates up to 250 entries. For each sequence listed, there are nine fields of data: a reference number, the amount of RAM it requires, its length in measures, the MIDI channels used, CST (an indication of special Music-X events within the sequence), a Time field that shows whether the sequence was recorded in relative (measures, beats, and clocks) or absolute time (hours, minutes, seconds, and frames), the sequence name, its out-

R E V I E W S

*Continued on p. 100*



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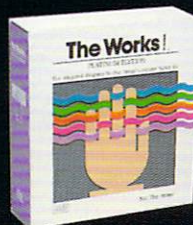
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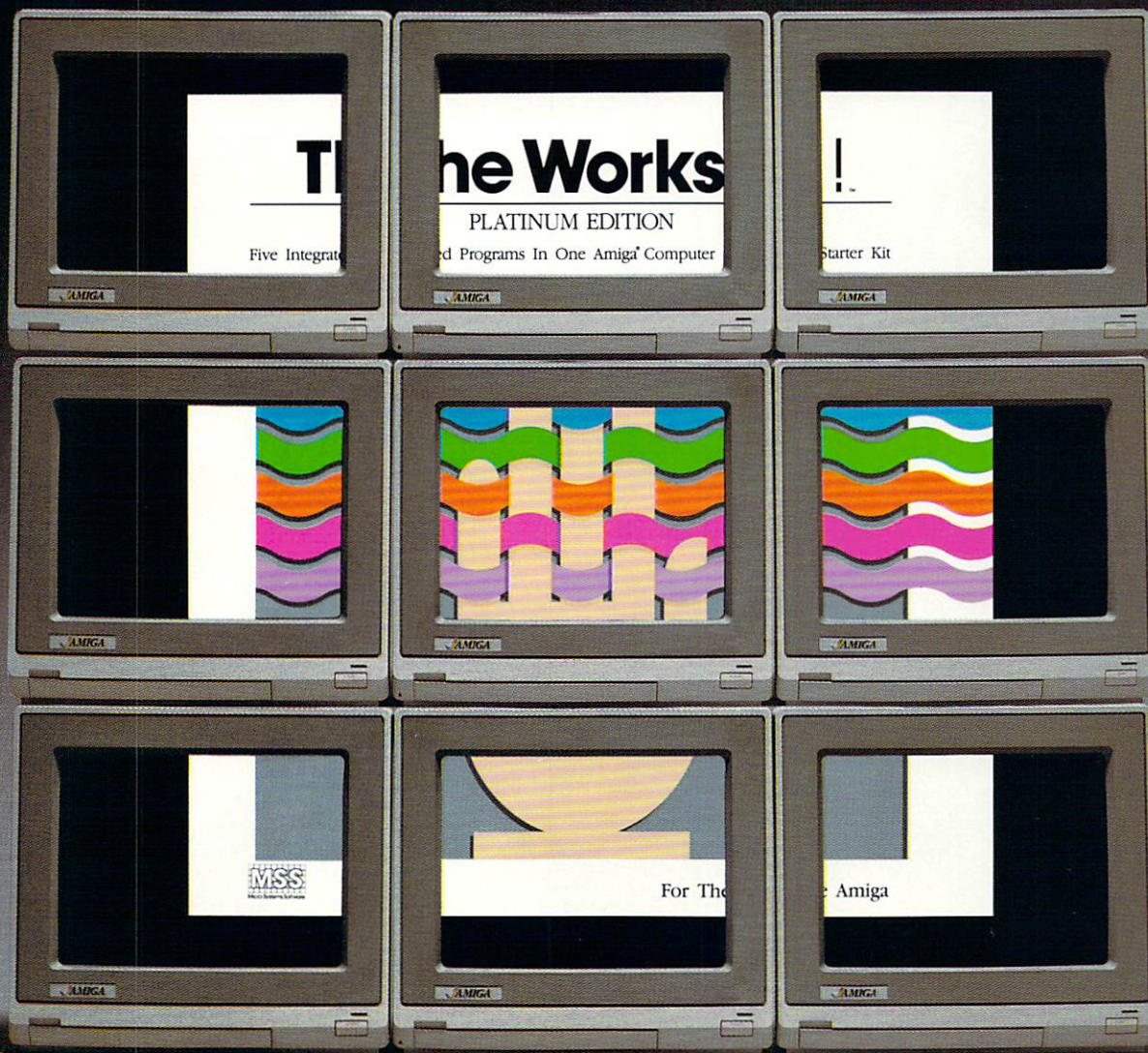
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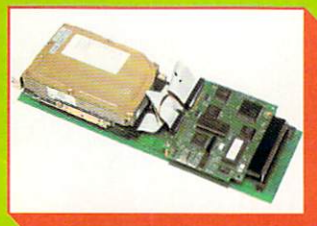
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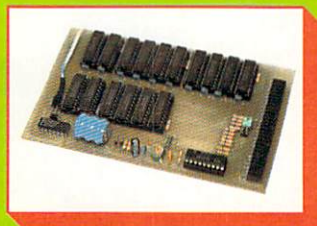
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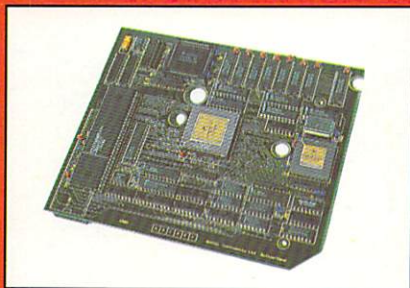
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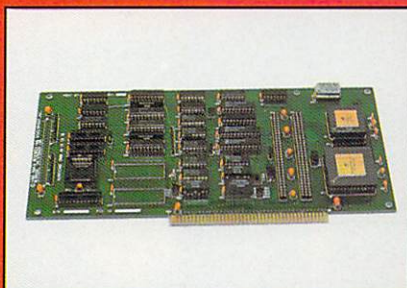
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# Top of the Midway

*The carnival's in town,  
and we'll show you which games  
to spend your allowance on.*

**e**AT YOUR FILL of cotton candy, fried dough, and candied apples, then follow along on a tour of the Amiga Midway's 20 best games. You'll sample shooting galleries, houses of horror, tests of strength, space-age rides, mazes within labyrinths, even an intellectual challenge or two. As the barkers say, "You don't play, you can't win. Get a prize every time!" Unlike the old duck shoot, ring toss, darts, knock-over-the-milk-bottles, and dime-pitch games, which rewarded you with stuffed animals in day-glow colors, Amiga games offer you extra lives, magic powers, and control of the universe.

Our *AmigaWorld* Players won (and lost) plenty during their many testing sessions. Control of the galaxy changed hands more times than the manager's office of the Yankees, and enough aliens to populate an entire solar system were destroyed, all in the name of research. Testers rated each for quality of presentation (Does the game have good graphics and sound?), durability (Does it hold its appeal for a long time?), and, most importantly, entertainment value (Is the game fun?). Only games released since last year's top 40 ranking (held in July of '88 and appearing on p. 29 in the November '88 issue) were eligible. Along with the overall rankings, we picked a winner in each class (see the sidebar "Before You Play" for an explanation of the categories) and the "Best of Show" game of the year.

While we guide you through only the top 20 games, the Amiga midway offers many more attractions. For a complete map, check out our buyer's guide to games and manufacturers (p. 39).►

**By Linda Barrett and the *AmigaWorld* Players: Bill Catchings, B.G. Hunter, Sheldon Leemon, Dave McClellan, Peter Olafson, Patrick Quaid, Mark Van Name, Lou Wallace, and Dodson Yaple.**







## 20 Where in the World Is Carmen Sandiego?

**Graphics Adventure**  
**Broderbund Software**  
**\$44.95**

Log onto the Acme Detective Agency's Crime Computer to find out which of the world's priceless treasures Carmen's band of thieves have made off with most recently. Beginning at the scene of the crime—one of 30 cities around the globe—you gather clues from the locals. Unraveling the clues with the aid of The World Almanac (supplied with the program) leads you on an educational chase. Arrest the thug within the allotted time, and you win a promotion (there are five detective levels) plus a tougher assignment. Stunning graphics depicting famous landmarks greet you as you land in each city.



## 19 Carrier Command

**Action/Strategy**  
**Medalist International**  
**\$44.95**

Prepare for war. In Carrier Command's 3-D world, you command an aircraft carrier, its four fighter planes (Mantas), and its four amphibious drones (Walruses) in an attempt to wrest control of an archipelago's 60 islands from an even faster computer-controlled carrier with tendencies just as aggressive. You'll need to establish a resource island on which to

construct mines and oil rigs, a factory island to transform the raw materials into weapons and fuel, stockpile islands to store the products, and, of course, a ring of defense islands to protect the more vulnerable ones. When you run out of neutral and friendly islands to colonize, launch a few Walruses and Mantas to attack a hostile island.

*"You can ambush the enemy carrier if you wait just out of range of an island you think the computer will attack. Launch your fully-armed Mantas when you receive word the island is under attack and head for the carrier at full speed. With luck and good timing, you will catch the carrier without its own Mantas nearby. Act fast though—it moves as fast as the planes do."* —Peter Olafson



## 18 Menace

**Arcade**  
**Psygnosis**  
**\$29.95**

With over 60 varieties of attackers, six levels of play, and two degrees of difficulty, Menace makes you appreciate a rapid-fire joystick. If you destroy an entire wave of nasties, a bonus cube appears. You can take it for its point value, or transform it into an icon by shooting it. Grab the icon and you gain a temporary advantage (lasers, cannons, more speed, a force field, or repaired shields). You'll need the extra help when you go up against the guardian at the end of each horizontally-scrolling level. The 64-color graphics combined with digital speech, sound effects, and background music set the scene.



## 17 Falcon

**Best Flight Simulator**  
**Spectrum Holobyte**  
**\$49.95**

Without joining the military, Falcon is about as close as you'll get to the cockpit of an F-16 Fighting Falcon jet fighter. The game's graphics are excellent and the physics behind the flying is realistic. Be prepared for some heavy manual reading, however, before you take off on air-to-air and air-to-ground missions. Falcon is very detailed. The game eases you into international warfare by giving you a choice of five ranks from First Lieutenant (no crashes or enemy fire) to Colonel (you're in the Air Force now) and 12 missions. Choose your weapons, then take to the air for the program's forte—dogfights. You can even fly against another player via modem on a one-meg system.



## 16 Starglider II

**Action/Strategy**  
**Medalist International**  
**\$44.95**

A cross between a flight simulator and an arcade-style shootout, Starglider II never lets up. Through space dogfights and careful scavenging you must accumulate enough skill and equipment to rout the dreaded Egrons from the Solice System. You can destroy your foes with gas plasma lasers, projected time-warp cuboids, fire-and-flee missiles, bouncing bombs, and a neutron bomb. Need a short cut? Just slip through the tunnel networks. While you're there, stop in at a service depot; the technicians can be a big help. The surprisingly effective plot, 3-D graphics, fast screen-refresh rate, and great sound effects will keep you riveted to the screen.



## 15 Zak McKracken and The Alien Mindbenders

**Graphic Adventure**  
**Lucasfilm**  
**\$44.95**

Poor Zak the tabloid reporter, he has to cover a two-headed squirrel instead of a ▶

## Starglider II:

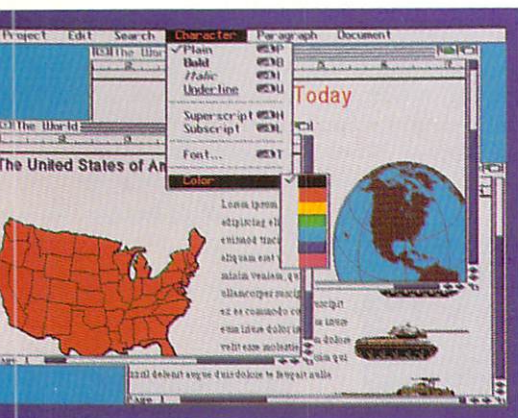
**Be a space-age fly-boy.**





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WYSIWYG Display	✓	✓	sometimes	✓	
Spelling Checker	✓	✓	✓	✓	✓
Mail Merge	✓	✓	✓	✓	✓
Typing Speed	fast	slow	medium	slow	medium
Spell Check as You Type	✓	✓			
Simultaneous Text and Graphics Printing	✓		✓		
Automatically Adjust to Printer's Capabilities	✓				
PostScript Support	optional	✓			
Paragraph Sorting	✓				
User Definable Defaults	✓				
Can Multi-Task with 1 Meg of Memory	✓			✓	✓
Suggested Retail Price	124.95	299.95	149.95	99.95	149.95
<b>Guaranteed Bug Free*</b>	✓				

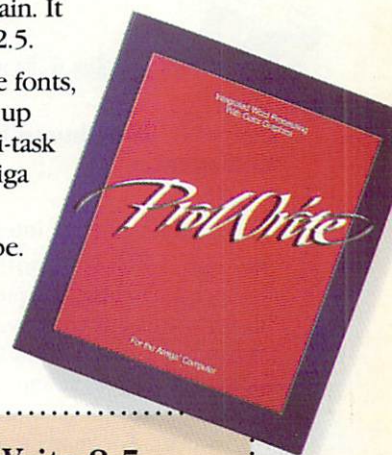


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real story. When the alien mindbenders infiltrate the ranks of the telephone company and start infecting the population with stupidity, however, Zak gets his chance. You control Zak and three women on their around-the-world (and Mars) quest to stop the aliens. Difficult-but-solvable puzzles and an understated sense of humor run through the game's huge and interactive world. Unlike Zak, you don't need to type anything. To control the game, click the action icons and the objects you wish to act on.

*"Liberal use of the What Is command upon entering a new scene will get you a long way. If you're getting no place, well, there's no place like home."* —Peter Olafson



## 14 Blood Money

**Arcade**  
**Psygnosis**  
**\$49.95**

Simultaneous two-player action, four almost-endless levels, and great graphics make this space shoot-'em-up a standout. Check your ethics at the door, though. In Bloody Money, you can turn around, shoot the aliens in the back, and collect money for making a kill. You can buy more powerful weapons from the equipment shops or save your booty and buy a new ship or rocket pack when you complete the level.



## 13 Battle Chess

**Strategy**  
**Interplay (distributed by Mediagenic)**  
**\$49.95**

While still a game for intellectuals, chess goes into the trenches with Battle Chess, in which 3-D animated pieces duke it out for control of contested squares. Each piece moves and fights with a distinctive flair. Queens saunter and throw lightning bolts, knights march and clash with swords. For more traditional players the game offers a 2-D mode, an opening library with 30,000 moves, an option to retrack moves, and playing hints. You

can play the computer or a friend on any of ten levels, and even over a modem.

*"Try starting off with P-K4. After that, read a chess book."* —Dodson Yaple



## 12 Rocket Ranger

**Action/Strategy**  
**Cinemaware**  
**\$49.95**

As a rocket-powered, leather-clad hero, you fly around the world fighting relentless hordes of Nazis and gathering rocket parts. The Nazis are mining lunarium (which fuels their spaceships and bombs, plus your rocketpack) from the moon; you must steal enough rocket parts to build a spaceship that you can fly to the moon for the Big Showdown. Besides cunning, your only assets are your rocketpack, radium pistol, wrist monitor, and secret decoder wheel. While the quest for rocket parts requires strategic planning, the game is peppered with arcade sequences to keep your joystick jumping. *"When you go up against planes, try to guess where they will end up. Lay down fire along that line and get out of the way before the planes even fire. Try to get one or two each pass."* —Patrick Quaid

*"Use your agents to search for rocket parts and Nazi bases for a turn or two, then set them to organizing resistance. The South American base eventually becomes too tough to handle, but you'll always be able to load up on lunarium at the base in Africa."*

—Dodson Yaple



## 11 Reach for the Stars

**Strategy**  
**Strategic Studies Group (distributed by Electronic Arts)**  
**\$39.95**

Explore, conquer, colonize, build. Explore, conquer, colonize, build, and soon the galaxy will be yours in Reach for the Stars. Complicating matters are three computer- or human-controlled opponents and various catastrophes (novas, natural disasters, viruses, and solar debris). Not only must you plan your exploration and attack strategies, you must manage the resource points your planets produce; should you spend them on building ships and defenses now or on increasing navigational and industrial technology to build more powerful, further-ranging ships later?

*"Don't try to be strong everywhere. Keep small forces around, plus a couple large counter-strike groups. Be offensive, and try to get your opponents on their heels."*

—Patrick Quaid



## 10 Tetris

**Arcade**  
**Spectrum Holobyte**  
**\$34.95**

Want to stretch a five-minute break to last an entire evening? Play Tetris. As various configurations of blocks fall from the top of a pit, you must rotate and position them to interlock with a growing stack below. When you complete a solid row, it collapses on itself to give you ►



**B**attle Chess:

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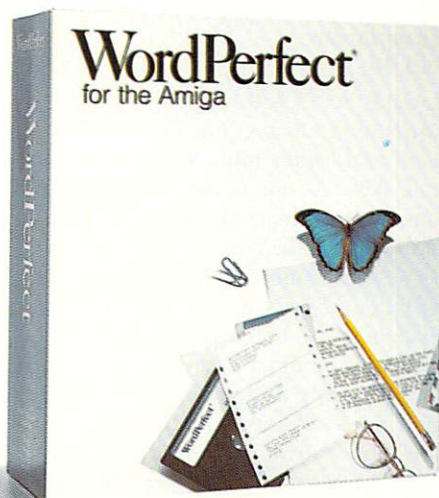
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# Before You Play

The type of game that leaves one player grinning with glee may leave another foaming in frustration. To make it easier for you to find the games you like and avoid those you know you'll never win (Ever see *anyone* land a dime completely in one of those little red circles?), we've classified the games in the *AmigaWorld* Midway into the following categories:

## Arcade

Limber up your trigger finger. In these games you use a joystick or mouse to shoot, catch, avoid, or deflect objects. Although many arcade games require strategic planning, their emphasis is on dexterity and speed.

## Action/Strategy

Trying to appeal to action lovers as well as thinkers, this category contains strategy games that have arcade or arcade-like elements. In the best examples, the arcade sequences are seamlessly integrated into the play of the game. In poorly-designed games, the arcade aspects seem tacked on as an afterthought.

## Sports

These games simulate the play of a particular sport such as hockey, basketball, or golf. Although some sports games stress arcade skills while others stress strategy, they all let you act out your athletic fantasies.

## Text Adventures

These games put you in imaginary worlds where you must use your wits to explore and survive. The worlds are created by descriptions supplied by the game. To specify your actions, you type commands; no pointing and clicking allowed, but practice your map drawing.

## Graphics Adventures

Also called illustrated adventures, these games use pictures to supplement or replace text descriptions of an imaginary world. In some graphics adventures the images serve only as illustration, while in others they serve as the interactive interface. You point and click on action gadgets, then on the image you wish to investigate or move towards.

## Flight Simulators

Zoom into the air realistically with these games. You are at a flying machine's controls as ever-refreshed 3-D graphics simulate its movement through the skies. The best flight simulators sustain the illusion of flight by updating the display screen many times per second through complex computations reflecting changes you've made in speed, altitude, and direction.

## Role-Playing Adventures

Assemble a party of adventurers, outfit them with supplies bought from the local store, and send them off on a quest to (usually) wipe out some monstrosously evil being. As the category name implies, the challenge is to develop characters with the necessary attributes to successfully face the final challenge.

## Strategy Games

With strategy games, joystick prowess takes a back seat to cool, calculating thought. The category encompasses games of logic, as well as games based on real-life scenarios.

more stacking room and adds points to your score. When the blocks no longer have room to fall, the game ends. Play on one of ten standard levels, ten advanced (double-time) levels, or in tournament mode against five opponents.



### Zork Zero

**Best Graphic Adventure**  
Infocom  
\$59.95

A prequel to the Zork Trilogy, Zork Zero sends you back to (or under) the old sod in the final days of the empire. The evil wizard Megaboz destroyed the ruling Flathead family with a curse that now threatens the entire kingdom—only you can save it. While the story is in the Infocom tradition, it is supplemented by an on-screen map, on-line hints, a mouse interface, and some graphic diversions. For a break from adventuring, try your

hand at playing Snarfem, the Tower of Bozbar, Peggleboz, or the legendary game of Double Fanucci.



### Lords of the Rising Sun

**Action/Strategy**  
Cinemaware  
\$49.95

Lavishly set in 12th-century Japan, Lords of the Rising Sun values judgment and leadership over battle and joystick skills. As one of two brothers, you must avenge the death of your father by capturing all the country's castles and becoming Shogun. The other clans are not about to let you rise to the top unchallenged, so be prepared for battles, sieges, and a ninja raid. Even if you can keep the ware under control, the arcade sequences will keep you on your toes. "Don't bother trying to play as Yorimoto until you can deal with the uniformly fatal shirken sequence." —Dodson Yapple



### Empire

**Strategy**  
Interstel (distributed by Electronic Arts)  
\$49.95

Built around the premise "This planet's not big enough for both of us," Empire starts you off with possession of one city and an urge to take over the rest of the planet. Your cities will produce armies, fighter jets, submarines, aircraft carriers, and battleships that you can use to capture other cities and, eventually, continents. Of course, two rival conquerors are doing the same and are out to get your cities. Careful management of resources and positioning are the keys to success.

*"Start building ships early. You're probably on an island, and you'll need ships for invasions."* —Peter Olafson

*"Explore fast. Build transports early. Always choose unconquered territory over enemy-held. Wait, build, then destroy."* — B.G. Hunter ►



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### The Best Software.

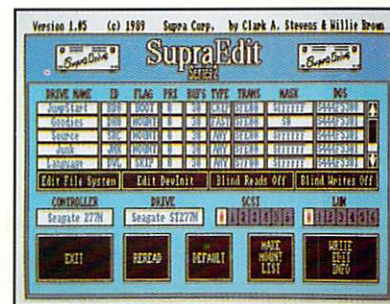
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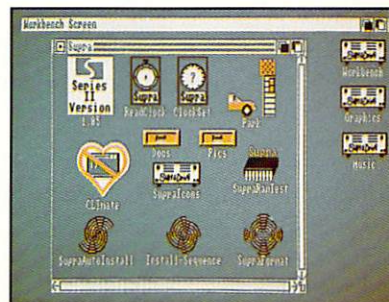
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## 6 TV Sports: Football

**Sports  
Cinemaware  
\$49.95**

Play football against a friend or the computer, and lead your team through one game or an entire season. Choose your plays from a separate screen, then control your player with the joystick. In season mode, the program sets up a schedule and plays pairings where both teams are computer-controlled. It even keeps track of statistics and standings as the season progresses. With detailed graphics, bone-crunching sound effects, arcade action, strategy, and cheerleaders, TV Sports: Football offers something for all types of football fans.

*"If you can't pass well, try running a wish-bone. Actually this works a lot better if you are playing teammates, because the computer does not expect the laterals."*

—Patrick Quaid

*"Pick a few good plays and stick with them. When running out the clock, pick the formation but not the play and wait for the clock to run down to about three seconds, then pick and play."* —B.G. Hunter



## 5 Sim City

**Best Strategy  
Maxis Software (distributed by  
Broderbund)  
\$44.95**

Want to move, but can't afford the new house? With Sim City you can build a new city right in your own house. A city simulator based upon an American Urban Architecture model, the game lets you plan, develop, and manage a city's growth, taxes, budget, transportation, power sources, and more. Sadistic players can even inflict disasters (floods, fires, tornadoes, earthquakes, and monsters) on their cities. Before you take any action, you can poll the residents on how you're handling things or study the maps and graphs for more information. If you don't want to build your own, you can save the eight provided cities from their eight accompanying disasters within the allotted deadlines.

*"As always, embezzlement is an undocumented option. Hold down the shift key and type*

*FUND. You'll be \$10,000 richer, and no one's the wiser, eh?"* —Peter Olafson  
*"When commerce demands an airport, put one in, but hook it up—it only causes plane crashes."* —Sheldon Leemon



## 4 Sword of Sodan

**Best Arcade  
Discovery Software  
\$49.95**

Large, gorgeous graphics make this vertically scrolling medieval slice-and-dice fest a stand out. As the hero or heroine, you must fight your way to and through the Castle Craggamoore and defeat Zoras the Necromancer to avenge his murder of your father. You are armed with only your sword, but will find other helpful items and magic spells along the way. Of course, you'll also find plenty of traps and Zoras' hench-creatures blocking your path. With a hot joystick and a judicious use of magic, you might make it through unharmed.

*"Don't be scared off by the giant. He's big, but he's slow."* —Peter Olafson



## 3 Wayne Gretzky Hockey

**Best Sports  
Bethesda Softworks  
\$49.95**

Wayne Gretzky Hockey simulates the good, bad, and ugly of hockey—fast action, teamwork, excitement, fights, fouls, and even bad calls. You can control a player for on-ice participation, stay be-

hind the bench to coach, or coach and play. You view the horizontally scrolling rink from above and control your player with the mouse or joystick. Whether you play the computer or a friend, you can handicap each other to play at high school, college, junior or professional levels. As coach, you not only call the plays, but also make player substitutions. Each team member is rated from zero to nine for 11 characteristics. Make sure you have the best (and freshest) line on the ice for the situation.

*"Chances are the moron who went offside was you. The officials will make bum calls, so don't cut it too close."* —Patrick Quaid



## 2 Populous

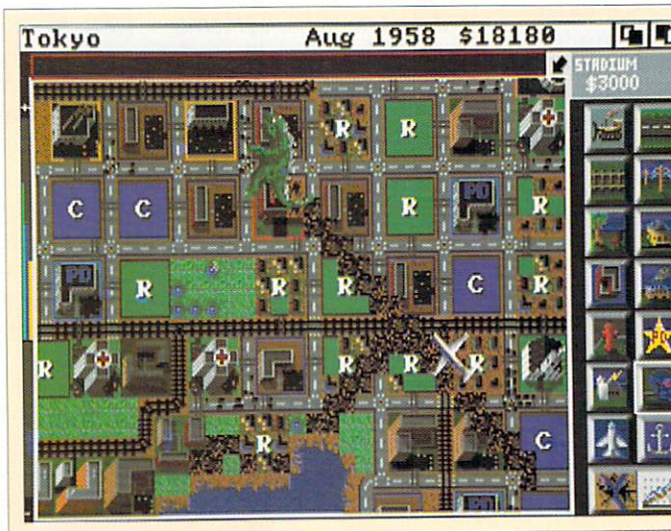
**Best Action/Strategy  
Electronic Arts  
\$49.95**

You play a god (evil or benevolent), aiding the expansionist policies of your own people and visiting earthquakes, floods, volcanoes, swamps, and more on the Other People, who are watched over by the computer or another omnipotent human. Essentially an icon-driven arcade chess game with real people, Populous offers 500 worlds to conquer, or use the world maker to design your own.

*"A good basic strategy is to create as much flat land (hence ripe for settling) as possible. Focus first on expanding settlements."*

—Peter Olafson

*"Never cause a flood when your own people occupy the low lands!"* —Sheldon Leemon ►

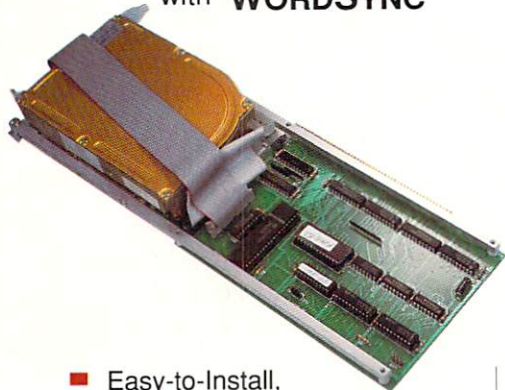


**Sim City:  
City planner  
to the rescue!**



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- Eliminates the sound, video, and serial I/O interruptions found with DMA interfaces
- 1-slot design & SCSI-out port
- Easy On/Off Autoboot Jumper
- Compatible with Amiga Bridgeboard, RAM, digitizers, and other boards
- Includes SupraBoot & SupraTools — two full disks of utility software
- Up to 30 Partitions
- All available file systems supported: FFS, MS-DOS, Unix, Macintosh, etc.
- Access to low-level parameters without maintaining MountList
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- Made in the U.S.A.

<b>30MB</b> (40 ms. RLL)	<b>\$649</b>
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**WordSync Interface Kit \$199<sup>95</sup>**

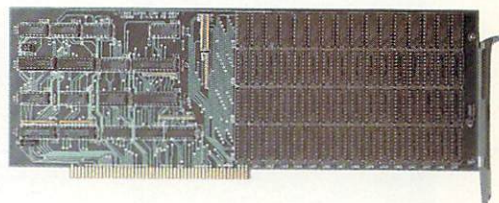
## SupraModem™ 2400zi



- Half card modem fits in any Amiga bus slot
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- Asynchronous 2400/1200/300 baud operation
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- Made in the U.S.A.

**2400zi \$179.95**

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# Dungeon Master

**Best Game**

**Best Role-Playing Adventure**

Software Heaven

\$39.95



**Explore carefully, or this could be you.**



**Will you fight?**



**Find the speedboots and you can flee faster.**

The paramount dungeon adventure, *Dungeon Master* leaves all others of its ilk lurking in the shadows. You select four heroes, each with unique characteristics, and set out to recover the Fire Staff, stolen by Lord Chaos and hidden in his dungeon. As you descend through the 14 levels of serious hell, puzzles and foes get progressively tougher. Luckily, you can hear the sounds of approaching monsters. Don't get so busy fighting that you and your band forget to eat, drink, and rest. The game is played in real time (with the mouse), and you'll need your health and stamina. Keep your eyes open too for weapons, armor, and scrolls of magic spells strewn around the corridors. The complex puzzles combined with a simple interface make *Dungeon Master* accessible to beginning adventurers and intriguing to even the most jaded.

*"The early nasties can be taken on head to head. The trees are even edible. Bash it out then, but don't be afraid of retreating from some of the ones that follow. Lure them from corridors into wider spaces where you can practice the 'Dungeonmaster Two-Step:' Float like a butterfly and sting like a purple worm."* —Peter Olafson  
*"Here's a handy way to inflict damage when you're weaponless: Lure monsters into a gate or doorway, then click to close the door on them."*

—Peter Olafson

*"You can only move as fast as your slowest member. Keep your two front scouts suited in the best armor and your supplies evenly distributed."*

—Lou Wallace

*"Look at what's on the walls, including dungeon fixtures you see constantly. Items are hidden everywhere."*

—Linda Barrett ■



# BATTLE SQUADRON

## THE DESTRUCTION OF THE BARRAX EMPIRE!

Whirling Barrax ships dart out from the dark spiral caves and attack from the right. You bank hard left, launching "smart" bombs. Look out! One of those darn "chameleons" is dead ahead — they're tough to spot and even tougher to stop! Avenge the Barrax Empire's deadly attack on earth in **BATTLE SQUADRON**. You'll be fighting on their turf, but you carry the most devastating arsenal in the universe. And if you're the best combat pilot, you just might succeed!

- ◆ Spectacular digitized sound — hear every explosion and collision.
- ◆ Single or two-player action with vertical and horizontal scrolling.
- ◆ More than 30 continuous minutes of sparkling background graphics.
- ◆ The toughest arcade challenge in any galaxy!

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Circle 254 on Reader Service card.





# GHOSTS OF GAMES FUTURE

*Unlike the bleak vision shown to Scrooge by  
Marley's Ghost, the future of Amiga games is  
full of promise and excitement.*



IF THE 1989 Computer Game Developers' Conference in San Jose was any indication, we should be seeing some dazzling new innovations in the Amiga game market for 1990 and beyond.

With over 300 game designers and developers in attendance, the Conference confirmed that the Amiga is currently the fastest growing computer for game software, and in 1990 it should pull into the No. 2 slot behind MS-DOS machines. And although many publishers may still develop their games first on MS-DOS machines, the majority will be following up with Amiga versions almost immediately—with some planning to develop specifically for the Amiga and its special capabilities.

Look for some Amiga games to require even one megabyte of memory and two disk drives, although the majority of games will still keep to the 512K standard as long as the A500 retains that amount as its base memory. Some developers plan to support extended memory to help buffer the flow of graphics or sound data from disk, creating a faster-playing game. Now that 68020 boards are more common, all games will be compatible with it.

More games will take advantage of some of the Amiga's unusual capabilities, such as HAM mode, multitasking, and four-channel stereo sound. Some publishers (most likely the smaller European developers) may initially use these as gimmicks to attract attention to their products, but they will probably be more widely exploited given a little more time. The new Fat Agnus chip will make possible larger graphics and sound files, but most publishers won't take advantage of this until the majority of machines have one (perhaps in 1991). Also, as hard-disk drives become more common, more games will work from one (the way Zany Golf from Electronic Arts or BattleChess from Interplay Productions do now). On-disk copy protection is becoming less popular, as publishers increase their use of code wheels, maps, and other tools that make copying difficult and annoying.

Many developers are adding a modem option to their games for multiplayer action. Modem options are usually found on a flight simulator, but developers plan also to use them in role playing and strategy games. Information services and networks will be offering more games with greater sophistication—►

By Steve Peterson





# JASON AND THE AMIGANAUTS

©1989 Susan Ishida

After eating some bad fruitcake, Jason, our Hi-Res hero, falls into a fitful slumber. Visions of his faithful Amiganauts slom dance in his head.



Didn't I tell him not to eat the fruitcake!

Actually, I think you told him he was a fruitcake.

C'mon guys! It's almost time for Santa to slide down the parallel port!



Moments later, Jason is visited by a fearsome apparition.

I am the Ghost of Games Past. Sprites, 2-D graphics. Blowing stuff up. COUGH UP A QUARTER, SPORT.

I remember you! In 1981 I fed you 2,659 tokens and I never even got to enter my initials.

GAD, I MISS THOSE DAYS!

I REMEMBER THIS GUY!

BOY, WAS HE LAME!



The second vision looks hauntingly familiar.

February of '89? I played for 72 consecutive hours and never got past level 1!

IT WAS THE BEST!

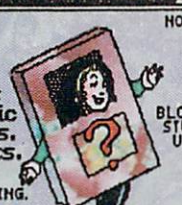
YEAH, WELL, ONLY WHIMPS PLAY SITTING DOWN. NOW IN MY TIME...

I'm the Ghost of Games Present. 3-D graphics. Role playing adventures. Blowing stuff up. HAND OVER YOUR SPARE TIME, BUCKO!



Finally, Vision 3.0 is released.

I am the Ghost of Future Games... of licensed characters yet to come. Holographic time travel simulators. Neural joystick implants. Blowing stuff up. LIFE IS ABOUT TO GET INTERESTING.



Come, Player 1.



Behold!



"To earn your degree from the Mendel Institute of Chromosome Engineering (M.I.C.E.), you must successfully populate a prefab planet with lifeforms which you design."

Okey Dokey!



"Ideally, this game should be played in a room large enough for the life-size hologram projections."



"Good ventilation is also recommended"



Yowza! What is that smell?

Digitized odors! Unfortunately, the giant winged cow you made wasn't housebroken. Fortunately, your tyrannasaurus roach just ate it.



A new game is loaded.



Now, this is hot stuff! You can play this game in your sleep!

But can I WIN in my sleep?

That's just it! When you wake up, you won't remember if you won. You won't even remember if you played! You'll never get tired of this game!

Speaking of tired, I'm feeling a tad...



Hi-Res



Lads! I've had a vision! I've seen the games of the future!



They'll invent UHHH... We'll have EARR... You'll be UHHH...



...Blowing stuff up!

YES!

AND SO IT BLOWS.





Amiga-specific "front ends" with stunning graphics and sound and the ability to play the game with dozens or even hundreds of other people.

## GAMES FUTURE CATCHING UP WITH AMIGA PRESENT

Much of the progress in game development will come about as software publishers begin seriously to tap the present capabilities of the Amiga. Graphics is one area developers are always striving to improve. Many current games use only 16 colors in 320 × 200 mode, as that makes it easy to move game graphics from the Amiga to the IBM or the Atari ST. But increasing competition has ruled that out for most games, and 32 colors are becoming the standard. Some games, particularly those from Psygnosis (such as *Menace*) are using Extra-Halfbrite mode for 64 colors, and overscan for even larger screen sizes than normal. We have seen already a HAM mode game (*Pioneer Plague* from Terrific Software) using all 4096 colors at once. Because many games are being ported to the Amiga from the IBM's 256-color MCGA mode, we will see more Extra-Halfbrite and HAM games in the future, as developers use the larger palettes to their fullest extents.

Animation is, of course, a key strength for the Amiga, where the blitter allows for faster animation than on any other personal computer. More publishers are trying out larger-size characters (à la *Sword of Sodan* from Discovery) for more realistic action. Silent Software (for upcoming games such as *20,000 Leagues Under The Sea*) is using ex-Disney animators to give its animation that extra level of realism.

Sound is one of the Amiga's most powerful features, and more games are taking advantage of it. In order to keep music "portable" between different machines, many Amiga scores are being written for a synthesizer and stored as MIDI data. This data is then used to drive digitized instruments through the Amiga's stereo sound channels. Increasingly, developers are optimizing their scores for the Amiga's four-channel sound, adding stereo effects for added impact. In the future, a MIDI output option may be available on some games. (You will, of course, need MIDI equipment to use such an option.)

Sound tracks and sound effects will get better as developers become more familiar with the technology. Expect continuous music sound tracks (as in games such as *Menace* from Psygnosis) to be the standard in the near future. Eventually, we will hear interactive, context-sensitive music that responds to the current game situation: When your character is in trouble, the ominous piano tones will boom, and when the villain appears, the violins will shriek. (Sierra On-Line is developing in this area now.)



## THE SOUL OF THE GAME

While graphics, sound and hardware considerations are important, they are only the exterior of a game. The soul of a game lies in its design and story, and more effort is being put there. MicroProse, for in-

stance, has hired a staff of experienced game designers from board-game and role-playing-game companies specifically to design (not program) its games. Other publishers are now bringing in writers and designers to help make their games better-written, more involving, and more exciting.

Many developers are trying to go beyond the basic shoot-'em-up or dungeon crawl. Cinemaware brought a new mix of arcade action and storytelling to the Amiga with *Defender of the Crown* and other titles. MicroProse is trying to blur the boundaries between action, simulation, and role-playing games. Its *F-19* (coming soon for the Amiga) has RPG and simulation elements in its flight simulator combat missions, while its upcoming *Samurai* uses RPG, action, and war-game elements.

One of the few things that future games will have in common will be simpler interfaces. More games will have rows of icons (as in *Dungeon Master* from Software Heaven), rather than text commands, making international versions easier. Less violent themes and more cooperation will be another future trend.

Fantasy, science fiction, action, and sports will continue to be popular subjects for games. Licensing of popular movie and book titles will become even more common. In fact, there will be more efforts at making licensed products come close to the original. With Lucasfilm's *Indiana Jones* and *The Last Crusade*, several scenes that were cut from the movie appear in the game, and both George Lucas and Steven Spielberg participated in the design process. We will also see more cross-marketing of computer games with other media—such as paper games, comic books, and novels—to create multimedia game experiences. At present, for instance, a board-game version of the *Ultima* series from Origin Systems is planned, while Infocom's *BattleTech* role-playing game is also available in paper-game and book formats, and an arcade game is currently in testing.

Beyond the next few years, future visions include CD-ROM technology, which allows 600 megabytes of data. The results on an Amiga would be stunning: How does TV-like graphics and animation with full orchestral sound tracks grab you? New ways of interacting with the computer, such as individual eye-screens, body-movement sensors, or even direct neural connection, will completely transform the game interface. The games that are being forged now in the cauldrons of software development are the tools that will build this new industry. (Note: For addresses and telephone numbers of game developers mentioned in this article, consult the "Manufacturers' Addresses" box at the end of the *Games Buyer's Guide* on p. 58.) ■

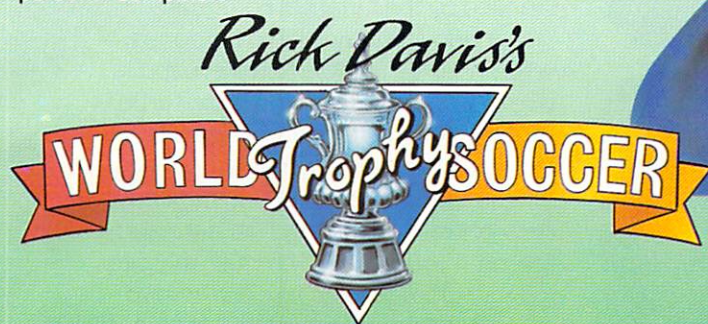
*Steve Peterson founded his own role-playing-game company in 1981, has worked for a major game developer, and written a choose-your-own-adventure book. Write to him c/o AmigaWorld, Editorial Dept., 80 Elm St., Peterborough, NH 03458.*



# KEEP THE CHANGE!

It looks, feels, and plays like a real Arcade game ... *because it is!*

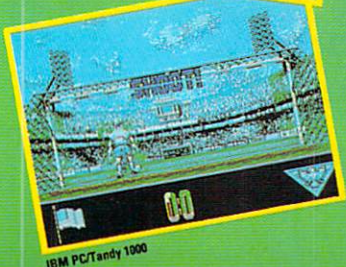
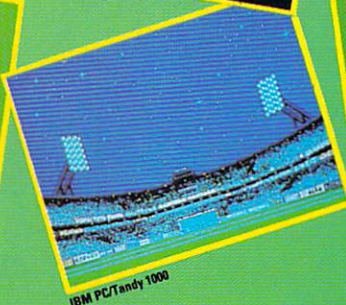
But you don't have to wait your turn at the Arcade to put your quarters into this new high-energy game ... you can take it home to play on your personal computer!



**Rick Davis's World Trophy Soccer** features real-to-life animation designed and programmed by professional cinema animators! The superb multidirectional scrolling is so smooth and fast it can make you dizzy just watching it!

Play with a friend, and you'll both have a lot of fun. Play against the computer, and you're in for the wildest challenge ever!

**It's literally like bringing an Arcade machine home!**



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Amiga (1 meg.)	\$49.99	Amiga (512K)	\$39.99
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# FOUR COMPUTER HACKERS ARE ABOUT TO RAID YOUR DISK DRIVE.



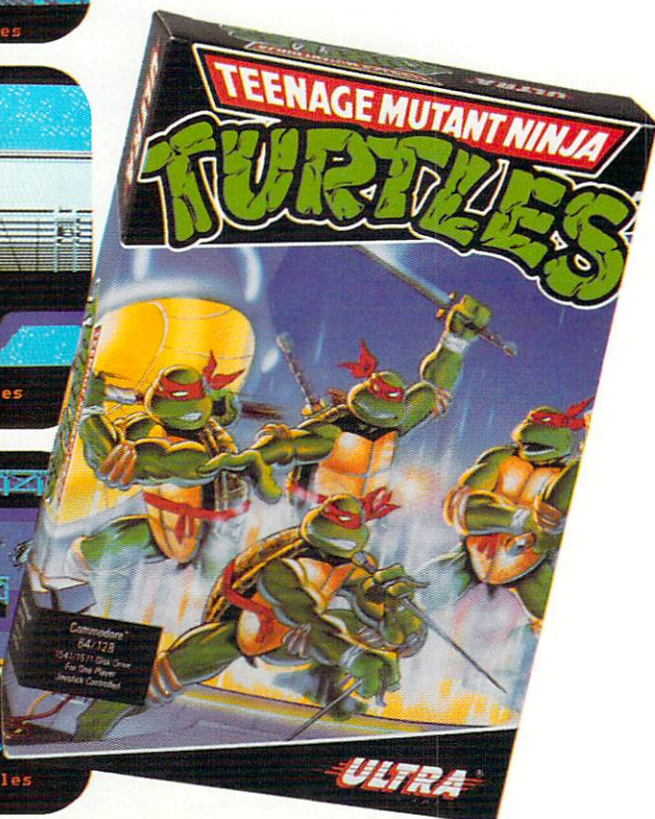
No computer will go unscathed, as Ultra's version of Teenage Mutant Ninja Turtles® storms into your disk drive to duke it out with Shredder™—a maniac more menacing than an army of mind-altered Bruce Lees.

But if they're to survive, you must command the role of each turtle, rumbling through a maze of Mouser™ infested sewers, criminally polluted rivers and alleys patrolled by the fanatical Foot Clan™.

Along the way, search for bonus weapons like the Triple Shuriken. You'll have to also think fast, switching turtle identities in order to match their karate skills with those of the enemy.

So grab your joystick and nunchukus, then control every leap, chop, slice and dice, until you splatter Shredder senseless or get yourself hacked into turtle soup.

Now featuring the ULTRA® "GAME SAVE" command.

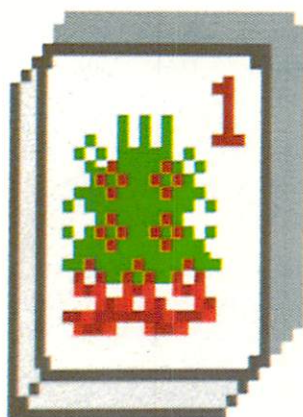
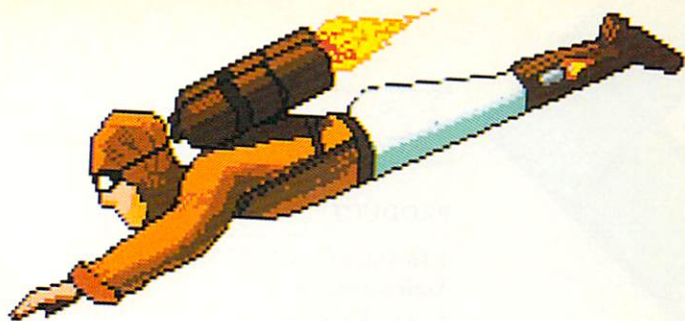


**ULTRA**  
GAMES

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# The Great Amiga Games Buyer's Guide



FEEL THE URGE to conquer medieval Britain? Hop a spaceship to the planet Drax? Maybe you'd prefer a Rambo-fest of destruction? Whatever your fantasy, our Games Buyer's Guide offers a way to live it out.

With the entertainment market expanding at warp speed, we decided it deserved a product listing all its own (stay tuned for our annual applications software buyer's guide next month), and deluged games manufacturers with questionnaires. The *AmigaWorld* offices were then equally flooded with responses, which we sorted and cataloged in the eight categories listed below. (For an explanation of each, see the sidebar "Before You Play" on page 28.)

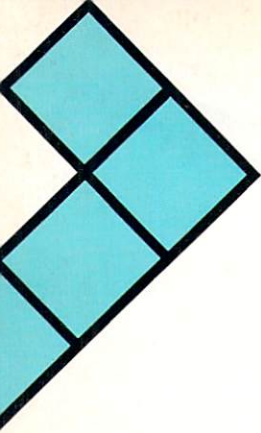
To keep the listing from being a complete flight of fancy, we listed only games already on the market or with a promised release date of November 31. Such promises—as well as prices and product names—are subject to change. If a company had decided on a release date but not a price, we listed NA (Not Available) in the Price column. For descriptions of last minute pre-Christmas goodies, watch our New Products column, "What's New?."

Action/Strategy. ....	40	Role-Playing Adventures . . . . .	50
Arcade. ....	42	Sports . . . . .	50
Flight Simulators . . . . .	46	Strategy . . . . .	54
Graphics Adventures . . . . .	46	Text Adventures. . . . .	56



By Jan Jackson





## ACTION/STRATEGY

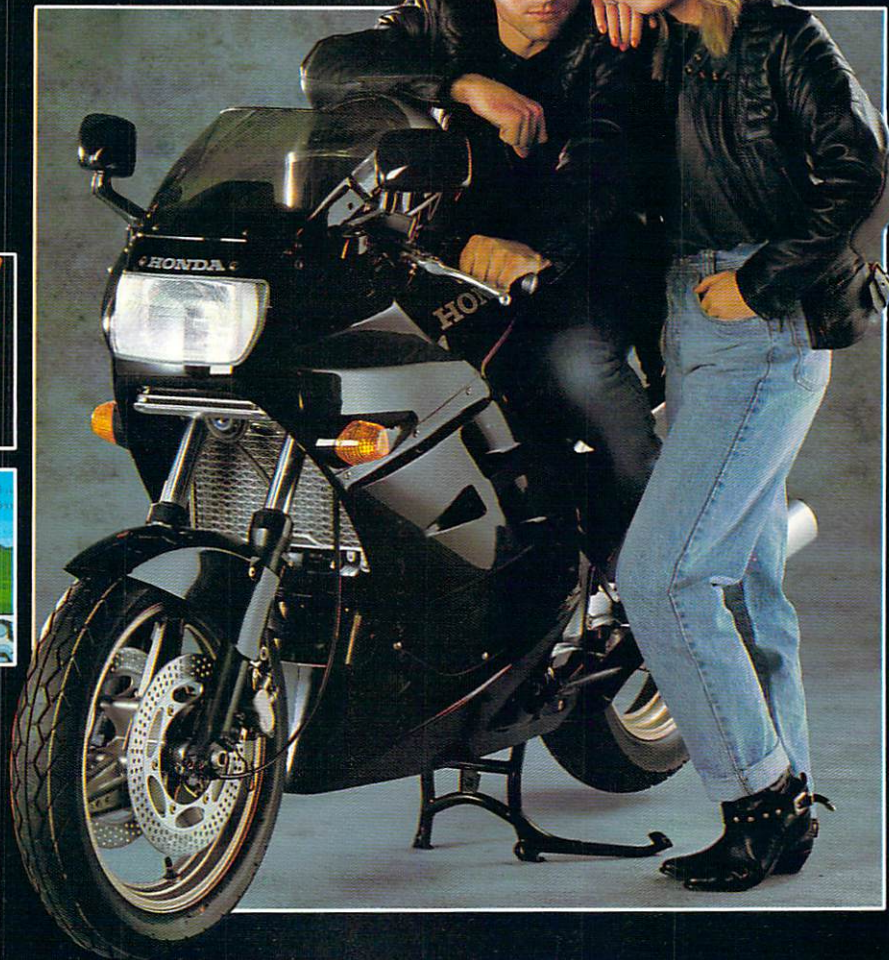
PRODUCT	COMPANY	PRICE	DESCRIPTION
4-In-One: Easy But Fun	Polyglot	\$14.95	Play Slot Cars, Circuit Mania, Shuffle Puzzle.
Andromeda Mission	Demonware	\$39.95	See M31 in style.
Axe of Rage	Epyx	\$49.95	Avoid cave crud, lava rivers, dripping gore.
Battleship	Epyx	\$29.95	Naval combat.
Beyond Dark Castle	Activision	\$39.95	Bomb and jetpack thru catacombs, swamps.
Carrier Command	Medalist	\$44.95	Strategy—resolve the energy crisis.
Death Sword	Epyx	\$29.95	Head-to-head medieval sword battle.
Defcon 5	Cosmi	\$39.95	Star battle simulation.
Defender of the Crown	Cinemaware	\$49.95	Lead Saxon swordsmen against the Normans.
Destroyer	Epyx	\$19.95	Command a US destroyer.
Devon Aire	Epyx	\$49.95	Prowl a wealthy household for diamonds.
DinoWars	DigiTek	\$39.95	Interactive game—includes encyclopedia.
Dragon Force	Interstel	\$49.95	Join an elite international strike force.
Federation	Cinemaware	\$39.95	Strategic space trading, combat adventure.
Fire Zone	Datasoft	\$34.95	Simulates combat scenario in the 21st Century.
Galactic Conqueror	Titus	\$44.95	Foil an alien take-over.
Gold Runner II	Microdeal	\$39.95	Defend yourself from space pirates.
Heroes of the Lance	Strategic Sim.	\$39.95	Advanced Dungeons and Dragons module.
Hits Disk Vol. I	Microdeal	\$39.95	4-pack of Microdeal favorites.
Hunt for Red October	Datasoft	\$49.95	Submarine simulation based on Clancy novel.
Ikari Warriors	Elite	\$39.95	US forces in Central America.
Impossible Mission II	Epyx	\$19.95	Explore eight towers, avoid robots, mines.
Insanity Fight	Microdeal	\$39.95	Space battle.
It Came from the Desert	Cinemaware	\$49.95	Suppress giant, flesh-eating insects.
King of Chicago	Cinemaware	\$24.95	Violence, intimidation, bribery.
Kingdoms of England	Incognito	\$44.95	Strategy game with graphics.
Knights of the Cryst.	Terrific	\$39.95	Five inter-dependent, HAM mode games.
Lazer Squad	MicroIllusions	\$39.95	Pack of MicroIllusions' hits.
Licence to Kill	Broderbund	\$34.95	As 007, bring a drug-lord to justice.
Lords of the Rising Sun	Cinemaware	\$49.95	Command armies of samurai.
Major Motion	Microdeal	\$39.95	Drive in jeopardy against the Lawless League.
Manhunter San Francisco	Sierra On-Line	\$49.95	Adventure strategy.
Matrix Marauders	Psygnosis	\$34.95	Maze action.
Mighty Nerd	ISM Inc.	\$49.95	Edit powers of an odd superhero.
Mind-Roll	Epyx	\$29.95	Maneuver a globe through astral planes.
Pioneer Plague	Terrific	\$39.95	Stop a terra-forming robotic space ship.
Police Quest	Sierra On-Line	\$49.95	Law-enforcement simulation.
Populous	Electronic Arts	\$49.95	You play god—500 worlds to rule.
Project Neptune	Epyx	\$39.95	Underwater in a sub or in scuba gear.
Purple Saturn Day	Epyx	\$39.95	Intergalactic sports with aliens.
Quadralien	Spinnaker	\$39.95	Destroy evil Quadaliens infesting Astra.
Return to Atlantis	Electronic Arts	\$19.95	Aquatic adventure.
Revenge of Defender	Epyx	\$34.95	Laserize otherworldly opponents.
Rocket Ranger	Cinemaware	\$49.95	Battle 1940 Nazis and their machines.
Rubicon Alliance	Datasoft	\$29.95	Pilot a Starfox fighter, planetary conflict.
Sinbad and the Throne	Cinemaware	\$29.95	Battle dark and mysterious forces.
Skyfox	Electronic Arts	\$19.95	Combat flight simulation.
Skyfox II	Electronic Arts	\$19.95	Travel faster in a 3-D environment.
Snow Strike	Epyx	\$39.95	Attack South American drug lords.
Space Station Oblivion	Epyx	\$19.95	3-D terrain to explore by land or air.
Star Trek V	Mindscape	\$54.95	Assume the role of Captain Kirk.
Starglider II	Medalist	\$44.95	Interplanetary battle strategy.
Stargoose	Spinnaker	\$39.95	Steal power crystals from one of eight cities.
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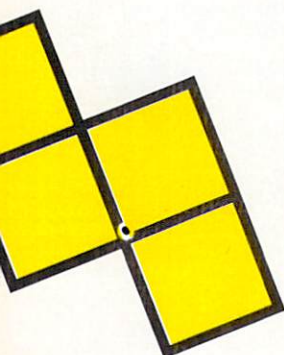




Technocop	US Gold	\$49.95	Cops and robbers of tomorrow.
Telewar	Telegames	\$39.95	Tank, naval, and space battles by modem.
The Colonel's Bequest	Sierra On-Line	\$59.95	Solve a murder.
Titan	Titus	\$66.95	Solve 80 levels of challenging puzzles.
Total Eclipse	Cinemaware	\$39.95	Locate and destroy an evil shrine.
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U.F.O.	SubLOGIC	\$49.95	Spacecraft flight simulator.
Victory	Demonware	\$39.95	Arcade-action, strategy.
Welltris	Spectrum Hol.	\$34.95	3-D Tetris-style game.
Zero Gravity	Microdeal	\$39.95	Play ball in weightlessness.

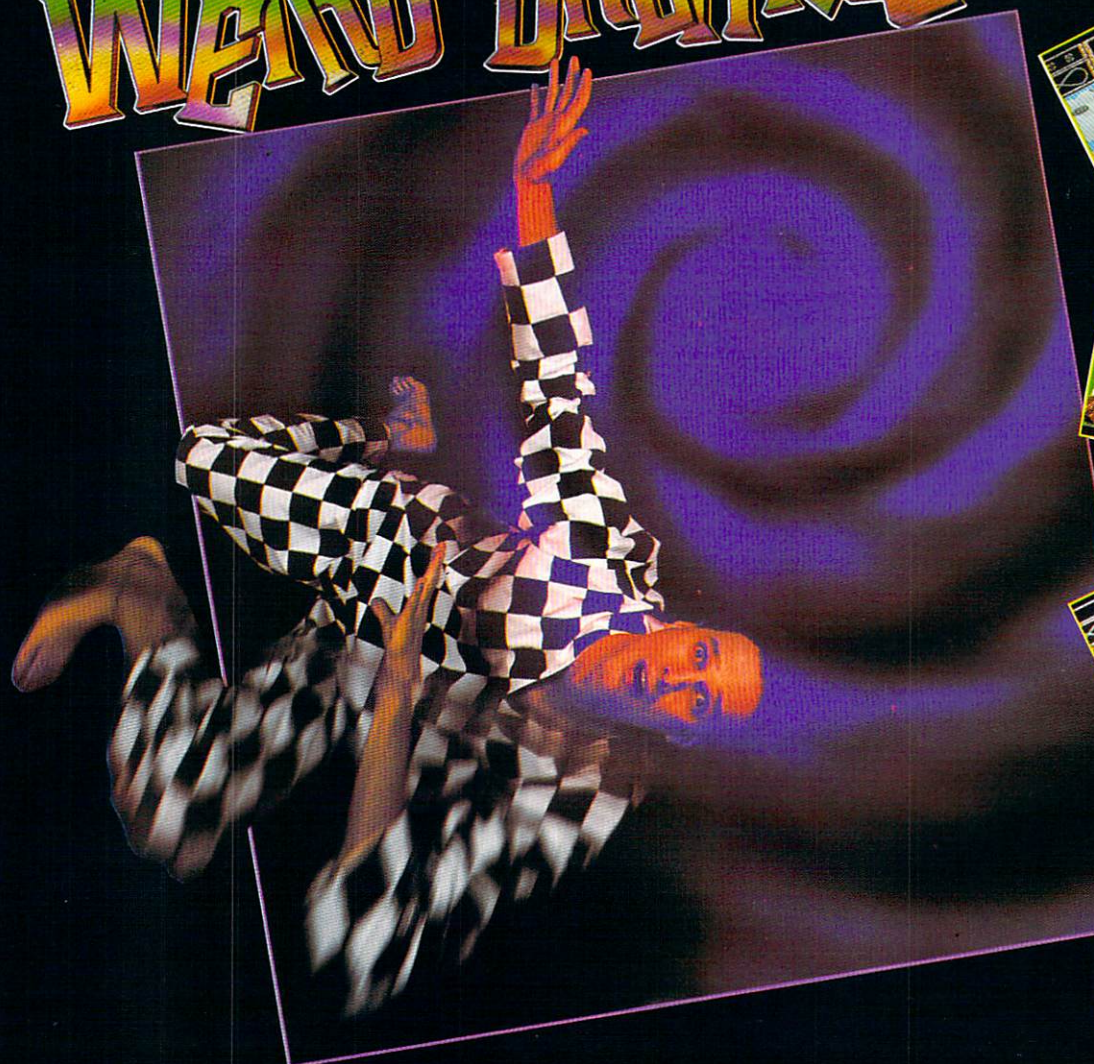
## ARCADE

PRODUCT	COMPANY	PRICE	DESCRIPTION
Aaargh!	Arcadia	\$39.95	Your monsters munch through 11 cities.
Action Fighter	Mindscape	\$39.95	Careen in a crime-fighting motorcycle.
After Burner	Mindscape	\$49.95	Pilot an F-14 Tom Cat.
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Alien Syndrome	Mindscape	\$39.95	Rescue crew of alien-infested space ship.
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AquaBlast	Elite	\$34.95	Complete your mission via complex waterways.
Archipelagos	Logotron	\$39.95	Quasi-tropical landscape with aliens.
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Arkanoid	Discovery	\$29.95	Breakout-style arcade with 66 levels.
Artura	Arcadia	\$39.95	An arcade adventure with enemies and traps.
Aunt Arctic Adventure	Mindware	\$39.95	Help Charlie the Chimp and Penguin Pete.
Awesome Arcade Action	Arcadia	\$49.95	Xenon, Blasta Ball, and Sidewinder.
Baal	Psygnosis	\$29.95	Scrolling screen features 100 monsters.
Ballistix	Psygnosis	\$34.95	Play alternates between soccer, pinball...
Barbarian	Psygnosis	\$39.95	You are Hegor the dragon-slayer.
Battle Squadron	Innerprise	\$49.95	Battle chameleon-like enemy.
Black Shadow	Scorpion	\$34.95	Save earth from a deadly asteroid.
Blood Money	Psygnosis	\$49.95	Sequel to Menace.
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Bubble Bobble	Taito	\$39.95	Brontosaurus pair rescue friends from villain.
Bubble Ghost	Accolade	\$19.95	Maneuver a bubble-blowing ghost.
Capone	Actionware	\$39.95	1920's-style arcade shoot'em up.
Captain Fizz	Psygnosis	\$29.95	Two-player, co-operate-or-die alien blasting.
Castlevania	Konami Inc.	\$44.95	Tour past blood-thirsty rogues gallery.
Charon 5	Mindware	\$34.95	Strategy and arcade action through 11 levels.
Clever and Smart	DigiTek	\$34.95	Help two bumbling detectives.
Combat Course	Mindscape	\$29.95	Train at a top-secret training camp.
Combat Zone	Keypunch	\$19.95	Tank and helicopter combat.
Contra	Konami	\$39.95	Guerilla warfare for the survival of the earth.
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Denaris	HardWired	\$39.95	Help the Denarians shake the yoke of bondage.
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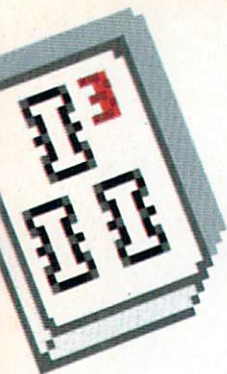
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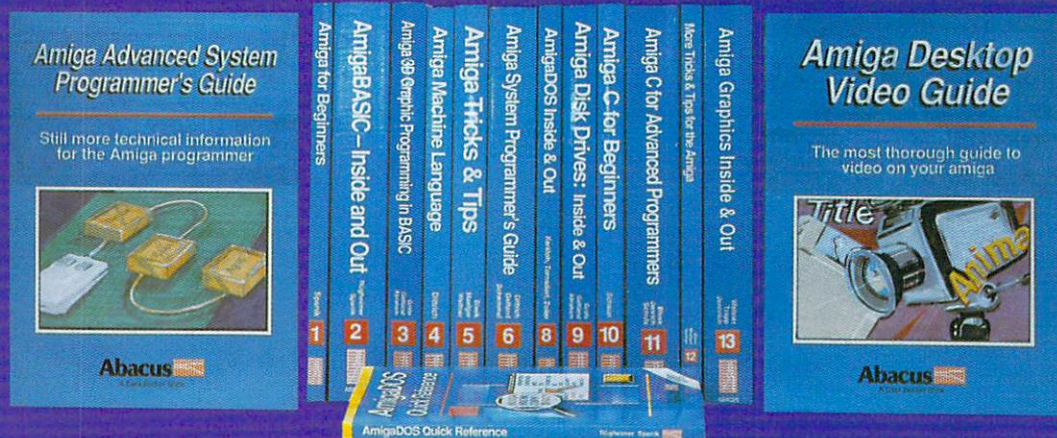
Dragon's Lair	ReadySoft	\$59.95	Save the princess from Singe.
Ebonstar	MicroIllusions	\$24.95	Arcade space game.
Eliminator	Hewson	\$34.95	Space highway arcade action.
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JUG	Microdeal	\$39.95	You are a humanoid in 36412 AD.
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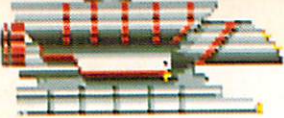
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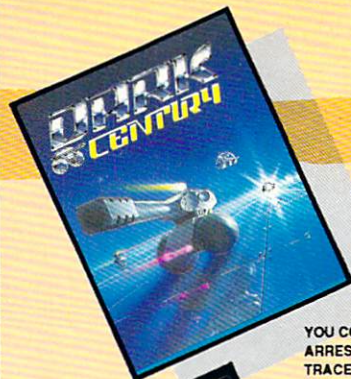
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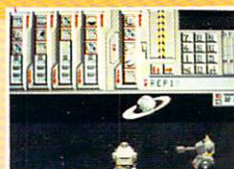
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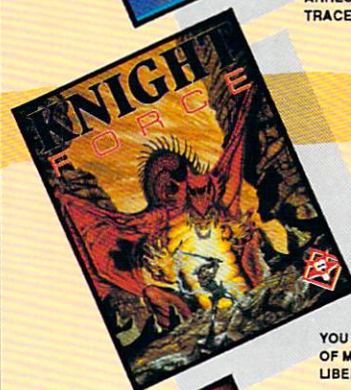
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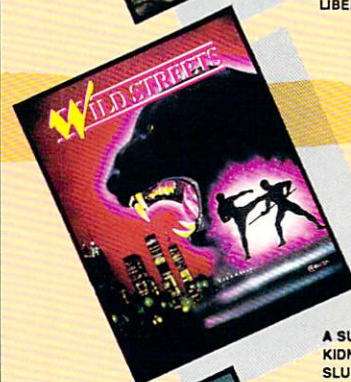


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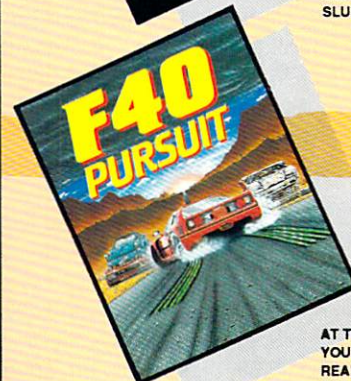
DEFENDER OF BELLOTH REALM. QUEST THROUGH FIFTEEN LEVELS AND FIVE ERAS YOUR ENCHANTED POWERFUL WEAPONS AND SPOIL THE MALEVOLENT TRAPS, TO TANYA FROM THE CLAWS OF RED SABAT THE SORCERER.



## WILD STREETS



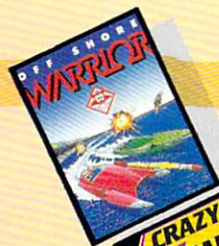
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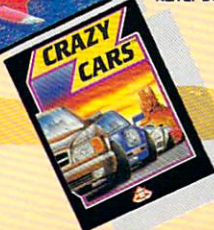
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YOU ARE AN OFF SHORE WARRIOR AND YOUR FIRST ARENA, FULL OF FANS, IS WAITING FOR YOU. STRUGGLE AGAINST ROCKS, WAVES AND OPPONENTS IN A DEADLY GAME. ONLY FEW CAN LEAVE ALIVE. DO IT OR DIE!!!



## FIRE AND FORGET

FACE THREE LEVELS OF SIX CONFLICTS, FROM SPORADIC WARFARE TO TOTAL WAR. NEVER LOOK BACK! IT COULD BE YOUR LAST MISSION. ONE OR TWO WARRIORS CAN TEAM UP.



## CRAZY CARS

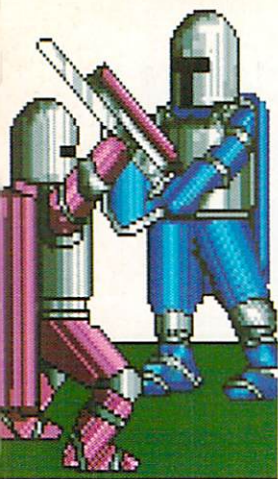
YOU ARE RACING FOUR OF THE MOST PRESTIGIOUS CARS IN THE WORLD'S CRAZIEST RACE THROUGHOUT THE UNITED STATES. PREPARE TO START, READY? GO!!!



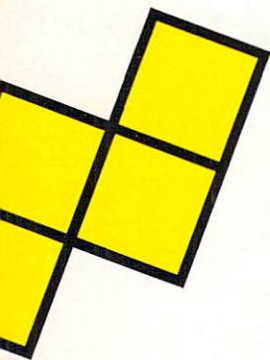
## TITAN

MAKE YOUR WAY THROUGH THIS STRATEGIC PUZZLE OF EIGHTY WORLDS WITH YOUR MAGNETIC CONTROL UNIT. BUT BE CAREFUL, THE ULTRA-FAST SCROLLING HAS ALREADY CAUSED SOME MENTAL BREAKDOWNS.





Autoduel	Origin	\$39.95	Car battles for cash prizes.
Barbarian II	Psygnosis	\$39.95	Sequel with more monsters, traps.
Battletech	Infocom	\$49.95	Skill enhancements and tactical combat.
Black Cauldron	Sierra On Line	\$39.95	Based upon Disney movie.
Bride of the Robot	Free Spirit	\$39.95	Adult graphic text adventure.
Captain Blood	Mindscape	\$49.95	As a half-machine, explore.
Carthage	Psygnosis	\$34.95	From out of the past.
Chrono-Quest	Psygnosis	\$49.95	Travel through time, solve murder.
Clavell's Shogun	Infocom	\$59.95	Players embark to Japan.
Conquests of Camelot	Sierra On-Line	\$59.95	Search for Holy Grail.
Cosmic Relief	Datasoft	\$34.95	Help Professor Renegade save the world.
Deja Vu II: Lost	Icom Simulations	\$49.95	1930-style gangster action.
Dr. Doom's Revenge	Paragon	\$39.95	Comic book superheroes battle.
Dr. Plummets' House	MicroIllusions	\$34.95	Gravity adventure.
Dragon's Lair	Visionary Design	\$59.95	Control Dirk, rescue Daphne.
Dream Zone	Baudville	\$39.95	Travel your dreamscape to exotic locales.
Dungeon Quest	Image tech	\$49.95	Interactive graphic adventure.
Faery Tale Adventure	MicroIllusions	\$49.95	Interactive adventure.
Flash Dragon	Psygnosis	\$34.95	Dragon fighting.
Galactic Invasion	MicroIllusions	\$14.95	Space battle.
Gettysburg:Turning Pt.	Strategic Sim.	\$59.95	Re-creation of the Gettysburg battle.
Gold of the Realm	Magnetic Images	\$39.95	Explore castle in search of hidden treasure.
Great States II	Designing Minds	\$39.95	Geography game.
Herachules	Gainstar	\$39.95	3-D role-playing, out-door adventure.
Hero's Quest	Sierra On-Line	\$59.95	Adventure.
Indiana Jones, Crusade	Lucasfilm	\$49.95	Seek the Holy Grail.
Infestation	Psygnosis	\$39.95	Get rid of it.
Jetsons	MicroIllusions	\$39.95	Interactive adventure.
Journey	Infocom	\$49.95	Enter a world of dwarves, elves, and wizards.
Killing Game Show	Psygnosis	\$34.95	A little turmoil.
Kings Quest I	Sierra On Line	\$49.95	Explore the kingdom of Davenry.
Kings Quest II	Sierra On Line	\$49.95	More fantasy with classical music.
Kings Quest III	Sierra On Line	\$49.95	Once more, new fantasy adventures.
Land of the Legends	MicroIllusions	\$49.95	Interactive adventure.
Leisure Suit Larry	Sierra On-Line	\$39.95	Help Larry through his adventures.
Leisure Suit II	Sierra On-Line	\$39.95	More mischief with Larry.
Lost Dutchman Mine	Magnetic Images	\$49.95	Wander the deserts, mountains of Old West.
Maniac Mansion	Lucasfilm	\$44.95	Rescue a cheerleader from a mad scientist.
Mindwalker	Commodore	\$49.95	You are a mad scientist with a four-way split.
Moebius—The Orb	Origin Systems	\$39.95	Fantasy adventure.
Murder on the Atlantic	Intracorp	\$39.95	Solve a mystery.
Never Mind	Psygnosis	\$34.95	Checkered field of play.
Pipe Dream	Lucasfilm	\$39.95	Plummer's worst nightmare.
Planet of Lust	Free Spirit	\$39.95	Sequel to Sex Vixens from Space.
Pocket Rockets.	Capcom U.S.A.	\$39.95	Test-ride four 600cc motorcycles.
President Is Missing	Cosmi	\$39.95	Find the Chief-Exec.
Prime Time	First Row	\$39.95	Network direction simulation.
Quest For Excalibur	Infocom	\$49.95	Fulfill your destiny as King Arthur.
Questron II	Strategic Sim.	\$49.95	Prevent evil.
Raiders of the Wind	Gainstar	\$39.95	Adventure.
Romantic Encounters	MicroIllusions	\$24.95	Adult text adventure.
Savage	Medalist	\$34.95	Heroic fantasy adventure.
Scary Mutant Space	ReadySoft	\$39.95	Animated fighting sequences.
Sex Vixens from Space	Free Spirit	\$39.95	Adult graphic text adventure.
Shadow of the Beast	Psygnosis	\$49.95	Fight monsters, go through traps.
Space Ace	ReadySoft	\$59.95	Sequel to Dragon's Lair.
Stryx	Psygnosis	\$34.95	Fight robots in Dome City.
Talespin	Microdeal	\$49.95	Create your own adventure game.
Tanglewood	Microdeal	\$39.95	Help Uncle Arthur regain mining rights.
Targhan	Gainstar	\$39.95	Adventure-action, role-playing arcade.





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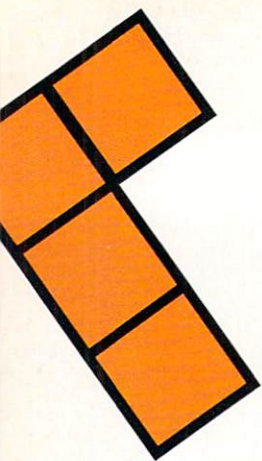
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Circle 28 on Reader Service card





The Kristal	Cinemaware	\$49.95	You are a space pirate on an epic quest.
The Last Inca	Free Spirit	\$39.95	Save the Incas.
Time & Magic	Datasoft	\$39.95	Lords of Time, Red Moon, Prince of Magik.
Time Bandit	Microdeal	\$39.95	Three graphic/text adventures.
Times of Lore	Origin	\$39.95	Rival lords battle for control.
Transylvania III	Polarware	\$39.95	Illustrated adventure.
Twilight Zone	First Row	\$39.95	Experience a bizarre storyline.
Twilight's Ransom	Paragon	\$34.95	Get to the bottom of a disappearance.
Universe 3	Omnitrend	\$49.95	Futuristic who-dunnit, political overtones.
Wanderer	Elite	\$34.95	3-D intergalactic trading game.
Weird Dreams	Medalist	\$39.95	A game within your mind.
Where, USA is C. Sandiego	Broderbund	\$44.95	Geography adventure with Almanac.
Where, World C. Sandiego	Broderbund	\$44.95	Geography adventure with World Almanac.
Zac McKracken	Lucas Film	\$44.95	Become a tabloid journalist.

## ROLE-PLAYING ADVENTURE

PRODUCT	COMPANY	PRICE	DESCRIPTION
Alternate Reality	DataSoft	\$39.95	Part I of a classic fantasy adventure.
Bard's Tale	Electronic Arts	\$49.95	Fantasy—bring down the scourge.
Bard's Tale II	Interplay	\$59.95	More scourge-scouring.
Black Tiger	Capcom U.S.A.	\$39.95	Conquer foes and evil dragons.
Code Name: Ice Man	Sierra On-Line	\$59.95	Role playing adventure.
Deathbringer	Cinemaware	\$39.95	Bring down resurrected wizard.
Demon's Winter	Strategic Sims.	\$39.95	Fantasy combined with adventure.
Dungeon Master	Software Heaven	\$39.95	Open doors in an underground world.
Forgotten Worlds	Capcom U.S.A.	\$39.95	Protect the Earth against an alien invasion.
Ghouls and Ghosts	Capcom U.S.A.	\$39.95	Sequel to Ghosts and Goblins—rescue princess.
Hillsfar	Strategic Sims.	\$49.95	Advanced Dungeons and Dragons.
Honeymooners	First Row	\$39.95	Ralph, Ed, Trixie, and Alice.
IntelliType	Electronic Arts	\$19.95	Murder, international intrigue.
J.R.R. Tolkien War	Melbourne House	\$49.99	Follow in the footsteps of Frodo.
Last Duel	Capcom U.S.A.	\$39.95	Pilot a futuristic craft for princess.
LED Storm	Capcom U.S.A.	\$39.95	Futuristic road-race, changing environments.
Might & Magic II	New World	\$59.95	250 animated monsters and auto-mapping.
Neuromancer	Interplay	\$44.95	Role-playing adventure and simulation.
Phantasie II	Strategic Sims.	\$19.98	Locate and destroy Dark Lord's evil orb.
Phantasie III	Strategic Sims.	\$39.95	Final confrontation against the Dark Lord.
Pool of Radiance	Strategic Sims.	\$49.95	Advanced Dungeons and Dragons.
Side Arms	Capcom U.S.A.	\$39.95	Defend Earth from armed aliens.
Speedball	Cinemaware	\$39.95	Futuristic heavy metal blood sport.
Swords of Twilight	Electronic Arts	\$44.95	Travel to other worlds, fight shodowlords.
Twilight Zone, The	First Row	\$39.95	Experience a bizarre storyline.
Ultima III	Origin	\$39.95	A fiery island marks the return of evil.
Ultima IV	Origin	\$59.95	Vanquish evil in this fantasy land.
Ultima V	Origin	\$59.95	Seek the paths of Avatar.

## SPORTS

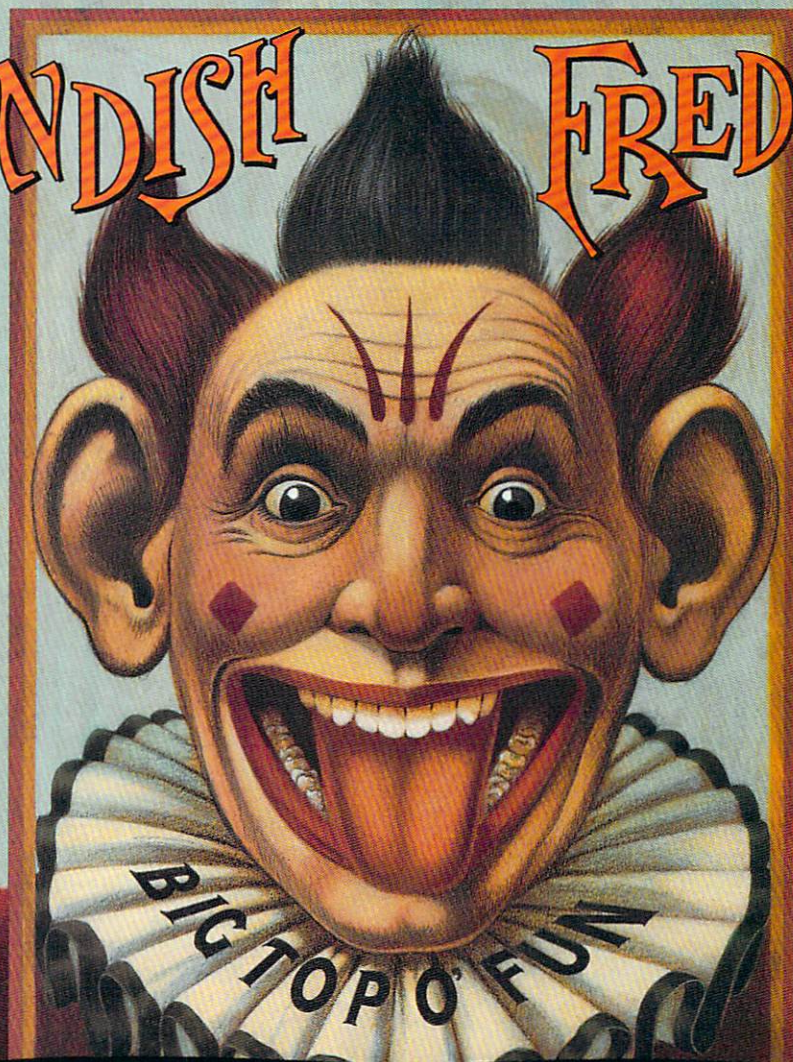
PRODUCT	COMPANY	PRICE	DESCRIPTION
3-D Pool	Medalist	\$34.95	Simulation of indoor table game.
4 x 4 Off Road Racing	Epyx	\$19.95	Down and dirty obstacle course racing.





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- Breakthrough animation
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- Original music
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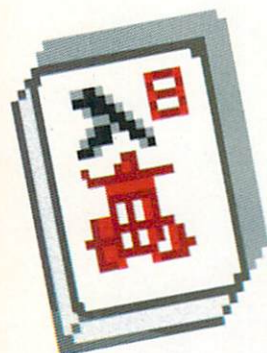
# M I N D S C A P E

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<b>4th and Inches</b>	Accolade	<b>\$14.95</b>	Football simulation.
<b>British Open Courses</b>	Moonlight Dev.	<b>\$20.00</b>	Five British open hosts, Mean 18.
<b>California Challenge</b>	Accolade	<b>\$19.95</b>	The Duel accessory disk—race West Coast.
<b>California Games</b>	Epyx	<b>\$49.95</b>	Current California outdoor sports.
<b>Championship Baseball</b>	Mediagenic	<b>\$39.95</b>	Baseball simulation.
<b>Championship Basketball</b>	Mediagenic	<b>\$44.95</b>	Two-on-two basketball game.
<b>Championship Golf</b>	Mediagenic	<b>\$39.95</b>	Golf simulation.
<b>Classic American Courses</b>	Moonlight Dev.	<b>\$20.00</b>	Five American golfing favorites.
<b>Crazy Cars</b>	Titus	<b>\$39.95</b>	Race cross-country in prestigious cars.
<b>Downhill Challenge</b>	Broderbund	<b>\$34.95</b>	Ski-racing simulation.
<b>Earl Weaver Baseball</b>	Electronic Arts	<b>\$49.95</b>	Baseball strategy.
<b>E. W. Baseball Data Disk</b>	Electronic Arts	<b>\$12.95</b>	Data on '86, '87, and '88 major-league teams.
<b>European Roadways</b>	Accolade	<b>\$19.95</b>	The Duel accessory disk—Europe's fastest.
<b>Extra Course Disk #3</b>	DigiTek	<b>\$19.95</b>	Three more course for Hole-In-One.
<b>F40 Pursuit Simulator</b>	Titus	<b>\$44.95</b>	Race the clock and the cops.
<b>Famous Courses Vol. II</b>	Accolade	<b>\$19.95</b>	More courses for Mean 18 golf simulation.
<b>Famous European Courses</b>	Moonlight Dev.	<b>\$20</b>	Top continental sites, Mean 18.
<b>Fast Break</b>	Accolade	<b>\$44.95</b>	Three-on-three basketball simulation.
<b>Fast Track</b>	Medalist	<b>\$39.95</b>	Hard driving racing excitement.
<b>Ferrari Formula One</b>	Electronic Arts	<b>\$49.95</b>	Auto-racing simulation.
<b>Final Assault</b>	Epyx	<b>\$19.95</b>	Mountain climbing challenge.
<b>Gee Bee Air Rally</b>	Mediagenic	<b>\$39.95</b>	Airplane race.
<b>GFL Champ. Football</b>	Mediagenic	<b>\$44.95</b>	Arcade football game.
<b>Grand Prix Circuit</b>	Accolade	<b>\$44.95</b>	International racing simulation.
<b>Great Resort Courses</b>	Moonlight Dev.	<b>\$20.00</b>	Five from Palm Springs to Puerto Rico.
<b>Gridiron!</b>	Bethesda	<b>\$29.95</b>	Control practice or pro game.
<b>Hardball!</b>	Accolade	<b>\$44.95</b>	Old-time baseball simulation.
<b>Hardball II</b>	Accolade	<b>\$44.95</b>	Sequel with stats, viewpoints, animation.
<b>Heatwave: Offshore</b>	Accolade	<b>\$44.95</b>	Super boat racing simulation.
<b>Hole-In-One Mini Golf</b>	DigiTek	<b>\$39.95</b>	Includes traditional and wacky holes.
<b>Int'l Course Disk</b>	Accolade	<b>\$19.95</b>	Extra courses for Mean 18.
<b>Int'l Champ. Wrestling</b>	Avatar	<b>\$32.95</b>	Professional wrestlers run, dance, and fight.
<b>International Soccer</b>	Microdeal	<b>\$39.95</b>	Control the weather, number of players.
<b>Jack Nicklaus' 18</b>	Accolade	<b>\$19.95</b>	Eighteen of Jack's favorite holes.
<b>Keith Van Eron Soccer</b>	Medalist	<b>\$34.95</b>	Your players dive, slide, and jump.
<b>Leader Board</b>	Access	<b>\$44.95</b>	Golf simulation.
<b>Magic Johnson's Bball</b>	Melbourne		Two-on-two play: 512K; 1MB: \$49.99.
<b>Major Champ. Courses</b>	Accolade	<b>\$19.95</b>	Jack Nicklaus' add-on course disk.
<b>Mean 18</b>	Accolade	<b>\$44.95</b>	Golf simulation.
<b>MicroLeague Baseball</b>	MicroLeague	<b>\$59.95</b>	Sports simulation.
<b>Mouse Bowling</b>	Silver	<b>\$19.95</b>	Bowl by manipulating the mouse.
<b>Muscle Cars.</b>	Accolade	<b>\$19.95</b>	The Duel accessory disk—5 hot 1960's-era cars.
<b>Omni Play Basketball</b>	Sport Time	<b>\$49.95</b>	Five-on-five basketball.
<b>One-On-One</b>	Electronic Arts	<b>\$19.95</b>	Larry Bird and Doctor J. do battle.
<b>Out Run</b>	Mindscape	<b>\$49.95</b>	Kick up your engine, down shift your gears.
<b>P.G.A. Championship Course</b>	Moonlight Dev.	<b>\$20.00</b>	Five P.G.A. courses.
<b>P.G.A. Tour Courses I</b>	Moonlight Dev.	<b>\$20.00</b>	Five P.G.A. Tour courses.
<b>Pocket Rockets</b>	Capcom U.S.A.	<b>\$39.95</b>	Test-ride four 600cc motorcycles.
<b>Pro Football Facts</b>	Inracorp	<b>\$39.95</b>	NFL statistics.
<b>Professional Football Sim</b>	MicroSearch	<b>\$34.95</b>	Support via modem, compiles statistics.
<b>Pure Stat Football</b>	Software Sims.	<b>\$39.95</b>	Football simulation.
<b>RVF Honda</b>	Medalist	<b>\$34.95</b>	Formula One motorbike racing.
<b>Shark Attack</b>	Melbourne	<b>\$39.99</b>	Greg Norman's Ultimate Golf.
<b>Street Sports Basketball</b>	Epyx	<b>\$19.95</b>	Three-on-three basketball.
<b>Team Construction Disk</b>	Accolade	<b>\$14.95</b>	Assemble your own teams for 4th and Inches.
<b>Test Drive</b>	Accolade	<b>\$19.95</b>	Sports car racing against the clock.
<b>The Cycles</b>	Accolade	<b>\$44.95</b>	Int'l Grand Prix Motorcycle simulation.
<b>The Duel: Test Drive II</b>	Accolade	<b>\$44.95</b>	Head-to-head match, Ferrari vs. Porsche.
<b>The Supercars</b>	Accolade	<b>\$19.95</b>	The Duel accessory disk.
<b>Tournament Disk #1</b>	Access	<b>\$19.95</b>	Courses for Leader Board.





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■ Download 3 Files	1:00	6.00
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■ Check 10 stock quotes	0:05	.92
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■ Play Stellar Emperor	0:30	3.00

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-Read today's news	0:10	2.08
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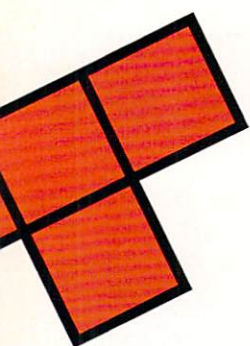
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<b>Turbo</b>	MicroIllusions	<b>\$24.95</b>	Auto racing.
<b>TV Sports: Basketball</b>	Cinemaware	<b>\$39.95</b>	Create and edit players, original plays.
<b>TV Sports: Football</b>	Cinemaware	<b>\$49.95</b>	Track individuals and teams.
<b>U.S. Open Courses II</b>	Moonlight Dev.	<b>\$20.00</b>	Five sites of 16 US opens.
<b>Vette!</b>	Spectrum Holo.	<b>\$49.95</b>	Race European sports cars.
<b>Wayne Gretzky Hockey</b>	Bethesda	<b>\$49.95</b>	Create teams, individual players.
<b>Wind Surf Willy</b>	Gainstar	<b>\$39.95</b>	Wind-surfing competition.
<b>Winter Challenge</b>	Thunder Mtn.	<b>\$14.95</b>	Olympic-sports simulation.
<b>Winter Games</b>	Epyx	<b>\$49.95</b>	Six international sporting events.
<b>World Class Disk</b>	Access	<b>\$19.95</b>	Harbour Town, Sunningdale, Dorado Beach.
<b>World Games</b>	Epyx	<b>\$19.95</b>	Cliff-diving, sumo-wrestling, caber-tossing.
<b>World Tour Golf</b>	Electronic Arts	<b>\$19.95</b>	Golf simulation—over 20 famous courses.
<b>World Trophy Soccer</b>	Melbourne House	<b>\$39.99</b>	Rick Davie's soccer: 512K, 1MB: \$49.99.
<b>Zany Golf</b>	Electronic Arts	<b>\$39.95</b>	Miniature golf with unusual field of play.

## STRATEGY

PRODUCT	COMPANY	PRICE	DESCRIPTION
<b>Amegas</b>	DigiTek	<b>\$34.95</b>	Bounce, shoot, slam, and juggle.
<b>Android Decision</b>	Datasoft	<b>\$34.95</b>	Two robot cities battle for total control.
<b>Annals of Rome</b>	Datasoft	<b>\$34.95</b>	Based on the rise of the Roman empire.
<b>Balance of Power</b>	Mindscape	<b>\$49.95</b>	Geopolitical simulation.
<b>Battle Chess</b>	Interplay	<b>\$49.95</b>	Chess pieces engage in mortal combat.
<b>Bingo Parlor</b>	Silver	<b>\$19.95</b>	Talking game for up to 10 players.
<b>Blackjack Academy</b>	MicroIllusions	<b>\$24.95</b>	Teaches and plays.
<b>Blackjack &amp; Solitaire</b>	Erisian	<b>\$29.95</b>	Carlos Monte's blackjack and Klondike.
<b>Blitzkrieg</b>	Command Sims.	<b>\$52.95</b>	Battle of the Bulge simulation.
<b>Boomeraid</b>	TSA Media	<b>\$30.50</b>	Define math functions to proceed.
<b>Breach</b>	OmniTrend	<b>\$39.95</b>	Tactical squad combat game.
<b>Breach 2</b>	Omnitrend	<b>\$49.95</b>	More futuristic role-playing combat.
<b>Bridge 5.0</b>	Artworx	<b>\$34.95</b>	Contract bridge, five-card bidding.
<b>Casino Fever</b>	ETHOS	<b>\$39.95</b>	Roulette, blackjack, poker, and craps.
<b>Centerfold Squares</b>	Artworx	<b>\$29.95</b>	Pits you against a centerfold opponent.
<b>Chessmate</b>	Dark Horse	<b>\$29.95</b>	Chess simulation.
<b>Clue Master Detective</b>	Leisure Genius	<b>\$39.00</b>	Computer version of popular board game.
<b>Colossus Chess X</b>	Artworx	<b>\$34.95</b>	Computer opponent learns strategy.
<b>Computer Scrabble</b>	Electronic Arts	<b>\$39.95</b>	Computer version of crossword board game.
<b>Craps Academy</b>	MicroIllusions	<b>\$24.95</b>	Learn and play craps.
<b>Cribbage King/Gin King</b>	Software Tool.	<b>\$59.95</b>	Challenge one of seven personalities.
<b>Crossword Creator</b>	Polyglot	<b>\$49.95</b>	Create crossword puzzles—3-D graphics.
<b>Distant Armies</b>	Eagle Tree	<b>\$44.95</b>	A playing history; historical versions.
<b>Dominoes</b>	Polyglot	<b>\$24.95</b>	Classic board game, sound, 3-D graphics.
<b>Empire</b>	Interstel	<b>\$49.95</b>	Interplanetary imperialism simulation.
<b>Fidelity Chessmaster</b>	Software Tool.	<b>\$49.95</b>	New and improved chess.
<b>Financial Time Machine</b>	First Row	<b>\$39.95</b>	Economics simulation.
<b>Fire Brigaid</b>	Panther Games	<b>\$44.95</b>	War simulation.
<b>Global Commander</b>	Datasoft	<b>\$39.95</b>	Negotiate—maintain world peace.
<b>Gold of the Americas</b>	Strategic Stud.	<b>\$39.95</b>	Command expeditions to Europe.
<b>Golden Pyramid</b>	Micro Entert.	<b>\$19.95</b>	Patterned after Wheel of Fortune.
<b>Gone Fish'n</b>	Interstel	<b>\$44.95</b>	Fishing without bait.
<b>Halls of Montezuma</b>	Strategic Stud.	<b>\$39.95</b>	You are there... Iwo Jima, Mexico City.
<b>Hollywood Poker</b>	DigiTek	<b>\$34.95</b>	Strip poker game with digitized opponents.
<b>Ishido</b>	Epyx	<b>\$49.95</b>	Ancient oriental board game.
<b>Jigsaw Puzzlemania</b>	Artworx	<b>\$29.95</b>	Place jigsaw shapes in six puzzles.
<b>Kamfgruppe</b>	Strategic Sim.	<b>\$59.95</b>	WWII tank warfare.
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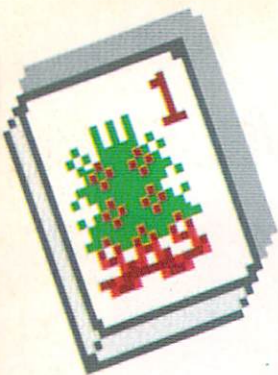
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<b>Targis</b>	Incognito	<b>\$34.95</b>	Puzzle.
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<b>WordPlex Data Disks</b>	PAR Software	<b>\$29.95</b>	Extra phrases for Wordplex program disk.
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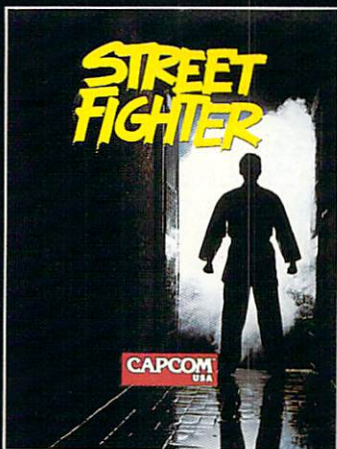
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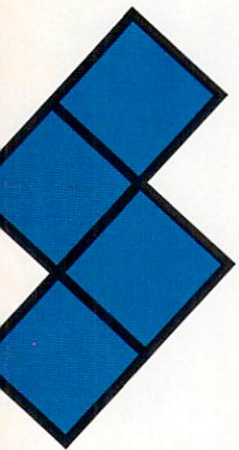


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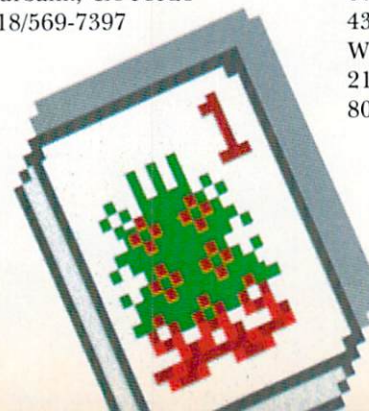
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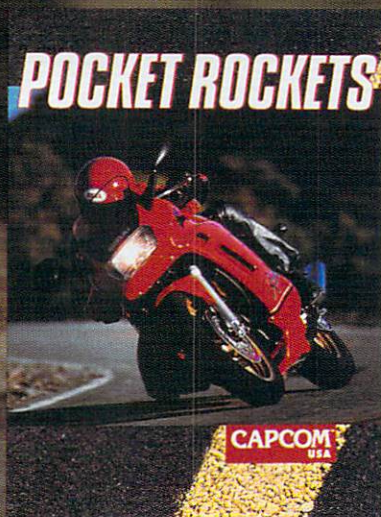
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LEFT: Try your skill against the clock with a couple of laps around the test track. RIGHT: Drag racing demands a quick wrist and fast shifting. Just don't blow the engine!

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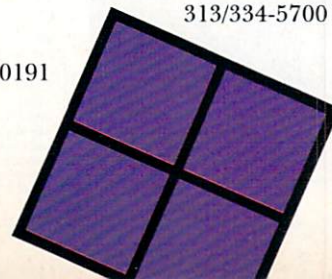
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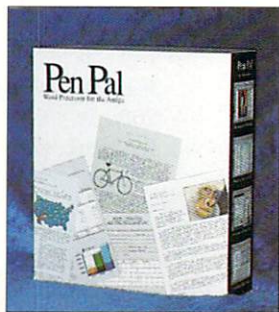
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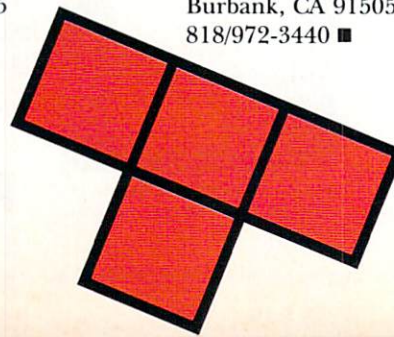
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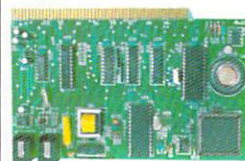
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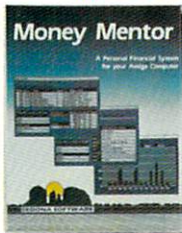
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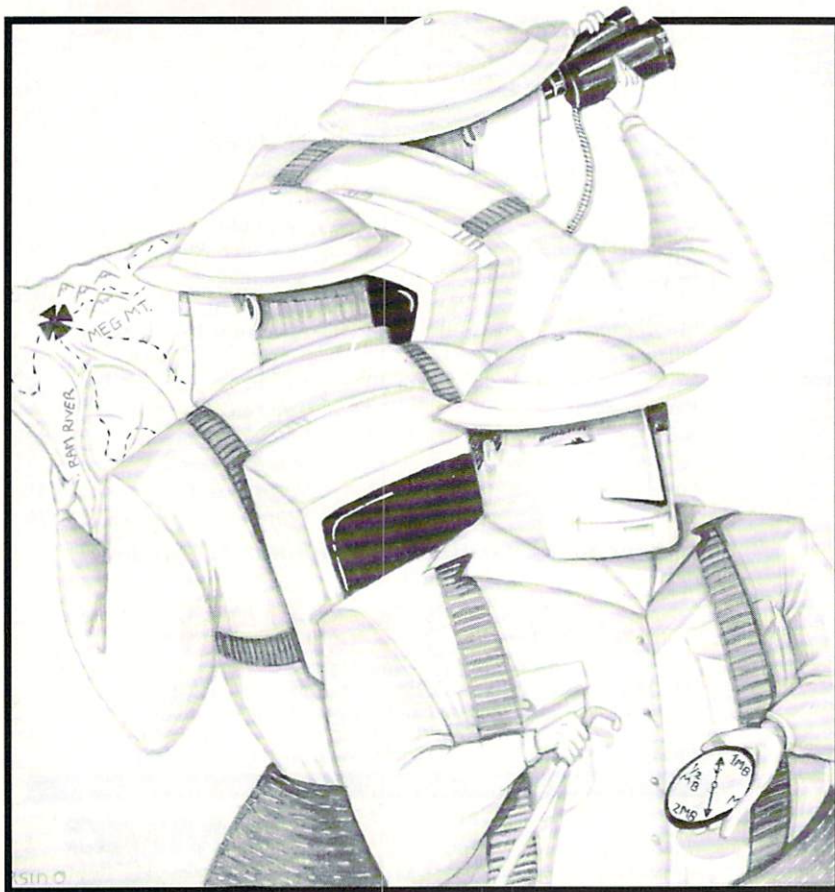
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# Pick a Path



**If 512K cramps your Amiga 500's style, follow our upgrade map to a multi-meg paradise.**

By Louis R. Wallace

THE STRAIGHT AND narrow is not always the best road to take—especially for upgrading your Amiga 500's memory. When you feel the pinch of a 512K system heavily multitasking or trying to load a one-meg-plus animation or program, the easiest solution is to buy the cheapest memory expansion you can find. While a quick, straightforward solution, it may limit how you can further upgrade your system.

A500s, although lacking the slots of the Amiga 2000, are surprisingly flexible to expand. You can add memory on two buses, internally, or in combination with a hard drive. As expansion memory is transparent (it changes system behavior only by adding more space for programs to operate), your prime considerations when shopping are not speed and performance but future expansion plans and power consumption (the A500 has a notoriously minimal power supply). Above all, be sure the device you choose conforms to the auto-config standard (all devices mentioned in this article do) that lets the Amiga detect the device automatically on boot up and install it in the memory map—no installation routines are needed.

The first step is to buy an internal 512K RAM cartridge to bring your A500 up to one megabyte. The module plugs onto the bus in the recessed area under the machine. In addition to Commodore's A501, several models are available. (See the accompanying chart for details.)

## HOP ON THE BUS

The easiest path to a multi-meg system is through the 86-pin bus on the left side of the A500. With the computer turned off, you simply snap a cartridge or small box on to the bus connector. The extra RAM is instantly available when you turn on the computer.

An excellent example of such a device is the tiny **Mini-Megs** cartridge from M.A.S.T. You can purchase it populated with 512K (\$223), one (\$299), or two (\$449) megs of RAM. If you buy Mini-Megs with less than two megabytes, you can later send it to M.A.S.T. ▶



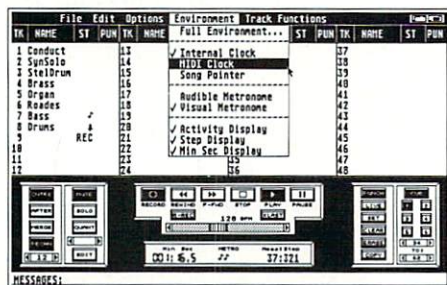
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# Standards

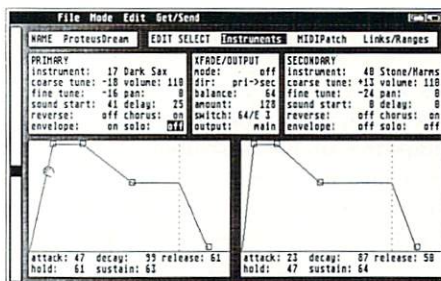
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for additional RAM. If you do not mind voiding your Mini-Megs warranty and feel technically confident, you can open the case and install the chips yourself. Mini-Megs' major limitation is that it does not have a pass-through port (i.e., a second port that accepts another expansion device and passes information between it and the computer). On the plus side, not expanding any further means the A500 has ample power for both the computer and the Mini-Megs cartridge. If you want only extra memory, then this limitation is not a problem. If you plan on someday expanding your system even more with a hard drive or specialized devices, Mini-Megs is not for you.

A more versatile bus upgrade is the **StarBoard-2/500** from Microbotics. Larger than Mini-Megs, the StarBoard-2/500 also snaps onto your expansion bus and is socketed for one megabyte of memory. You can purchase it unpopulated (\$339) and install the chips yourself, or buy it complete with one megabyte of memory (\$489.40). To keep strain off the A500's power supply, it comes with its own. The StarBoard also provides a pass-through bus expander.

The StarBoard-2/500 offers a more comprehensive upgrade path than just mere memory expansion. You can open your StarBoard-2/500 and install yet another megabyte of RAM or a multifunction board (\$90) with a clock, parity-checked memory, an optional Motorola 68881 floating-point coprocessor, and a StickyDisk recoverable RAM disk, which retains its contents during a warm boot. More important is the StarDrive SCSI Module (\$129.95), a SCSI hard-drive interface. With this option you can later add a standard SCSI hard-drive without having to scrap the investment already made in the StarBoard-2/500. Like all Microbotics hardware, the StarBoard-2/500 is a well-designed, well-supported product, and a good intermediate step between a standard system and a multi-meg, hard-drive system.

#### MASS TRANSIT

If you know from the start you want expansion RAM and a hard drive, you should consider my favorite method of expansion—the all-in-one solution. Several companies have combined a hard-drive chassis and a memory-expansion cartridge into one easily installed product. After installing the hard drive, you

just open its case and pop the RAM card in the slot. The accompanying power supply eases the load on the A500's original one.

A good choice is the **Impact A500-HD/XX** hard drive chassis from Great Valley Products. This small box quickly connects to the Amiga 500's bus and can contain from a 20MB (\$650, including unpopulated RAM card) to an 80MB (\$1429, including unpopulated RAM card) autobooting SCSI hard drive. For RAM expansion it has a slot for an optional two-megabyte RAM card (\$550 populated). Should you need help setting up the system, GVP has an excellent record of customer support.

If you prefer the security of an all-Commodore system, check out the **A590** hard disk and RAM expansion chassis (\$999). Pop it on the expansion bus and you add a 20MB hard disk and up to two megs of RAM.

Pacific Peripherals' **Synergy 500** hard disk and memory expansion system offers from a two megabyte RAM board (\$149 unpopulated; \$449 fully populated) and a hard disk ranging from 20MB (\$599) to 60MB (\$749). The drive is tethered to the bus expansion cartridge by a five-foot ribbon cable that gives you plenty of flexibility in positioning the drive on your desk.

Supra Corporation also designed its expansion in a two-piece system. The **SupraDrive SCSI Interface** (\$199) hooks to the bus, contains up to two megabytes of memory (\$549), and connects to any SCSI hard drive. (Supra sells from 20MB drives (\$599) to 250MB custom-built drives.) Supra recently reaffirmed its commitment to product support by upgrading the performance of their hard drives and controllers.

A new entry in the RAM expansion market, Xetec now offers RAM boards for its A500 **Fasttrak** expansion chassis. Connected to the bus via a small host adapter (with a pass-through for other bus devices), the Fasttrak is an expansion chassis that contains an autobooting SCSI hard-disk controller (\$399.95 alone), hard drive (complete systems from 20MB to 80MB for \$699.95 to \$1499.95), and RAM expansion slots. Xetec RAM boards can come configured with 512K (\$99.95) to a full eight megabytes (price market dependent) of RAM.

#### THE SUBWAY

If you do not mind some extra work and risk, you can install a memory board inside your computer. The A500 was not designed for internal expansion, but at least two companies (Spirit Technology and Progressive Peripherals & Software) have successfully engineered internally mounted piggyback RAM boards that install on top of the motherboard.

To install either board, open your Amiga 500's case (thereby voiding your Commodore warranty), then remove the top, the keyboard, and the metal shield that covers the motherboard. The next phase is the most dangerous and delicate: Remove your 68000 ▶

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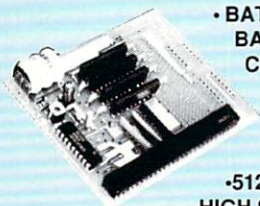
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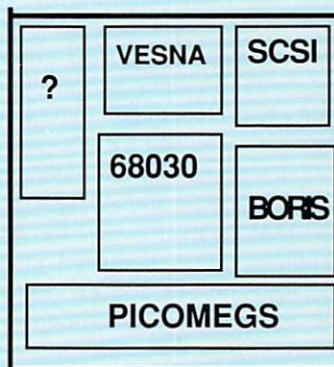
A. Infinity accepts up to 8 megabytes of RAM. The memory can be selected as either 16 or 32 bit memory. It can be used with both the 68000 and 68030. The PICOMEGBS memory can run in interleaved mode in most configurations for even faster access.

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A. NO PROBLEM- you have the choice of a 68000 running at 7 OR 16 MHz in the PICOMEGBS address space or a 68030 running at 16,20,25,33,50 MHz.

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A. In December you will be able to have a machine as fast as an A500 or A1000 fitted with INFINITY.

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The above units include a drive mounted on the controller card. Additional drives can be purchased separately - 90meg \$1039, 136meg \$1309, 182meg - \$1550. These drive are high performance, with similar characteristics to the Quantum drives. They also have embedded sector servo.

PARALLEL SCSI  
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- Quality Fujitsu Mechanism
- Superslimline
- No Clicking
- May be switch disabled
- 1 year limited warranty
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- Quality Fujitsu Drive Mechanism
- Superslimline Design 5" x 7.5" x 1.2"
- No click when the diskette is removed
- May be switch disabled
- Low Power- 2.4 watts operating  
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- Limited one year warranty

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- Two quality Fujitsu drives in a slimline case.
- No clicking.
- Each drive may be switch disabled.
- Quiet operation
- Limited one year warranty.
- May be powered from the Amiga or from optional 9V DC plugpak.

**\$299**

A2000 INTERNAL \$109  
DRIVE



CPU chip from the motherboard and carefully install it in the waiting socket on the piggyback board. Finally, insert the pins on the bottom of the piggyback board back into the now empty CPU socket on the motherboard. Be very careful to not bend any pins. When you reassemble your Amiga and power up, you will have the additional memory. If you are not comfortable with a screwdriver or leary about dismantling your computer, let an authorized Amiga service center perform the upgrade for you.

I installed a fully-populated, two-meg **SIN-500-2** board (Spirit Technology, \$623; unpopulated \$263) in about one hour. Each step is described clearly in the small manual. The only problem I had was that I inadvertently bent a few pins on the CPU while I was installing it in the piggyback board. Luckily, I was able to straighten them using needle-nose pliers. On power up I had two additional megs of autoconfig RAM in my A500.

The SIN-500-2 does use some of the A500's meager power supply, but, according to Spirit, it will work properly with the available power. Any additional expansion devices should have their own power supplies, or you should purchase Spirit's optional external power supply (\$21) for the internal board.

In an earlier review, *AmigaWorld* criticized Spirit Technology's first internal A500 memory board for not being fully autoconfig and giving you incomplete access to the RAM on the board. I was happy to see that the problems were eliminated in this model. Before I installed the SIN-500-2, I was skeptical of the internal piggyback board technique, but now I must admit it's a viable upgrade option.

Progressive Peripherals & Software also has an in-

ternal RAM board, the **EXP-1000** (\$299.95 unpopulated; \$429.95 one megabyte). Offering the same features as the SIN-500-2, it provides only half the memory. The board does require more power, however, enough that Progressive recommends that you upgrade your power supply before installing the RAM board. I suspect the EXP-1000 has larger power requirements because it uses the cheaper 256K DRAMS chips, while the Spirit board uses one-meg DRAMS. The Spirit board has only 16 RAM chips for its two megs, while the EXP-1000 requires 32 RAM chips to give you one meg. More chips require more power.

### WORTH THE TRIP

While expansion memory is easy to install and transparent to run, the configuration you choose can make all the difference in your system. If you have no future upgrade plans, get a simple, easy-to-install external RAM cartridge, such as Mini-Megs. If you want to keep the possibility open for additional upgrades, then take a look at the StarBoard-2. An internal board, such as the SIN-500-2, could be the answer for the technically adept who want their RAM out of sight and expansion bus free. The best solution, but the most expensive, is to upgrade with more memory and a hard disk at the same time. Before you buy those extra megs, however, carefully examine your needs both now and in the future. Otherwise, you might look back and regret the road not taken. ■

*Louis R. Wallace is AmigaWorld's Senior Editor, Technology. Write to him c/o AmigaWorld Editorial Dept., 80 Elm St., Peterborough, NH 03458.*

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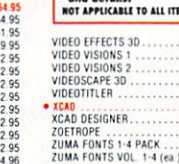
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## # 9

◆

**A continuing series  
of tips, techniques,  
and tricks for  
creating more  
imaginative Amiga  
graphics.**

◆

**By Joel Hagen**

# A Monochromatic Approach

ALTHOUGH THE AMIGA is capable of displaying 4096 colors, only 16 value levels of a given color are possible. I have always enjoyed painting in the 16 gray-scale colors for the special quality of depth and dimension one gets from a monochromatic palette. Recently, however, I have been exploring techniques that retain that feel, but stretch the apparent value scale to the full 32 colors available in DeluxePaint.

If you view the palette of a 32-color image captured with NewTek's Digi-View (or most other digitizers), you will find the colors arranged in ascending order. Digi-View actually makes palette position 0 the darkest color, and position 1 the lightest color for menu readability, with the remaining 30 colors in a smooth sequence from dark to light. Even though adjacent colors may share the same "V" value level, one or two of the "RGB" levels will be different, creating a logical value differentiation. The result is a 32-level palette—the foundation of the techniques that follow.

## CREATING THE PALETTE

It is possible to create such a 32-level palette from scratch using the tools in the Palette requester, but in this case I prefer to create a digitized palette. Soft, neutral colors can be elusive to build, and the visual context of adjacent colors makes objectivity challenging. For this technique, you create a palette with the objects you select for the camera. Avoid bright colors, or a broad spectrum; the point is to limit color and seek a smooth Range of values. Using such objects as shells, stones, pieces of wood, bones, and the like should yield excellent results. The palette in the accompanying illustration, "Biomech," is the product of digitizing a piece of notebook paper lying on dark wood. The incidental colors in the

value scale add vitality to the final painting while retaining an overall monochromatic tone.

I recommend working in 320×400 screen format, lo-res interlace. For convenience, I leave colors 0 and 1 for my menu colors, adjusting color 1 down the value scale to a soft amber to reduce interlace flicker. The remaining 30 colors are the painting palette. Set all Ranges but one in the palette requester to color 0 by clicking color 0, then Range, then color 0 again. Make the last Range the 30-color painting palette. With the mouse, make the background color the darkest color (color 2) and the foreground color any intermediate color. In the menu, set Prefs to Fast FB and Be Square. I toggle the cursor off with the Delete key, preferring to just look at my brush. Shift-K clears the screen to the background color, and F10 removes the menus. F5 will then put you in Shade, the primary mode for all painting that employs this monochromatic technique.

In Shade mode, tools respond only to those colors within a defined Range. One button lightens colors step by step through the other colors in that Range, while the other button darkens them in the same fashion. With the entire painting palette as a Range, your brush becomes a unique tool. One finger lightens as you move, the other darkens. The method is analogous to a favorite drawing technique of mine in which you rub graphite powder onto paper with soft leather to create shadow areas, then cut highlights back in with a kneaded eraser.

I began painting the alien skull in "Biomech" with a two-inch round brush.



**By mastering this group of subtle techniques, you can extend that unique feel of monochromatic painting to the full 32 colors available in your paint program.**

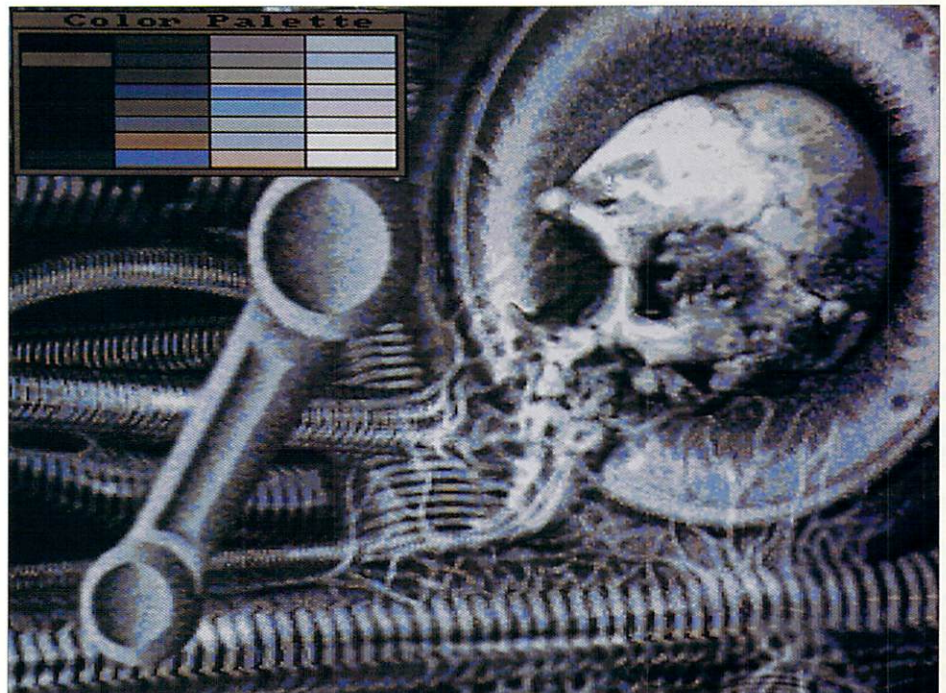
Working quickly and spontaneously, I lightened large areas, then carved them back by darkening to the background. You will come not only to accept, but also welcome the accidents and unpredictable shapes that emerge. The painting becomes a compromise between serendipity and control. In the early stages of the painting, I yield willingly to whatever character the medium itself has to offer. As the painting progresses, I exert tighter and tighter control to add the necessary definition to the image.

Having roughed out the skull, I used the “-” key to reduce the brush size as needed, working increasingly finer detail into the image, shifting rapidly between light and dark. Final details in the suture lines were done with a single-pixel brush, still in Shade mode. Shift-J copied the skull to the spare screen. I cleared the screen and began the background.

#### **BACKGROUND AND FOREGROUND**

Clicking any line tool with the right button brings up the spacing requester. I clicked Every Nth Dot, and returned to the screen to begin the large circular form. Using the unfilled circle tool in the Shade mode, I produced a disk of kaleidoscopic patterns with my two-inch brush. Still using the circle tool, but bouncing back and forth in the spacing requester between Every Nth Dot and Continuous, I highlighted the shape with a smaller brush, shaded it with another, then used Smear in the Nth Dot mode to add a ribbed texture.

The spring-like shapes were made with a quarter-inch round brush and straight-line tool, using Every Nth Dot,



**“Biomech” (above) shows the extra warmth and vitality possible with a 32-level palette, while still retaining an overall monochromatic tone. (Note the colors in the palette, as reproduced in the inset, upper left.)**

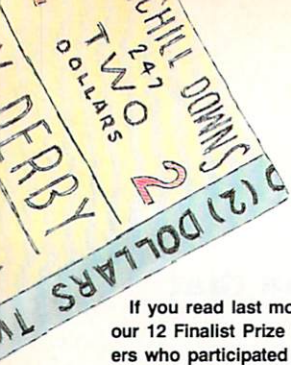
in Color mode (F2). By drawing a line I was able to lay down a series of quarter-inch dots. I picked up the whole line of dots as a brush and then returned to Shade mode and the curve tool (q). I drew a short curved line, and the row of dots made the entire spring. This was picked up and shrunk, and then Sheared, Rotated, and Bent, all from the Brush menu. I used it many times, overlaying it upon itself to create the background. After I placed the skull into the image, I used Blend and Smooth with small brushes to help soften edges and eliminate the “cut-out” look.

The mechanical foreground object was created with the filled-circle and polygon tools. I used the Horizontal Line gra-

dient fill with dither control set all the way to 15. After the first shape was drawn, I returned to the Palette requester and flipped the Cycle Direction arrow. This reversed the direction of the gradient fill, so that a second shape drawn within the first one created the concave illusion. Using Shade mode, I added dents, cracks, and other details as final touches. ■

*Joel Hagen's credits include work in art, astronomy, science fiction, and software development. Write to him at 10512 Sawyer, Oakdale, CA 95361. Please include a stamped, self-addressed envelope.*





# Mystery Sweeps Winners and Prizes

If you read last month's issue, you now know the solution to "Murder at Saratoga" and the names of our 12 Finalist Prize winners. This month we award Consolation Prizes to some of our many, many readers who participated in the Mystery Sweeps.

As all of the people who submitted entirely correct solutions to the mystery received Finalist Prizes, our consolation winners were drawn from the next closest solutions.

First preference was given to entries identifying the correct victim (Syl Vestry) and Buford Langtry (the next most likely choice) as the murderer. Second preference was accorded to entries specifying the correct victim but a murderer other than Davis Longfellow or Buford Langtry (although there were two consolation winners who identified the correct murderer, Longfellow, but the wrong victim). Remaining consolation winners were chosen from otherwise correct entries that listed Jimmy "The Satchel" Mikaros as the victim (a common mistake of many contestants who correctly solved all but the very last clue in Part I).

As you can see from the list below, we were able to award a significant number of Consolation Prizes. We were pleased to acknowledge at least some of the many people who spent a considerable amount of time following our mystery throughout the summer. We are extremely grateful to the sponsors—the many developers of fine Amiga products, whose names appear next to the prizes they donated—who made the Sweepstakes possible.

We thank all of you who participated and we hope those who didn't succeed this year will come back winners next year. And be assured, we will endeavor to make our 1990 contest—whatever the theme will be—match the challenge of the 1988 Treasure Hunt and this year's Mystery Sweeps.

## Finalist Prize Sponsors

Before listing the Consolation Prize Winners, we would like to acknowledge the sponsors of our top 12 prizes, the winners of which were announced in last month's issue.

**Grand Prize:** GO AMIGO! of Redwood City, CA  
**First Runner-Up Prize:** LIGHTSPEED Distribution of Portland, OR

**Second Runner-Up Prize:** The Software Shop of Worcester, MA

**Finalist Prizes (Fourth through Twelfth):**

Anakin Research  
Antic Software  
Cape Fear Teleproductions  
Communications Specialties  
DigiTek Software  
Dr. T's Music Software  
Electronic Arts  
Hammond Photographic Services  
Magnetic Images Co.  
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Precision Inc.  
Psygnosis Ltd.  
ReadySoft Inc.  
Software Visions Inc.  
Spectrum HoloByte  
Strategic Simulations  
Supra Corp.  
Taito Software

## Consolation Prize Winners

Complete Abacus Amiga Library—John Orwig, Columbus, OH; Photon Paint (MicroIllusions)—Lewis Hatch, Los Lunas, NM; SupraModem 2400 (Supra)—Tony McLaughlin, Stittsville, Ontario, David Hahne, Newport News, VA; Clip Art Disks (Magnetic Images)—Ken England, Hammonton, NJ; Falcon (Spectrum HoloByte)—Sylvia Bennett, Tampa, FL; Tetris (Spectrum HoloByte)—Debbe Loebrich, Maumee, OH.

Superbase Pro 3 (Precision)—Stephanie Bartz,

South River, NJ; Jesse Smith, Arlington, TX; Brent Hunter, Salt Lake City, UT; Hector Gutierrez, Lindavista, Mexico; Brad King, Hayesville, NC; Jeffrey McHarg, Acton, MA; Superbase Personal 2 (Precision)—Jonas Winfield, Augusta, ME; Jean Augsburger, Ellicott City, MD; Arthur Entlich, Bergenfield, NJ; Billy Ray Justice, Sumter, SC; Ken Smith, Charlottesville, VA; SuperPlan (Precision)—Dennis FitzGibbon, South Haven, MI; Jacob Fetsch, Schererville, IN; Dewilton Haslup, Arlington Heights, IL; L. Crawford, Harrisonburg, VA; Linda Adams, Highland Heights, OH.

PageStream (SoftLogic)—Jack Lehman, Mount Airy, MD; Pioneer Plague (Antic)—Melinda Matheny, Charlottesville, VA; Crash Garrett (Antic)—Chris Adamo, Schererville, IN; Joseph Rantz, Sumter, SC; Stir Crazy (Antic)—John Manley, Cheshire, CT; Fire Power (MicroIllusions)—Marian Monwai, Seattle, WA; Faery Tale Adventure (MicroIllusions)—Charles Wall, San Lorenzo, CA; Skyfox (Electronic Arts)—Daniel Feyma, Brooklyn Park, MN.

Dragon's Lair (ReadySoft)—Harry Bratt, Mt. View, CA; Jim McCold, Papillion, NE; Jose Dieppa, Homestead AFB, FL; Blyden Potts, Oxford, NY; John Klovstad, Whitefish, MT; Cosmic Bouncer (ReadySoft)—James Funk, Denver, CO; Katie Meers, Powell, OH; Pete Monwai, Seattle, WA; Scott Shaffer, Weston, WV; Ellie Friml, Hollis, NH; David Mitzenberger, Portland, OR; Scary Mutant (ReadySoft)—Tom Fusco, Rockville, MD; Brian Kohler, Pasadena, MD; Marjorie Mack, Covington, LA; Daniel Weir, Anacortes, WA; Brian Howard, Stanford, CA; Paul Baron, Munhall, PA; Rock Challenge (ReadySoft)—David Neighbors, West Monroe, LA; Peter Castro, Sunnyvale, CA; Dieter Blosser, Cleveland Heights, OH; Mike Gentry, Cookeville, TN; Rick Wirch, Monona, WI; Matt Scotten-Precs, Portland, OR.

Gold of the Realm (Magnetic Images)—Scott Touzet, Monroe, LA; Airball (MichTron)—Leon Martin, Fairborn, OH; Fight Night (MichTron)—Michael Pershing, Xenia, OH; HiSoft BASIC Pro (MichTron)—Lindsay Zollinger, Phoenix, AZ; M (Intelli-

gent Music)—Andrew Funk, Fort Collins, CO; David Rawle, Hendersonville, TN; Quest I (Sound Quest)—Ricky Hortman, Monroe, LA; Judy Purtell, Long Beach, CA; Dan Cooley, Clinton, IA; Mike Garner, Falls Church, VA; Mike Jourdan, Lexington, KY; Editor/Librarian (Sound Quest)—Jim Roberts, Snellville, GA; Brad Anderson, Salem, MO; Bruce Loebrich, Maumee, OH; Kevin Wiese, Orlando, FL; Robert Norton, Madison, WI.

Mind Light (Visual Aural)—Robyn Thurman, Lexington, KY; Nimbus (Oxxi)—C.D. Whitire, Phoenix, AZ; Tax Break (Oxxi)—Willa Boisseau, University City, MO; Todd Allendorf, Clinton, IA; P.D. Disk Set (PD Software Resource)—Chris Richard, Liverpool, NY; Carolyn Argo, San Antonio, TX; Who! What! When! Where! (Blue Ribbon Bakery)—Bill Richard, Fort Myers, FL; Paige Plummer, Lexington, KY; John Fowkes, Huntington Beach, CA; Rahila Ansari, Shaker Heights, OH; David Hetzel, So. Milwaukee, WI; Set of Course Disks (Moonlight Dev.)—C. Johnston, Euclid, OH; Thinker (Poor Person Software)—Russ Purtell, Redondo Beach, CA; Ken Menderhall, Dayton, OH.

Bubble Bobble (Taito)—Teresa Richard, Monkton, MD; Fred Maloney, Grosse Pointe, MI; Timothy Boykin, Stanford, CA; Mickey Algo, Offutt AFB, NE; Nancy Ruba, Orange City, IA; Jim McCormick, London, Ontario; Karen Schellman, Ballwin, MO; Mike Douglas, St. Louis, MO; Jennifer Stewart, Fairfax VA, L.C. Debbe, Maumee, OH; Operation Wolf (Taito)—Ann Freeman, Hickman, KY; James Quinn, North Wales, PA; Mike Hale, Ballwin, MO; Joe Saunders, Memphis, TN; Mike Goldstein, Clifton, VA; Darrel VanDusen, Spring Lake, NC; Fred White, Haverton, PA; William Richard, Syracuse, NY; Renegade (Taito)—Bonnie Packert, Escondido, CA; Terry Richard, New York Mills, NY; Edwin Long, Bartlett, TN; Gary Elliott, Bolivar, MO; Jim Alerico, St. Peters, MO; Michael Chiofalo, Mount Holly, NJ; Dawn Seery, East Lyme, CT; Ken Sherman, Oakland, CA.

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# Scripts For Success Part 1

*This three-part series from our AmigaDOS directing team will demonstrate why 1.3's new Shell, not Hollywood, is the hot spot when it comes to writing and producing blockbuster "scripts." Ready to roll on Act One...*

By Mark L. Van Name and Bill Catchings

TYPING THE SAME commands over and over again for often-used routine procedures is one of the most annoying and time-consuming tasks. A powerful feature, however, of AmigaDOS 1.3's new Shell—its ability to create scripts—can lighten the load considerably.

Scripts are sequences of commands that you can execute as if they were single commands. Scripts (also called batch files or command files) are actually ASCII files that contain lists of commands. When you execute a script, the Shell treats it essentially as if you had typed the commands in the file.

You can create scripts with any text editor that can save its output as pure ASCII. This includes ED and MEMACS, as well as Notepad—although with Notepad you must stick to one font and you cannot use any styles. You can put any of the normal Shell commands in a script, as well as such special commands as IF that work only in scripts.

Let's start with a very simple example: a script that saves the files in your current directory to a directory named BACKUP on the disk in your external drive, df1:. First, create the directory BACKUP on the disk in df1:. Then, using your text editor, create a file named

SAVEIT that contains the single line

```
COPY #? DF1:BACKUP
```

There are three ways to run a script. Two work from the Shell, while one runs from Workbench. All scripts, however, work the same way within each method, so our example will suffice to explore all three approaches.

## EXECUTING SCRIPTS FROM THE SHELL

The traditional way to run a script is with the EXECUTE command. Simply follow that command with the script file's name, as in

```
EXECUTE SAVEIT
```

This approach appears to require you to put the script you want to run in your current directory, which could be a problem if you use several scripts regularly. Don't worry; EXECUTE is smarter than that. When you enter

```
EXECUTE <file>
```

EXECUTE first checks for <file> in the current directory. If it is not there, EXECUTE then checks both the S: directory (usually Workbench1.3:S) and all the directories on your path. (S: is the standard AmigaDOS script directory, in the same way that C: is the standard com-

mand directory. If you use a script often, you should put it in S:.)

In AmigaDOS 1.3, however, a new, shorter approach to running scripts has been added. To use the new method, first you must tell AmigaDOS that your script file is a script. To do so, use the PROTECT command to set the file's script protection bit, as in

```
PROTECT SAVEIT +s
```

Now you can treat the script file almost as if it were an executable program. To run it, simply type its name at the command prompt:

```
SAVEIT
```

Because the Shell can tell that SAVEIT is a script file, it calls EXECUTE to run that file. This approach works even if EXECUTE is not resident, although EXECUTE must be in a directory (usually C:) where the Shell can find it.

## EXECUTING SCRIPTS FROM THE WORKBENCH

The ability to execute scripts from the Workbench, courtesy of the program IconX, is another feature of 1.3. (You never run IconX directly—in fact, you cannot run it from the Shell—but Workbench does use it to execute scripts.) ►

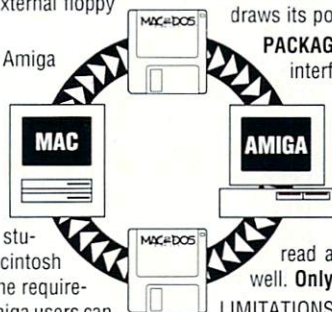


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It takes a bit of effort to prepare a script file for use from the Workbench, but the result is worth it because you can run a suitably prepared script as you would a program—simply by double-clicking on its icon.

First, write the script in the usual way. You may set the script bit, although it is not absolutely necessary to do so. Because you want to use the script from the Workbench, you must give it an icon. (Make sure it is a Project icon, not a Tool icon.) An easy way to obtain a Project icon is to copy the icon of the file `ReadMe` in the main directory of the 1.3 Extras disk. With that disk in `df1:`, you can assign `SAVEIT` an icon by entering

```
COPY DF1:ReadMe.info SAVEIT.info
```

The next step is to edit your script's icon so that `IconX` can work with it. Go back to the Workbench screen, open the drawer containing your script file, and click once on its icon. Then move the mouse cursor to the Workbench menu and select `Info`. What appears is a full-screen window labeled "`Info 1.3`" in which you will perform your editing.

Make sure the icon's `TYPE` (right under its `NAME`) is `Project`. (If it is not, click `QUIT` to exit `Info`, go into the `Shell`, delete this icon, and get a `Project` icon for your script.) Click in the `Default Tool` field. Delete any characters that are already in that field, and then enter

```
C:IconX
```

We assume here that you use the standard `C:` directory. If not, enter the full pathname of the `IconX` program on your Workbench disk.

Now check the `Tool Types` field. If it is blank, click on the up and down arrows (next to the words "`TOOL TYPES`") to make sure that there are no hidden tools. If no tools appear, you are all set to run your script. If you obtained your icon by copying `ReadMe`'s icon, however, you have some additional work to do. In fact, you will find four tools here. Click on the `Delete` button next to the `Tool Types` text field to delete the currently visible tool. Repeat that process until all the tools are gone. Verify this by using the up and down arrows. Do not merely delete the characters in this text field; a blank tool will confuse `IconX` and stop it from running your script. Use the `Delete` button to remove them all.

Now we're ready to go. Click `SAVE` to exit `IconX` and save your changes. To run your script, double-click on its icon.

A `Shell`-style window will appear in the same spot and in the same size as the standard `Shell` window, but its label will be `IconX` rather than `Shell` or `CLI`. The output of your script will appear in that window; `SAVEIT` will display the names of files as it copies them. When the script is done, the window will disappear immediately and you will be back to the Workbench.

### GETTING AROUND THE GLITCHES

That rapid disappearance can be annoying when you need to read your script's output, but, fortunately, the problem is easily remedied. Bring up `Info` on the icon as before. Go to the `Tool Types` field, and this time click on `ADD`, not `DEL`. Type the following line into that text field:

```
DELAY = 150
```

This line will make `IconX` wait 150 "ticks" after the script is done before it closes the window. An `AmigaDOS` "tick" is one-fiftieth of a second, so that a value of 150 will give you a three-second delay. You can substitute any number you wish to achieve the delay of your choice.

Be sure to type the line given above just as it appears. If you leave any spaces before or after the equal sign, or if `DELAY` is not all in uppercase, `IconX` will ignore your new instructions. Also, beware of a bug in the `AmigaDOS 1.3 Enhancer Software` manual. It states that you can use a `DELAY=0` here to make the `IconX` window stay open until you type `CTRL-C`. That is not the case. To verify that the delay works, click `SAVE` in `Info` and then run the script again.

While this procedure solves one difficulty, two nagging problems persist: You are stuck with that default window, and the window's name is `IconX`, not that of your script.

Go back to `Info`. The solution is to add another tool, so click on `ADD` in the `Tool Types` field. This time, however, you will need to add a `Window` tool that will define the location, size, and title of your script's window. To do so enter the following line in the format:

```
WINDOW=<handler:><startx>/  
<starty><width><height><label>
```

where `<handler:>` is the name of the

window handler you want—either `NEWCON`: for the new `Shell` handler (which we recommend), or `CON`: for the `CLI`'s handler.

The next four entries define the placement and dimensions, in pixels, of the window. `<startx>` defines the left margin of the window in relation to the edge of the screen, while `<starty>` sets the depth of the window's starting position from the top of the screen. To begin the window at the upper left corner, for example, make both of these 0. The `<width>` and `<height>` of the window are also defined in pixels. To make the window the width and height of a full, non-interlaced screen, use a `<width>` of 640 and a `<height>` of 200. (The slashes (/) between the entries are required.)

With `<label>` you assign the name that will appear in the upper left corner of this window, replacing `IconX`. The label can contain spaces, and unlike with the `Shell`, where you must surround a label containing spaces with quotes, here you can simply type in the spaces. (If you were to use quotes here, they would appear as part of the window's title.)

Thus, to create a full-screen window whose label is `My Script`, enter

```
WINDOW=NEWCON:0/0/640/200/  
My Script
```

Again, be careful: `WINDOW` must be all caps, and no spaces should appear before or after the equal sign.

It is perfectly okay to have both the `Delay` and `Window` tools in the same script icon, even though you are not using them at the same time. Remember, however, that you can edit or delete only the tool that is currently visible. Use the up and down arrows to make visible the tool you wish to edit.

Click `SAVE`, and you are ready to proceed. Now when you run `SAVEIT`, its window will follow your specifications, not the `Shell` standard.

You should now have enough general background on *running* scripts. In the next two columns we will look at the commands and features that you can employ to *write* powerful scripts. ■

*Bill Catchings and Mark L. Van Name are contributing editors to AmigaWorld. Write to them at 10024 Sycamore Rd., Durham, NC 27703.*



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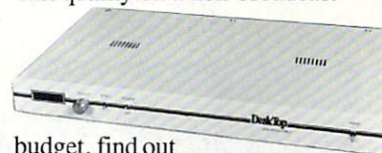
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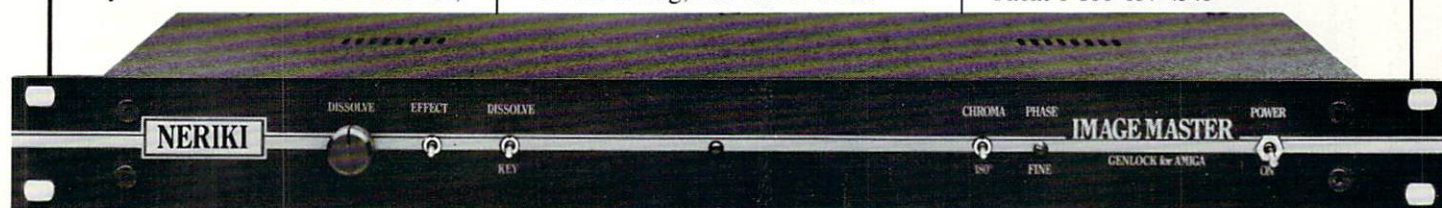


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# THE GAME PRESERVE

## Bad Games Anonymous

*What happens when you can't just say no.*

By B.G. Hunter

A FEW MONTHS ago I noticed a disturbing theme in the letters I received from readers. Many Amiga owners are so addicted to computer gaming that they compulsively play inferior games they shouldn't even like. To rescue these readers, I've started a self-help-by-mail organization, Bad Games Anonymous (BGA). Here are some confessions from the charter members. If, as you read these letters, you catch glimpses of your own gaming behavior, then it might be time for you, too, to join BGA.

Consider "Head Lock's" plight:

Dear B.G.,

I'm hooked on International Championship Wres-

tlng (Avatar Consulting, \$32.95). ICW is as bad as the real thing, maybe even worse, but, like many wrestling fans, I can't help myself.

I usually start out as the high-flying Eagle, master of the Texas Bulldog. I'm sorry, but I just love fighting my way through Ivan, the Russian assassin, and Khan, the Mongolian Killer, so that I can finally meet Bruiser, the ICW Champ, mano a mano. First I box with them, wearing them down, and then I switch to wrestling mode and trash them with a suplex or two, an atomic drop, maybe a power slaw, and my favorite, the piledriver. I love the grunts and groans, the satisfying thump as my opponent hits the mat.

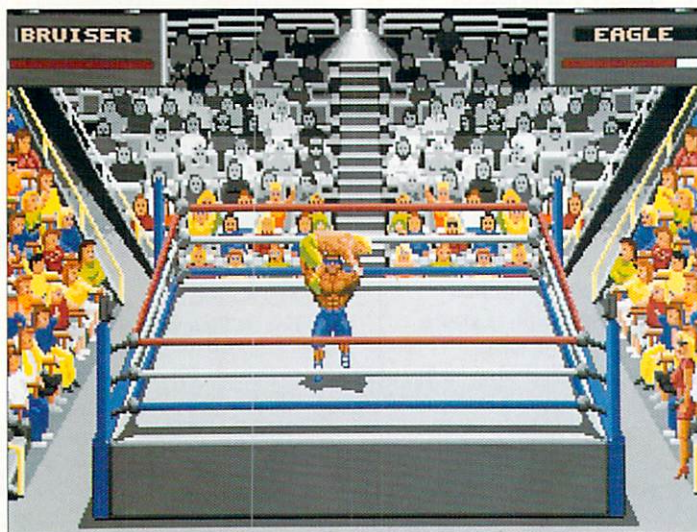
Getting him to the thump is guess work. It's almost impossible to remember which joystick position does what, and every bit as hard to learn to control the joystick so that you can finally lay a hand on your opponent, but I don't care—I'm hooked. I don't even mind the fact that all I can do when my opponent has me down is shake the joystick wildly and scream at the screen. Help!

"In the Gutter" no longer leaves his home he's so thoroughly afflicted:

Dear B.G.,

I want to stop playing Superstar Indoor Sports (Mindscape, \$49.95), but I can't. I keep thinking it will get better, but it never does.

Five hours of bowling made my hand ache as if I ►

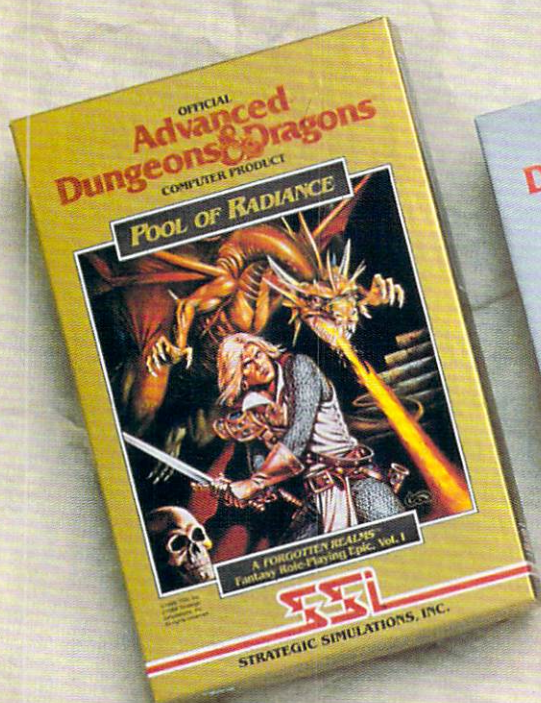


Bruiser's on a wrestling rampage.



# Advanced Dungeons & Dragons®

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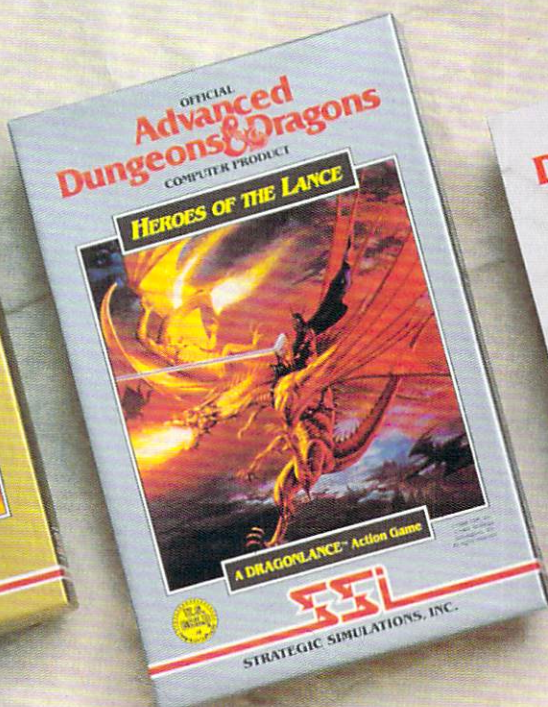


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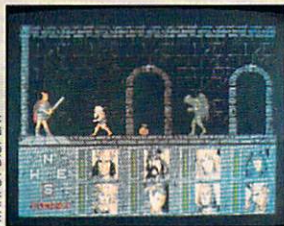


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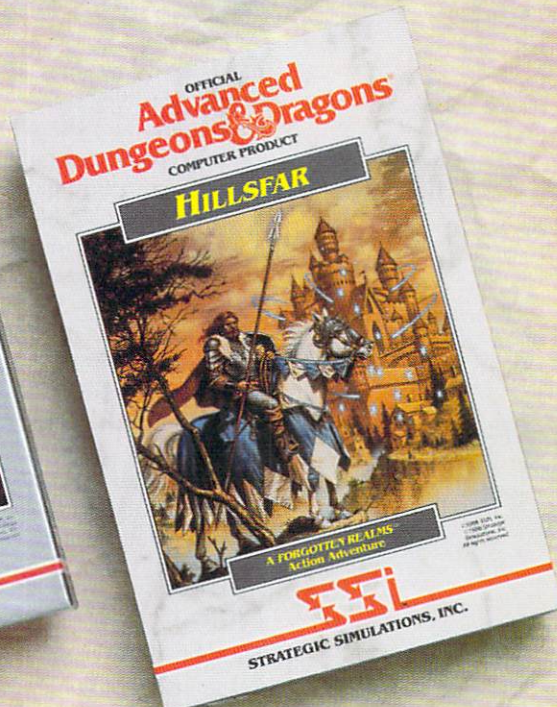
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had been at the lanes. If I kept fiddling with the ball weight, the alley slickness, the aiming arrow, my release point, and the skill level, I knew I could win. The next problem would be reproducing the complex formula for future games.

Bowling is tolerable, however, compared to darts and ping-pong. I wasted hours trying to master the overly complicated dart-throwing technique: depress the joystick button to aim, release it to determine the throwing angle, and then click again at the appropriate power setting. With all the dials spinning and power bars pulsing I lost track of the dart. In ping-pong, I understand the backspin and the smash techniques, but I can rarely get to the ball to use them. The paddle always drifts across the screen at the same speed, no matter how quickly I react or how fast the ball is moving. I often flail at air. Please help me.

Written in crayon in a large, barely legible scrawl, a letter from "Little Rumbler" said:

Dear Mr. B.G.,

I got tired of doing math problems in that Discovery game. I went to my daddy's room and took Thunder Boy (DigiTek, \$34.95).

A little blond boy in diapers jumps over spiders with stingers and runs away from bats and other bad things. He has to go fast before he runs out of energy. The boy tries not to get killed by these things. He's supposed to save "his woman" that some dragon kidnapped. I don't understand why he'd even want a woman, but I figured it was okay because it was only a game. Besides, he makes a really neat, bad scream when he dies. He dies a lot. I can't make him jump and run very well. I read the rules, but they were shorter than my reading group lessons at school. Why is something so silly, so hard?

I don't want to keep playing this game. Don't let me try to save that woman any more!

I vow to do my part, Little Rumbler and bad game junkies everywhere. I'll be ever vigilant, ever honest in my quest to separate good games from bad, to try to stop any more innocents from being sucked into the painful trap of bad game addiction. □

*Although not the type to be caged in an office, B. G. Hunter does skulk in occasionally to pick up his mail. Write to him c/o AmigaWorld, Editorial Dept., 80 Elm St., Peterborough, NH 03458.*

## G A M E R E V I E W S

### **SIMCITY POPULOUS**

**By Peter Olafson**

QUITE A transformation has been wrought in my life with the arrival of SimCity and Populous, two delightful programs that allow would-be Apollos to be omnipotent on scales both global and municipal. It's long past the seventh day since these two arrived,

and I haven't rested. I haven't even come up for air.

SimCity permits you to design a city from the ground up, and to try to master the problems plaguing the "sims" who then build and inhabit it: pollution, traffic, unemployment, the whole bit. In Populous, you have to build up or tear down the ground itself to encourage your people—an

animated lot of top-tappers in *Flintstones* outfits—to build the settlements themselves, while stomping the minions of an enemy god.

The animation provides the initial tickle; it's easy to forget playing the games, and just watch the little people run around your creation like madmen. Things will come

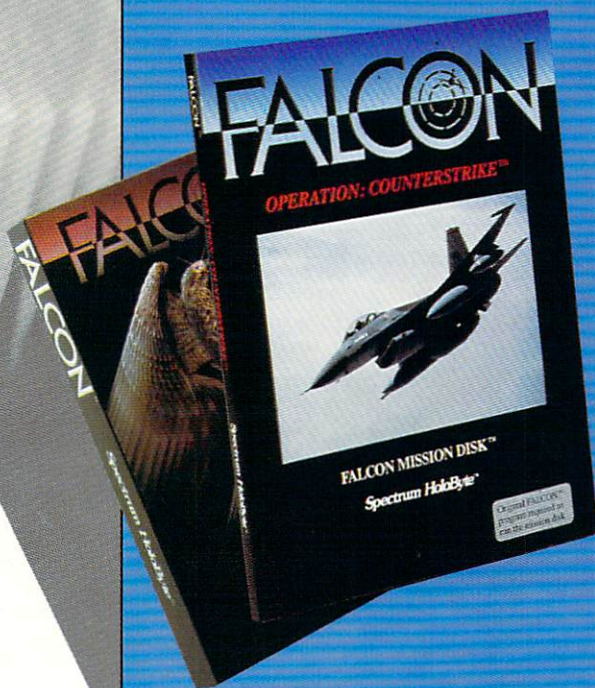
apart quickly without your guiding hand. In SimCity, you lay out streets, bridges, parks, commercial, residential and industrial zones, power plants, airports, and seaports. The residential zones sprout houses, cars appear on the roads, ships on the waterfront, planes in the sky. The stadium ►





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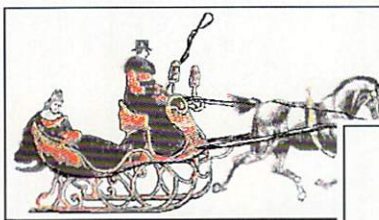
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fills up for home games. Put a nuclear power plant in the middle of a suburban neighborhood and people will move away. And woe betide the simulated city that doesn't have enough money to cover its budget come January 1st. You can track your progress via the graphic overlays, charts, annual budget, year-end population survey, and opinion poll. While this game is the most sophisticated ant farm a kid ever had, it's not so sophisticated that you can't just boot up and fool around.

If you get bored with your

you raise and lower land to provide a nice level surface for construction, while using earthquakes, swamps, volcanoes, and floods to give your opponent—either the computer or another schnook with a modem—a nasty pitted and rocky one. (Building volcanoes on top of one another in the enemy's chief civilized plain effectively makes that territory unusable for the next millennium or so.)

The overhead view of SimCity is impressive, but Populous has to be seen to be believed. The bulk of the



The fate of Populous dwellers is in your hands.

creation you can select a cataclysm to rain down upon it. There are also a number of pre-built, problem cities—such as post-meltdown Boston and post-firestorm Hamburg—to redeem. If you master all of the above, the file format for cities is identical on the Amiga, IBM, and Macintosh versions, and you can exchange your creations; I've already spotted a handful on the networks.

Populous isn't the social wars on crime and poverty; it's more like war, period. You help your people settle land, increase their number (and hence your power or "manna") and give the hardest of times to rival settlers in red suits who are aided and abetted by another god. To do so,

screen is taken up with two maps: a "Book of Worlds," showing the full playfield, and a glorious perspective view of a closeup map complete with settlements from grass huts to turreted castles, people, trees, mountains, and coastlines. The icon system isn't quite as painless as SimCity's, but it's the next best thing, and you'll be cutting down the heathens in no time. The atmospheric, Gregorian chant-like music and special effects (heartbeats, for instance) provide just the right apocalyptic touch as your civilization does the dance of death. ►



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Both Populous and SimCity have a few surprises, but none are nasty bugs. In Populous, I occasionally wished for a second, independent computer opponent to keep me looking over my shoulder at critical junctures and prevent outcomes from being too much a sure thing. My only laments about SimCity are its occasional rigidity (roads can curve, but bridges and tunnels can't) and the inability to mix some elements. (Try running a power line under a bridge.) Version 1.1 clears up the multiple drive and partition bugs of the original.

The real joy of these pro-

grams is the interlocking relationships. Sure, you're a creator, but even more a facilitator, influencer and stage-setter for little computer people who act on your wishes in their own time and fashion. Of the two, I prefer the more intimate urban controls of SimCity to the sweeping omnipotence of Populous. (*Populous*: \$49.95, Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404, 415/571-7171, no special requirements. *SimCity*: \$44.95, Maxis Software, distributed by Broderbund Software, 17 Paul Dr., San Rafael, CA 94903-2101, 800/521-6263, 415/492-3500, one megabyte required.)

## WAR IN MIDDLE EARTH

By Neil and David Randall

WE THOUGHT WAR in Middle Earth would be the ultimate Tolkien game, combining the best elements of the book with the most intriguing aspects of strategic war games—then we started playing. (By all means, read the manual first.)

The game captures the feel of the different stages of the Hobbits' journey to Mount Doom. The dreaded Nazgul, even though you can discern their location, are fast and deadly. The trip from Hobbiton to Rivendell is frightening, as it is in the book. Detouring to find needed objects and treasures increases the Nazguls' chances of detecting you and thus heightens the immediacy of the race. While you can change the game speed (Normal, Hasty, and Very Hasty), everybody's speed does not change by a common ratio. When trying to evade the Black Riders, changing from Normal to Hasty increases the Nazguls' chances of finding you. If you leave the speed on

Normal, however, the game slows to a crawl.

To move, you order the characters to a specific place and the computer picks the best route (you can alter it if you wish). Movement commands can only be executed on the Campaign level, which shows a detailed, beautifully scrolling map of the immediate region. Most of the game is played on this level, but you'll want to spend some time watching the colorful animations on Animation level, which uses strong graphics (albeit some strange depictions of Tolkien's characters) and interesting sound effects.

When you meet characters, be prepared to work for your information. You cannot communicate with most of them, but when you can, the character will give you clues. A good feature, but they stay on the screen only briefly. If you click ►





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the mouse, the information is gone, and not retrievable.

A more significant problem is the game's crashes. Animation screens are frequently obliterated by a series of data numbers, and when trying to move multiple forces we usually had complete software lockup.

Most irksome to Tolkien disciples, the game misses the point. *The Lord of the Rings* was

about characters, not about warfare. We liked the combination of characters and armies in the game, but feel that the characters were given short shrift. Somehow, Tolkien's great humanity was lost in a sea of only partially appropriate details. (\$49.99, Melbourne House, 711 West 17th St., Unit G9, Costa Mesa, CA 92627, 714/631-1001. No special requirements.)

## KIKUGI

By Shawn Laflamme

KIKUGI IS AN ancient Japanese game of concentration and strategy, brought to the Amiga by Image Tech. Unlike other current Amiga games with Japanese themes, this one is for the thinker rather than the samurai.

The disk includes 15 different game boards, all of which are variations on the same theme. The Original board contains 32 marbles arranged in a cross pattern with one empty space in the center. You jump one marble over another into an empty space, removing the one that you jumped. The idea is to remove all but the last marble, which should be left in the center position on

the board. If you succeed, you are rewarded with a fortune cookie.

All of this sounds very simple until you attempt to do it. You will quickly discover that you need to develop some sort of strategy for removing the pieces; slow down and think ahead as many moves as you can. Each move becomes more critical as you go along.

If you find that you need some practice, you can make a humble retreat to the Beginner's board, which has only 19 pieces to worry about. The other 13 boards on the disk ►

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## THE TOP 10

- ❑ **#23 Monopoly** - Excellent color and graphics in this adaption of the famous board game. Play against computer opponents. This program is definitely of commercial quality - a must! Requires 512K.
- ❑ **#27 Amoeba Invaders** - This fantastic game plays just like the original arcade classic, Space Invaders, but with enhanced color and digitized sound. You'll find more great games on this disk.
- ❑ **#128 Space Games** - Cosmoroids (like asteroids) and Gravity Wars highlight this disk just full of games.
- ❑ **#131 PacMan '87** - Better than the original. Great graphics, sound, and options. Keeps a top-10 list. May be our most popular disk.
- ❑ **#139 Bull Run** - Great Civil War strategy game. Disk also includes a small Data Base, Reminder, Grocery Construction Set, Will Kit, Label Maker programs.
- ❑ **#142 Q-Bert** - Fashioned from the popular Q-Bert game. Good graphics. Other Programs include MakeLabel, Nutty 9 game, Softball Status program, Hustle!
- ❑ **#77 Instruments** - Turn your keyboard into 25 different musical instruments.
- ❑ **#37 Business Programs 1** - The programs include an address book, an amortization program, talking mail manager, label printer, and much more.
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- ❑ **#158 Sinking Island II (TWO Disk Set!) By Terry Fike** - Great text graphic adventure. 4 map scenes, underground chambers and much more.
- ❑ **#160 Pilot** - Learn all you need to know about Alaska with this pilot demo.
- ❑ **#161 Sorry** - Like the board game. Also includes bully and amazing.
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- ❑ **#164 Bank'in** - By Hal Carter, Keep your account in perfect balance.
- ❑ **#165 Wheel with Vanna** - Play against two computer opponents. The game with everything, including Vanna.
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- ❑ **#167 Public Domain Catalog** - By Hal Carter, Keep track of all your disks.
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- ❑ **#175 ART** - Another great graphic disk. Volcano with burning lava. Ocean scene (sunrise to sunset)
- ❑ **#176 Galactic Worm** - Great arcade maze like game. Also super Brickout.
- ❑ **#177 Kamikazi Chess** - Lose all your pieces to win!

## THE BEST OF THE REST

- BUSINESS/HOME**
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  - ❑ **#117 Business III** - DataBase, a bunch of great new fonts, RSLClock-great clock utility, AmigaSpell.
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  - ❑ **#129 Amiga Utilities II** - A hard disk backup; Target-sounds a gunshot whenever the left mouse button is pressed; DPaint Tutor; WinSize-change window size from CLI easily, and lots more.
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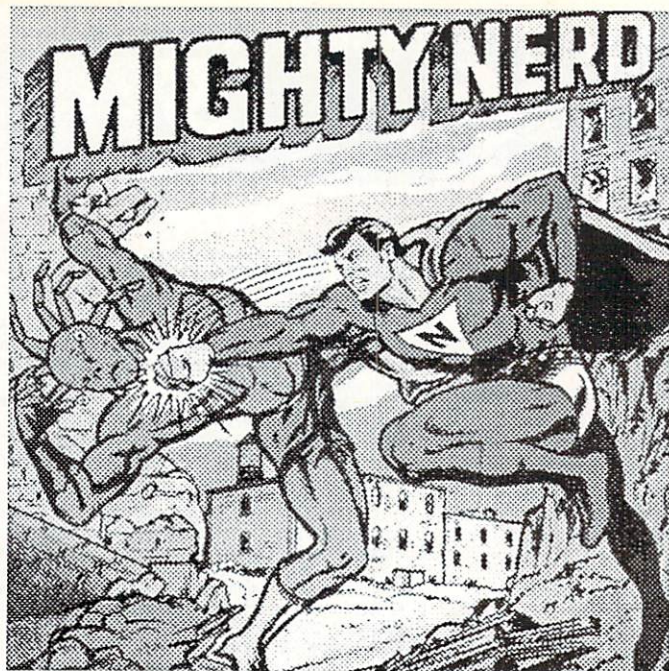
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offer some interesting variations: **Classic Marble** has 104 pieces on a marble board; **Sea Shells** gives you 28 shells arranged on a beach; **Short Circuit** gives you a taste of contemporary Japan with 36 chips arranged on a circuit board; **Insanity** has 332 pieces. Other boards mercifully allow diagonal moves.

Options allow you to back up one move or preview all possible moves; the **Meditate** option gives you a rest and lets you review your jumps. You can play a solitaire or two-player game. You can

the **Insanity** board or the **Meditate** option to load on a 512K A1000.

**Kikugi** has colorful, Amiga-quality graphics. It has stereo digitized sound effects. It has 15 game boards. It's challenging. But **Image Tech** has made much of little here. All you're really doing is jumping marbles. You can buy games that will let you fly a helicopter, pitch to Babe Ruth, conquer a galaxy, or save a city. **Kikugi** doesn't have what it takes to keep most people intrigued for very long. Besides, these are frustrating little games.



**Hop, skip, and jump to win.**

also watch the computer play itself, which is a rather silly option because the computer plays worse than most humans, so you won't glean any useful strategy hints from watching it.

**Image Tech** recommends a minimum of 512K to run the program, but I couldn't get

Unless you have the patience and concentration of a Shinto priest, you are probably going to lose very often. And he who often loses grows impatient and loads another game. (\$39.95, **Image Tech**, 9276 Adelphi Rd., Suite 102, Adelphi, MD 20783-2029, 301/439-1151. No special requirements.)

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By Peter Olafson

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**WB1: GRAPHICS and PLOTTING** - Several neat graphic and mathematical plotting routines are included: Plot - A 3D mathematical function plotter. Plots any user defined function. Scenery - This generates fractal landscapes, Surf - Makes bezier surfaces of revolution. It produces awesome pictures of objects one could turn on a lathe. And others.

**WB3: General** - This disk is crammed full of programs, including: FastDisk - optimizes the chaotic disk structure. Introductor - create your own scrolling demos. Plans - Plans is a high speed, versatile drafting program. Zerg(v1.00) Zerg is an Ultima type clone with a nominal plot. ARP 1.3 with Ash, and others!

**WB5 - Fonts #1** - Several fonts (35) for the Amiga, also some PageStream fonts, and ShowFont - a font display program.

**FD5: Tactical Games** - BattleForce(3.0): A game that simulates combat between two or more giant, robot-like machines BullRun - a Civil

war battle game. Metro - you play the role of a city planner. Very good Amiga version of Kingdom. Golden Empire, Etc. Very very habit forming.

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launcher (in lieu of a puck dropping ref), goals at either end of the playfield, and high walls for ricochets. The ball looms up on the screen when it is airborne. You can tackle, too. Against the more powerful computer opponents, however, hanging on to the ball is a challenge. You can play

rious, you might not even notice the floating tiles. Some are money, which you can spend after the final whistle to improve your stats, tamper with your opponent's or bribe officials. (Officials in future sports are not very honest.) Some are power tiles that you can use immediately for tackling, pro-



Choose your team and captain.

against a friend or the computer in elimination tournaments or leagues of up to 100 weeks.

A few elements step in to prevent this from being a futuristic hockey-handball hybrid or a member of the Sports in Hell series. One is the warp tunnel in the arena's side walls, which permits a ball thrown in from one side to come out the other. Less helpful are the bounce domes that repel the ball and appear in various configurations. Often the action is so fast and fu-

tection against tackling, freezing the opponent, and so on.

About the only drawback is that the digitized sound of cheering on my occasional goals comes through muffled sometimes. I'm no great fan of sports invented for the computer, but Speedball, an English import, is a pip. What else can I say but WHAM, WHAM, WHAM! (\$39.95, Spotlight Software, distributed by Cinemaware, 4165 Thousand Oaks Blvd., Westlake Village, CA 91362, 805/495-6515. Joystick required.)

## GRAND PRIX CIRCUIT

By Peter Olafson

THE ONLY THING I've consistently been able to drive on my Amiga is myself crazy—until Grand Prix Circuit, which includes many of the better as-

pects of previous driving games and eliminates many of their potholes. The biggest ob-





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jections I have so far are the long load times and the black-on-black steering wheel on one of the three available cars.

Grand Prix successfully adapts the technology of Accolade's earlier attempts, Test Drive and Test Drive II: The Duel, to the closed circuit. The dashboards' graphics aren't quite as detailed, but the set-up screens have the same glossy look. The screen changes have the same windshield wiper swish. Then, there are the tunnels. Coming out of a tunnel in the middle of the pack is better experienced than described. I only wish there were an echo.

One of the friendlier racing programs around, Grand Prix has no mysterious requester boxes but plenty of options. I especially like the map that indicates your progress and how

ing from practice to the full eight-race circuit.

The designers paid great attention to detail. When you blow your engine, you hear a convincing bang and watch billowing black smoke in your rearview mirrors. When you nudge the car in front of you too hard, your hood crumples and he spins out in a full 360. The engine sound is even a little throatier than usual.

The slim manual is thorough, but does not provide much game color. It says the other nine drivers have their own styles, but profiles would be more helpful than the best-to-worst chart.

I finished second in my first race (Brazil), but haven't managed any better than a close sixth on the second (Monaco). At least this time I'm just driving, and not driving myself



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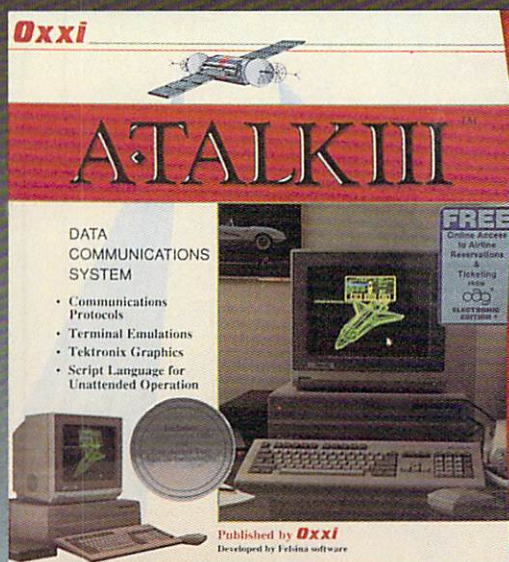
sharp the approaching turn will be. Pit stops, mercifully, are limited to wheel replacement. You can choose among five difficulty levels from rookie (automatic shifting, sometimes nudgeable cars) to pro (you have to work to make it out of the straight-aways) and three types of rac-

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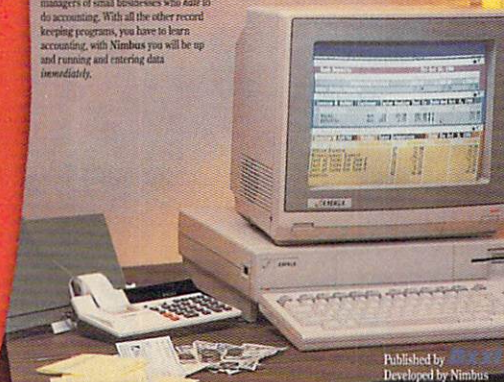
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# REVIEW

Continued from p. 18

put status (MIDI or Amiga internal samples), and an offset control that delays the start time of the sequence by a number of measures.

## THIS OR THAT

Music-X's approach to sequencing is a bit confusing. A sequence can be thought of as one entire musical part extending from the beginning to the end of a song, or as a fragment to be strung end to end with others to form a complete part. It can be triggered by a control sequence, and it can also be a vertical arrangement containing more than one part (for example, you could record drums, bass, piano, and brass parts on separate MIDI channels into one sequence).

Up to 20 sequences can run simultaneously, and in the Track window at the top right of the screen, you can see which are playing at any given time. This display is just for monitoring purposes, though; the only control you have here is the ability to mute a sequence by clicking on its name.

Click Record in the Transport window and the program presents a number of recording options. The choices include Punch-In Manual (which you control with the Return key), Punch-In Auto, Loop mode (which allows you to record multiple passes of a part without restarting the recorder), Mix Down mode (merges a number of sequences into one), and a Count-In setting (which backs the recorder up a specified number of bars before starting to record). While these options can make the recording process convenient, their presentation—in a window that appears every time you select Record, regardless of whether you need to reset your parameters—is inconvenient. A better approach would be to offer them in a pull-down menu.

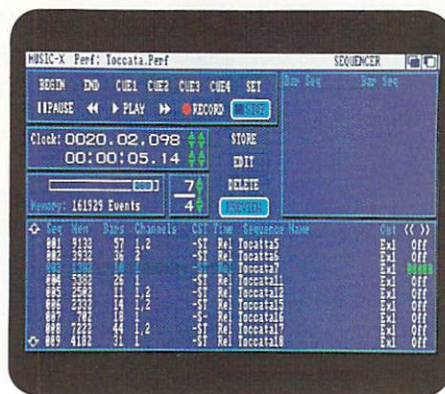
Once you have made your selections, you can start the recorder either by clicking on "Go" or by playing a note on your controller.

It is unfortunate that the Sequencer page's metronome is in the form of a looped track, as this setup complicates the changing of time signatures. In order to retain an accent on the first beat

of each measure, you must program any time-signature changes into the metronome track—otherwise you are stuck with an unaccented metronome.

## THREE DOWN

The Sequencer screen offers three pull-down menus. The Options menu is the



From the Sequencer page, you can keep tabs on all your tracks.

place to go for sequence manipulation: a Copy Sequence selection duplicates the current sequence and places it in another location, while Merge Sequence combines two sequences into one. Extract Sequence removes MIDI-channelized data, System-Exclusive data, or Music-X events (commands) from a sequence. For example, you could split a sequence containing a bass part on MIDI channel 1 and piano part on channel 2 and copy it to separate sequences, or you could transfer all controller data to another sequence. Erase All Sequences wipes out all sequence data, but leaves everything else intact. Output Channels lets you globally remap MIDI channels: Any data on MIDI channel 1 could be routed to channel 10, for instance.

Items on the Synchronization menu help you sync Music-X to other timing-intensive devices. Music-X can slave to MIDI, MIDI Time Code, SMPTE, the Amiga's internal clock, or the Amiga's internal video clock (the chip that controls the monitor's Vertical Blanking Interval generates a timing frequency that is the same as the NTSC standard frame rate for television). A Time Code Offset enables you to set your start time to zero even though it may be starting 20 minutes into the code (SMPTE or MTC). Music-X can also serve as a timing source, generating MIDI sync, MIDI Start and Stop, and Song Position

Pointer. Finally, a Delay option attempts to compensate for older MIDI gear that may not be correctly implemented with Song Position Pointer.

## THE EDITORIAL DEPARTMENT

You can tweak your sequences in either the graphic (Bar Editor), or text (Event Editor) page.

A good portion of the Bar Editor page is taken up by a Graphic Score window, which displays notes and other MIDI data as bars on a grid, piano-roll style. Running down the left side of the window is a five-octave keyboard that acts as a note reference. An octave slider to the right scrolls the display up and down to show notes that fall in outer octaves, while a scroll bar beneath the window moves the display back and forth in time. Through a pull-down menu, you can determine what types of data (notes, controllers, Music-X events, and so on) are shown on the grid.

The Bar Editor accepts input by either real-time recording (there are Record, Play, Pause, and Stop buttons at the lower left of the screen), step-time recording, or manual placement of notes (via mouse) on the grid. By selecting one of the boxes numbered one through 16 you can determine which MIDI channel the notes will play on, and on the grid, each MIDI channel is represented by a different color.

Along the right side of the screen you will find a list of tools for adding, inserting, moving, and erasing data, and more. The Lock tool removes a selected MIDI channel's data from the grid, so that it is heard but not seen. Select and Mark are two options for partitioning off data for editing. Zoom changes the magnification of the grid, while Snap, a sort of auto-quantizer, is useful for entering new data onto the grid. Quiet silences the sound source when entering new data onto the grid. Scroll determines whether the display moves as sequences play (scrolling in the Sequencer page is great, by the way), while Grid sets the display resolution. The Parameter selection opens a window full of sequence-



playback options, including Play in Context, which determines whether the sequence plays solo or with others. While Play in Context is a nice feature, it would be easier to use if you could trigger it via a gadget.

The Bar Editor's Cut, Copy, and Paste functions let you move groups of data to different locations in time. You can select data using either the Select or Mark tools; a small window below the Graphic Score shows you the beginning and ending points you have selected. When you copy or cut, a line appears to paste the data onto the grid. Position the line and click; if you have chosen the Select tool, the new material will be inserted into the score; if you chose Mark, it will be pasted over existing data. Cut and Paste double as transpose functions: By copying data to a higher or lower position on the grid, you are transposing it.

## EVENTUALLY

There are no global methods for making changes in tempo, time signature, or loop, but you can accomplish these operations on separate pieces using Music-X events—commands that you place into the sequence like any other data.

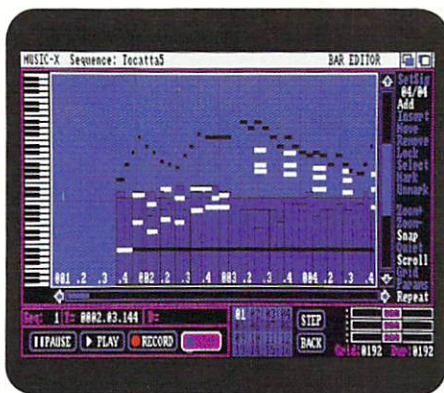
One global feature Music-X does offer is Quantize, with its array of options such as minimum and maximum threshold, quantization by percentage, velocity scaling, and the ability to determine whether the operation affects a note's start time, duration, or both. Unfortunately, these options do not include the quantization factor (eighth notes, quarter notes, or other); you must return to the grid setting for that.

The Event (text) editor displays sequence data in alpha-numeric format. It has some of the same features as the Bar Editor, but offers very limited control over the display: You can determine only whether durations or note-offs are shown. Keyboard editing is easy—the cursor arrows move you around the screen while the + and - keys change note values. There are two things I do not like about the Event editor, however. Selecting groups of events can be time consuming because you must click each event individually. Also, unnecessary dig-

its clutter up the display. For instance, the measures column in the durations field is taken out to four digits. . . how many events will last 1000 measures?

## MY BACK PAGES

The Samples page lets you arrange samples in a list, and offers tuning, octave-



Would you like something from the Bar Editor?

shift, and envelope-editing features.

In the Keymap page, you can use a controller keyboard to call up other

events. MIDI notes can trigger other notes, controller changes, program changes, or Music-X commands. This page is very powerful and has great potential for live interactive performances.

The Filters page lets you change note messages into other event types, filter out, thin out, and rechannel selected data types, and to echo data to the internal voices or back out through MIDI. There are 16 filters in all (one for each MIDI channel) and you can save settings for each in a separate performance file.

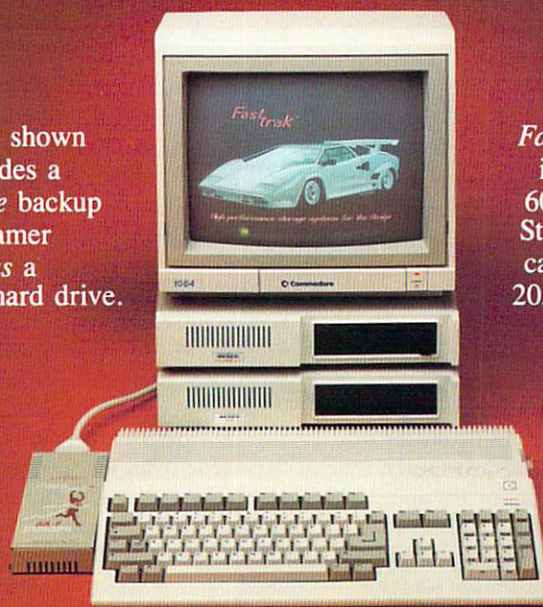
The Librarian page works with any MIDI device capable of sending and receiving system-exclusive information. To set it up, you must know the SySex protocol that your particular MIDI machine requires for this kind of communication. If you don't know system exclusive and cannot find your protocol on a bulletin board, you will have to depend on a SySex fanatic to write one for you.

## FLIPPED OUT

Music-X is both powerful and comprehensive. Because its design is open- ▶

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ended, it has the potential to be even more powerful. The timing is solid and the many synchronization options are professional. Music-X's manual is clear and well written. The Librarian, Key-maps, and Filters pages are clever and very useful, and the graphic editing is great, but the front end of Music-X, the sequencer, is in many ways needlessly complicated. It works fine, but the extra steps required for routine operations give it a cumbersome feel. And while having to use Music-X events for such things as tempo and meter changes may be fine for some applications, a program of this caliber should have global controls as well. This is not to say that Music-X cannot get the job done—there is more than enough here to work with. I just hope that MicroIllusions will forego esoteric functions on future updates in favor of a more elegant front end.

#### **Music-X**

##### **MicroIllusions**

17408 Chatsworth St.  
Granada Hills, CA 91344  
818/360-3715  
800/522-2041  
\$299.95

*No special requirements.*

## **ONLINE! PLATINUM EDITION**

*Limber's the word.*

**By Sheldon Leemon**

THE VARIOUS COMMERCIAL information services and private bulletin boards accessible to Amiga users employ many different transfer protocols for insuring that data is received properly. On the PeopleLink network, for instance, Windowed Xmodem is the preferred method for receiving, while on GENie, I use Ymodem-batch to transfer several files at once. On CompuServe, I prefer the proprietary B or Quick B protocol, on Bix I usually use Xmodem 1K, and on many bulletin boards, Zmodem is the protocol of choice.

Online! Platinum by Micro-Systems Software is one of the only Amiga termi-

nal programs that supports all of these formats, as well as Xmodem and Xmodem CRC, Kermit, and its own Sadie protocol. (Sadie allows you to transfer files both ways and key in text, or "chat," all at the same time, but it is supported only by other Micro-Systems Software products). Its wide-ranging protocol support is not the only reason I like Online! Platinum, though. Its many other features, including a comprehensive script language, macro-key capability, and ARexx support, make it the first Amiga terminal program I've found that meets all of my basic telecommunications needs.

#### **EASY TO SAY**

While several other Amiga terminal programs include script languages that enable you to automatically execute a command sequence whenever a specified number is dialed, most of these are limited to a few commands that log you on (enter your account number and password) to a remote system. Online! Platinum, on the other hand, understands a much more extensive script language, one very similar to that used by the popular MS-DOS terminal program Crosstalk. Online!'s script language includes most of the features of a true programming language, such as a conditional IF statement, a JUMP command, and a WHEN command that lets you specify a response whenever a certain condition occurs. In addition, its powerful MENU command allows you to choose any pull-down menu item from a script. For example, to select the "2400" sub-item of the Baud selection on the COM menu, you would use the statement "MENU COM BAUD 2400". Because virtually all of the program's features are accessible through pull-down menus, they are also accessible from the script language.

Just because the script language is powerful, however, does not mean it is complicated. Online!'s special Learn mode allows you to create log-on scripts automatically. As you respond to prompts from the remote system, the program notes the exchange and writes a script that responds in exactly the same way to that series of prompts.

#### **BEND AND STRETCH**

Two other programming features further maximize Online! Platinum's flexibility. First is its extraordinarily powerful

macro-key capability, which not only allows you to set up text strings that can be entered at the touch of key, but also lets you program Online!'s scripts and macros to call each other. This means that you can trigger any macro key from a script, and more importantly, that you can execute any script command from a macro key. Set the F10 key to "{script} MENU FILE RECEIVE...RAM:Temp;" for example, and then, when you are ready to start downloading, all you have to do is press F10.

Perhaps the most important programming feature, however, is Online! Platinum's support of ARexx, an interpreted programming language that makes it easy for ARexx-equipped multitasking programs to communicate with one another. When you start up Online!, it opens a message port (which is, incidentally, named ONLINE-1, not MSS-ONLINE-1 as documented) that can receive requests from other programs. Other applications can use this port to send any script command to Online!, giving them complete control of the program. Likewise, Online! can send a message to any other ARexx-supported program using the ARexx script command. This kind of flexibility is what ARexx was designed for. Using Online! and Superbase Professional (Precision) together, for instance, you could update your stock portfolio easily: Have an ARexx program call up your information service via Online!, manipulate the text that comes in from the modem, and store the relevant information directly into a database.

About the only feature I can think of that is missing from Online! is one to enable ARexx programs to get the address of Online!'s capture buffer. With such a feature, ARexx could manipulate the data in the buffer directly. As currently implemented, the calling program uses an ARexx "get" command to receive text from the modem one character or one line at a time.

#### **TO BE . . .WHAT NOT TO SEE**

Among the program's host of other important features is its ability to emulate a number of popular terminals, such as the Tektronix 4010, and the DEC VT 52, VT-100, and VT-102. Online! Platinum



lets you choose from many different screen configurations (overscan or non-overscan, interlaced or non-interlaced, two to eight colors, with or without window borders and title bars, and more) and text fonts (IBM5, IBM8, Topaz8, Topaz9, or Topaz11). It offers a chat window for online conferences, and lets you toggle the printer on and off.

Each 40-number phone directory allows you to select a sequence of numbers to call, so that if one is busy, the next on the list is dialed automatically (or the same number is redialed until a connection is made). The program automatically retains an 8K review buffer so you can take another look at text that was scrolled by too quickly.

Online! Platinum is one of the first terminal programs to support multiple serial devices directly. I was able to use Online! Platinum with both the Supra 2400zi internal modem and ASDG's Dual Serial Board without altering the program in any way (alterations are necessary with most other programs). The only incompatibility I found was a mysterious failure when uploading files to CompuServe using the B protocol with the Supra internal modem.

#### ONE THING AT A TIME

Online! Platinum does have a few drawbacks. For one thing, the program is huge—the code alone consumes almost 256K. If you have a 512K machine, don't plan on doing any word processing

while you are downloading files. Even with a lot of memory, the program does not multitask well. When it is downloading a file, it slows other tasks to a greater degree than most terminal programs. Online! doesn't even multitask well within itself: When you open the review buffer, your terminal window freezes and becomes inoperative.

The user interface leaves something to be desired as well. For example, the translation tables, which let you replace any character with any other character (good for filtering out non-text characters), consist of 256 hexadecimal numbers. To change a number, you must click on each digit with the mouse; this adds one to the number. In order to filter out the high bit of the top 128 characters, therefore, you need to click eight times on each of 128 digits—1024 clicks in all. If you inadvertently pass the number you want, you must click 15 times to get back to it. Obviously, a "strip high bits" or "filter non-printing" button would be a big help here. Also, each phone entry saves many of the current menu settings, without any visual indication of what the settings are. An expanded phone book edit screen, showing all of relevant settings, would go a long way towards eliminating confusion.

Nonetheless, Online! Platinum is the Amiga's most professional and polished terminal program. It includes important extra touches, including an excellent hard-drive installation program, a read-

able and informative manual, and good telephone support. And finally, I applaud Micro-Systems Software for replacing the Archive menu selection with the more standard Open and Save options. With its exhaustive array of features and programming capabilities, Online! Platinum should meet the needs of even the most demanding user.

#### Online! Platinum Edition Micro-Systems Software

12798 W. Forest Hills Blvd.  
Suite 202

W. Palm Beach, FL 33414

407/790-0770

\$99.95

*No special requirements.*

## M2DEBUG

*Make Benchmark bugs boogie.*

**By David T. McClellan**

SAT DOWN TONIGHT, plugged in 600 lines of Modula-2 code, ran it, and the program went south—without even a beep goodbye. Now I get to plug in 45 WriteString( ), WriteInt( ), and WriteCard( ) calls and try to figure out what it's doing.

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ula-2 compiler. A new version of the original compiler, a source-code tab-to-blank tool, and a tutorial are included with the package. As with the other Benchmark tools, this debugger is customizable and does its best to run on 512K floppy-based Amigas.

M2Debug can put several windows on your screen, including ones for source code, variables and values, memory (hex, decimal, and so on), registers, procedure call (stack) traceback, disassembled source, breakpoints, modules, execution (stepping/running), and other information. You can resize each of the windows individually, and scroll through them both horizontally and vertically (for several, you must scroll both ways). Most of the windows allow you to make a selection (a line of text or a variable, for instance) with the mouse, and with many, you can switch to another window for the operation. For example, you can select a line in the symbolic variable window, click the Destination gadget above the memory window's scroll bar, and view the variable in hex. Ditto for the source code and disassembly windows.

## STEP OUT AND BREAKDANCE

M2Debug knows how to single step, slow-run, and run your modules at normal speed, and can set several kinds of breakpoints. You can single step at both the Modula-2 and 68000 assembly-language levels, so you can get very close to your code. Single-step flavors include stepping into procedure calls (i.e., single stepping each line of a called procedure) and stepping over them (treating the whole procedure call as one step).

The Run Slowly option is a unique and useful cross between single stepping and littering the code with breakpoints to execute at full speed. Here, M2Debug displays each line as it executes, scrolling the source text slowly. You can interrupt the process at any time by hitting the F5 key.

You can set temporary breakpoints (whereby the program runs to the breakpoint, stops executing, and clears the breakpoint), permanent breakpoints (which control will always stop at, such as in a loop or procedure), and the limited repeat variety, wherein the debugger does not stop until it has hit the breakpoint a given number of times. While you cannot set breakpoints that have debugger commands attached as some other debuggers allow, with

M2Debug's multiple tracking windows you don't really need to. When you set a breakpoint on a line that modifies a variable, that variable will generally be in the symbolic data window.

A more complicated function than is immediately apparent, the Symbolic Data window lets you look at variables. Suppose you have a record or array containing components that are themselves records. M2Debug uses an "increasing level of detail" approach to accommodate all your data without scrolling 90% of it off the screen. Click on a record, and the values of atomic fields—numbers or characters—are displayed beside their corresponding field names. The size of every field that is a record is displayed beside the field's name; click on the name and that record-field expands to fill the window. You can move up and down levels of detail this way to see whole data structures.

Global variables are displayed as you enter the program and stop on the first line; you can examine local procedure variables when control enters their procedure. Also, when in a low-level procedure, you can move up the procedure call stack to examine the variables of its caller, and its caller's caller, and so on. Lastly, you can set the values of atomic variables and fields with the F9 key after selecting the variable/field. Strings are set one character at a time.

## DOWN AND DIRTY

M2Debug operates either at Modula-2 source level or the assembly-language bits-and-bytes level, and can intermix the two. Besides examining variables in symbolic form, you can display them or other chunks of memory in hexadecimal, octal, binary, or decimal format, or as characters, and do memory fills this way, as well. The debugger also lets you view and set the 68000 registers, plus you can disassemble Modula-2 source lines and single-step through the assembly. This capacity is not something you will need often, but it is useful. M2Debug can also report which machine resources the program has tied up—open and active devices, system libraries, message ports, resources, tasks, overall memory usage, and contents of directories (via a directory lister). Except for the directory window, you cannot modify the displays, but



they are helpful as is and provide a warm, fuzzy feeling.

### YOU CONFIGURE IT OUT?

A built-in configuration section, available from the debugger's main menu, lets you create custom startup patterns: which windows open initially, what language it runs in, and various other maxima. You can save the options in a file called M2Debug.config, which is read at startup time from either the current directory or the S: directory. You can also save other configuration files and load them while running the debugger.

M2Debug is the kind of dog you'll want a big back yard for. I ran it in about 800K of available memory and it did just fine on a medium-size program, but I believe it might get surly in 512K. Avant-Garde Software provides it in both a 84K packed form, which saves disk space, and a 181K unpacked form. Running on a two-floppy system is awkward, with one disk for the compiler, linker, and libraries, and the other for your source. I transferred the debugger to my RAM disk; a hard disk would be better.

A hot key lets you switch from the program to the debugger and back. I had a few problems with it, and sometimes had to switch and click on a few windows to get the debugger in gear. It never hung, though, so I can't grumble much. The manual it contains bits of information not obvious from running the software.

Although I generally think through my designs carefully, sketch out the program and code, and test in chunks, I still end up needing a good debugger more often than I like to admit. M2Debug is a good debugger, and it makes Modula-2 programming easier. I like it.

### M2Debug

#### Avant-Garde Software

2213 Woodburn  
Plano, TX 75075  
214/964-0260  
\$149.95

*Benchmark: Modula-2 compiler required.*

## AMI...ALIGNMENT SYSTEM

*Get in the groove.*

By Tim Walsh

AS A RULE, floppy-disk drives are noted for their Maytag-like durability. After a few years of daily grunt work, however, drive-head misalignment can occur, resulting in the drive's inability to read one or more of the 80 tracks on a disk. Like a firecracker with a defective fuse, misalignment is potentially dangerous: Entire disks can become corrupted every time data is saved to them.

With Free Spirit Software's Ami... Alignment System and a screwdriver,

you may be able to save yourself an expensive visit to the repair center by realigning drives yourself. (Keep in mind that making the repair yourself may invalidate your drive's warranty.) At the very least, it will help you to rule out misalignment as the source of your difficulties.

### A LOOK INSIDE

The boot disk contains a variety of utilities, including one for installing Ami... Alignment onto a hard disk. Double-click the HD Install icon and enter a path name including a directory; the program does the rest.

Disk number two, the Calibration disk, contains the Align Data file, which is used for drive-alignment and speed checking. You will need the original disk for testing purposes; duplicates may provide imprecise feedback.

The Align program identifies misalignment and times your drive's motor speed. Start Align from either the Workbench or the CLI and a high-tech control panel, with buttons for choosing drives DF0: through DF3:, appears. With the Calibration disk in the selected drive, you can begin testing.

Alignment checking can be done manually (by clicking the appropriate drive button, selecting Manual mode, and stepping through the tracks individually) or automatically. Either way, the Align control panel reports the status of each track as it is tested. If it signals a prob-

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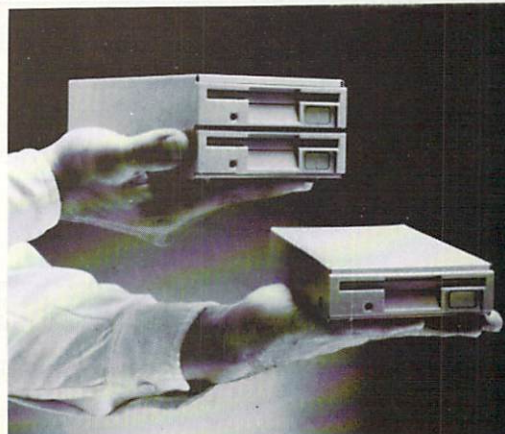


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lem, follow the manual's instructions for drive disassembly. The manual gives descriptions of each process. It shows you how to access the stepper motors of Commodore Amiga disk drives (both internal and external) and two third-party drives, the M.A.S.T. and the AIR. As you adjust the ailing unit's stepper motor with a screwdriver, the Align program retests automatically and provides on-screen feedback. Tweak the motor until the program reports satisfactory results.

The Align program's Speed Test gadget summons a real-time digital read-out of the rpm (revolutions per minute) on your choice of drives. Because accelerated machines normally cause both external and internal disk drives to spin a bit faster, you must power up in 68000 mode for accurate results.

Like a high-speed phonograph, a properly-timed drive spins floppy disks at a given rate—300 rpm in the Amiga's case—with very little deviation. If the speed test indicates that your drive is turning too slowly, you will need to take the unit to a service center for a cleaning or other service. Slightly faster spinning is nothing to be concerned with.

## READ AND WRITE RIGHT

The Drive Performance Function test, which rates track integrity and read and write performance, requires you to place a blank disk in the drive. Here, the program clocks the time needed to write a file to the work disk, then measures the time it takes to read the file. Deviation from a standard 12,000 bytes per second for reading and 5000 bytes per second for writing on each track indicates a potential alignment problem. Read and write times on my drive came in at just about 350 bytes per second higher than these standards. Above-standard ratings are not problematic, but a drive that processes fewer bytes per second than the standard is either misaligned or has a more serious problem.

The Ami...Alignment System takes advantage of multitasking, and from the control panel you can toggle between the program and the Workbench screen. A Print option puts your test results in black and white, while a sound option provides eerie sound effects.

The UnStick programs, represented by four icons (UnStickDF0 through Un-

StickDF3) tackle the task of "unsticking" drives plagued by intermittent stopping of the read/write heads at track 0.

Ami...Alignment helped me align an A1010 drive that regularly corrupted disks during save operations. Now I'm back to routinely saving important files on that drive. That's the best testimony I could give any product.

## Ami...Alignment System Free Spirit Software

PO Box 128  
Kutztown, PA 19530  
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\$49.95

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## I.C.E.

*Calculating on the rocks.*

**By Louis R. Wallace**

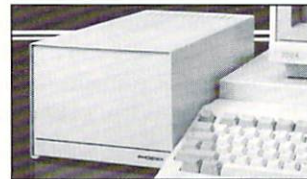
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What most differentiates I.C.E.'s utilities from other disk-based calculators is Install, which makes your calculators always available: You simply press the Right Amiga and Enter keys to summon them to the foreground. I.C.E. calculators are not programs themselves, but data files; the Install module, which loads into RAM, reads the data to emulate a calculator. Install uses very few CPU cycles, and thus has minimal effect on other memory-resident programs.

All I.C.E. calculators run from both the CLI and Workbench. From Workbench, Install works behind the scenes;

from the CLI you must specify the source disk and directory of the Install command and the calculator file. I.C.E. is non-copy-protected and can be copied to both floppy and hard disks; you can easily add calculators to your startup-sequence and activate them on boot up.

#### BUTTON BY BUTTON

Creating calculators is a quick and easy process. Double clicking the Constructor icon takes you to the Button screen. While this display offers over 50 calculator keys, the range of options is actually larger because some buttons have multiple functions. By pressing ALT on your keyboard, you can cycle through four function-key displays, one of which is completely user definable. Selecting a button is as simple as clicking on it. (You can select a group of keys as well, by drawing a box around them.) Using front to back gadgets, you move from the Button display to the Slate screen, where you assemble your calculator. On the Slate screen, the selected button (or box) appears attached to the pointer; another mouse click pastes it in place.

Once you have created the keypad,

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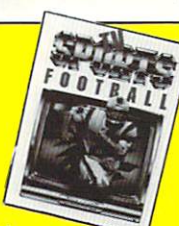
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## FINDEX V

*As you like it.*

**By Loren Lovhaug**

THE ALLURE OF computerized data management springs from the power it

gives you to enter, store, and retrieve data quickly and easily. Findex V attempts to achieve this goal through a free-form approach. Instead of entering data into defined fields of given sizes and types, you key it onto an 80-character by 60-line page in any format you desire. In fact, your data's format can vary from page to page.

To recover data from Findex, you simply specify a word or group of characters. Findex searches the pages for a non-case-sensitive match. Findex can also do criteria searches based on the Boolean logic and comparison operators (AND, NOT, OR, < >, and so on). Because of Findex's free-form nature, these searches are slower and generally less powerful than the sophisticated field-based query facilities of other Amiga database programs. While its line-search option speeds the process by scanning only designated lines on each page, Findex is still the slowest commercial Amiga database I have used. The program is also limited by its provision for holding all records in memory and its fixed buffer space (approximately 256K). These factors indicate that Findex is best

suited for casual, limited, or non-traditional applications.

#### SHAPE IT UP

Findex V's programmable forms-generation facility lets you create customized letters, invoice forms, and so on. To set up a form, you enter text as usual and then insert bracketed commands. Commands can copy data from a record line onto the form, accept user input at specific locations, perform very primitive looping, retrieve pages sequentially either forward or backward, insert the current date, perform limited totalling, and control printer attributes by sending non-printing ASCII codes directly to a printer. While I applaud the programmability, Findex's embedded-command approach is cumbersome and far less useful than more traditional methods.

When you invoke Findex's sort mechanism, the program asks you to declare a single line on your page as the sort criterion. This means that multilevel sorts are unwieldy. For instance, to sort by zip code, last name, and first name, in that order, you would have to make certain that one line within every record con-

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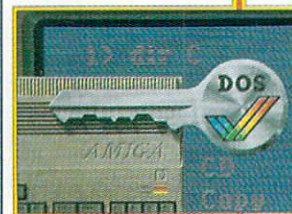
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tained a zip code, last name, and first name—in that order. Setting each record up this way takes a great deal of effort, and offsets the benefits of the free-form structure.

As a sort is performed, all record pages are re-sequenced. The only method for maintaining alternate record sequences is to save the entire file under a different name after every sort, and then manually update all as needed.

#### PORT IN A STORM

Index V was originally developed for Timex/Sinclair microcomputers and then was ported to MS-DOS and Atari ST systems. Finally, the software was ported to the Amiga. The manual, however, was not. It describes how to use Index on Atari ST and MS-DOS machines, and includes an insert of "special instructions for Amiga versions." Although the program functions almost identically to the MS-DOS version, there is no excuse for not producing an Amiga manual.

Like the manual, the program disregards the Amiga environment. It boots on the Workbench screen and does not provide front, back, or window-sizing

gadgets. Although Index does not preclude multitasking, without such gadgets, you can access only applications that use custom screens, by flipping through them with the left-Amiga M and left-Amiga N key combinations.

Index V's heritage also affects its command interface adversely. The program is controlled through a series of four-letter mnemonic commands. You can type these sequences in at the command prompt or, in one of the few conciliations to the Amiga environment, you can click on the commands listed in a terse help window. While this mouse support may be a step toward Intuition, it is clumsy to use. Only nine of the 27 commands are displayed in the help window at a time, and once you have clicked on a command, you must return to the keyboard to select a suboption.

The program's Record/Forms editor also has limited mouse support. While you can place the cursor anywhere on the screen with the mouse, all other operations—including natural candidates for mouse support (such as cut and paste)—require that you use the keyboard.

#### ROLL THE CREDITS

The Formatted-Data-Entry mode, which allows Index to emulate a field-oriented database, is useful for applications not suited to the free-form environment. Another welcome touch is the definable keyboard tokens (macros) option. With it, you can assign up to 16 characters to keys A through P, and later recall the characters by pressing ALT and the appropriate letter keys.

I wish Index V's data-management prowess overshadowed its lack of attention to the Amiga environment, but it doesn't. Though the program functions adequately, it does not outperform its competitors in terms of speed, power, flexibility, or ease of use. And because other packages can mimic its free-form nature, I can find no compelling reason to recommend Index V.

#### Index V

E. Arthur Brown Company

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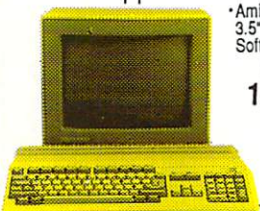
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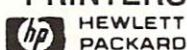
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% Test Drive II Data (Each)	\$15	<b>BUENA VISTA</b>		% Mind Roll	\$32	% Photon Vid. Cel Animator	Call	% Mathamagic	\$42	Interchange Object	\$15
% The Train	\$31	% Byte By Byte		% Mind Roll	\$32	% Planarium	\$51	% Pixmap	\$54	Interchange Object	\$15
<b>ACS</b>		% Byte By Byte		% Mind Roll	\$32	% Tracers	\$19	<b>PSYGNOSIS</b>		Interchange Object	\$15
New! Fort Works	\$67	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$19	% Adventure	\$15	Interchange Object	\$15
% Grade Manager	\$55	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$19	% Arma	\$15	Interchange Object	\$15
% Learning Curve	\$55	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$19	% Bal	\$15	Interchange Object	\$15
% Music Student I	\$43	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$19	% Balistix	\$15	Interchange Object	\$15
<b>ACTIONWARE</b>		% Byte By Byte		% Mind Roll	\$32	% Turbo	\$19	% Barbarian	\$15	Interchange Object	\$15
% Capone	\$28	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% Blood Money	\$15	Interchange Object	\$15
% Creature	\$28	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% Captain Fizz	\$15	Interchange Object	\$15
% Phaser Gun	\$45	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% Chrono Quest	\$15	Interchange Object	\$15
% P.O.W.	\$28	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% Deep Space	\$15	Interchange Object	\$15
% Prison	\$28	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% Fire Brigade	\$15	Interchange Object	\$15
<b>ACTIONVISION</b>		% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% Menace	\$15	Interchange Object	\$15
Battlehawks 1942	\$34	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% Obliterator	\$15	Interchange Object	\$15
Battle Tech	\$34	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% Star Ray	\$15	Interchange Object	\$15
Beyond Zork	\$35	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% Terrors	\$15	Interchange Object	\$15
% Fah	\$31	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	<b>QUESTREK</b>		Interchange Object	\$15
% Gadget Air Rally	\$28	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% Mission Combat	In Stock!	Interchange Object	\$15
New! Journey	In Stock!	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% Carrier Command	\$33	Interchange Object	\$15
% Rampage	\$29	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% Corruption	In Stock!	Interchange Object	\$15
% Shanghai	\$29	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% Silicon Dreams	\$25	Interchange Object	\$15
% Zak MacCracken	\$31	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% Space Cutter	\$20	Interchange Object	\$15
Zork Zero (w/ Graphics)	In Stock!	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% Starblazer	\$33	Interchange Object	\$15
<b>ADDITION WESLEY</b>		% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% Star Wars	In Stock!	Interchange Object	\$15
New! Amiga Manuals (Now w/ 1.3!)	Call	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% UMS Data Disks	Call	Interchange Object	\$15
<b>AEGIS</b>		% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	<b>REINBIRD</b>		Interchange Object	\$15
New! Animagic	Call	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% Carrier Command	\$33	Interchange Object	\$15
% Animator Images	\$87	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% Corruption	In Stock!	Interchange Object	\$15
% Araks Tomb	\$69	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% Silicon Dreams	\$25	Interchange Object	\$15
% Audio Master 2.0	\$63	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% Space Cutter	\$20	Interchange Object	\$15
% Draw 2000	\$39	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% Starblazer	\$33	Interchange Object	\$15
% Impact	\$54	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% Star Wars	In Stock!	Interchange Object	\$15
% Lights Camera Action	Call	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% UMS Data Disks	Call	Interchange Object	\$15
% Models	\$36	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	<b>READYSOFT</b>		Interchange Object	\$15
% Ports of Call	\$36	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% AMAX	\$129	Interchange Object	\$15
% Sonix	\$49	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% Bomb Busters	\$23	Interchange Object	\$15
% Sound Trax 1 or 2	\$49	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% Cosmic Bouncer	\$21	Interchange Object	\$15
% Video Title v1.1	\$97	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% Dragons Lair	\$38	Interchange Object	\$15
% Videopace 3D 2.0	\$122	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% Gnomes	\$38	Interchange Object	\$15
<b>ALPHA</b>		% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% Rock Challenge	\$27	Interchange Object	\$15
% Alpha Fonts (each)	\$15	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% Scary Mutants	\$27	Interchange Object	\$15
% ConSoundTranfer	\$30	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	<b>RGB VIDEO CREATIONS</b>		Interchange Object	\$15
<b>AMIGO BUSINESS</b>		% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% DeluxPaint	Call	Interchange Object	\$15
% Kickwork 1.3	\$39	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% DigPaint, Pagesetter, Photon Paint, and Calligrapher!	Call	Interchange Object	\$15
% (At1000 only)	In Stock!	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	<b>RIGHT ANSWERS GROUP</b>		Interchange Object	\$15
<b>ANCO</b>		% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% The Director	\$45	Interchange Object	\$15
New! Art Of Chess	\$24	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% Director Toolkit	In Stock!	Interchange Object	\$15
% Face Off	\$18	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% Black Shadow	\$25	Interchange Object	\$15
% Las Vegas	\$19	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% Foundation Waste	\$24	Interchange Object	\$15
% Micro Base	\$25	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% I Luddrator	In Stock!	Interchange Object	\$15
% Micro Text	\$25	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% Phantom	\$24	Interchange Object	\$15
% Micro Robbery	\$18	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% Space School Simulator	\$24	Interchange Object	\$15
% Sky Fighter	\$19	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% Synapse	In Stock!	Interchange Object	\$15
<b>ANTIC</b>		% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	<b>SEDONA SOFTWARE</b>		Interchange Object	\$15
New! Bobo	\$24	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% Money Mentor	\$39	Interchange Object	\$15
New! Crash Garrett	\$27	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	<b>SEGA</b>		Interchange Object	\$15
% Human Design	\$24	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% Afterburner	Call	Interchange Object	\$15
New! Future Design	In Stock!	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% Alien Syndrome	\$28	Interchange Object	\$15
% Architectural Design	\$24	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% Out Run	In Stock!	Interchange Object	\$15
% Microbot Design	\$24	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% Shinobi	Call	Interchange Object	\$15
% PHASAR 3.0	\$61	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% Space Harrier	Call	Interchange Object	\$15
% Pioneer Plague	\$27	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	<b>SEVEN SEAS SOFTWARE</b>		Interchange Object	\$15
% Zoetrope	\$92	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% Color Commander	\$21	Interchange Object	\$15
Trozo Silver Data Disks Available!		% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% Doug's Library Disk	\$11	Interchange Object	\$15
<b>AROCK</b>		% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% Doug's Math Aquarium	\$59	Interchange Object	\$15
% Masterpiece Fonts	\$149	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	<b>SOFT CIRCUITS</b>		Interchange Object	\$15
<b>ARTWORK</b>		% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% L. Deber	\$76	Interchange Object	\$15
% Bridge 5.0	\$27	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	<b>SOFTLINK</b>		Interchange Object	\$15
% Centerfold Squares	\$24	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% MultiPrets	\$23	Interchange Object	\$15
% Colossus Chess	\$27	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% SoftLogik	\$28	Interchange Object	\$15
% Linkword Languages	\$24	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	<b>SOFT LOGIK</b>		Interchange Object	\$15
New! Strip Poker II	In Stock!	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% PageStream	\$129	Interchange Object	\$15
% Strip Poker Data (Ea.)	\$15	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% PageStream Forms	Call	Interchange Object	\$15
<b>ASDG</b>		% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% PageStream Fonts	In Stock!	Interchange Object	\$15
% CymusEd	\$25	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	<b>SW ADVANTAGE</b>		Interchange Object	\$15
% FACC II	\$25	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	% Investor's Advantage	\$79	Interchange Object	\$15
<b>AVANTE-GARDE</b>		% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	<b>SWADVENTURE</b>		Interchange Object	\$15
% Benchmark Modula-2	\$134	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	<b>SWADVENTURE</b>		Interchange Object	\$15
% Benchmark C Library	\$71	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	<b>SWADVENTURE</b>		Interchange Object	\$15
% Benchmark IFF Library	\$71	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	<b>SWADVENTURE</b>		Interchange Object	\$15
% Benchmark Simplified	\$71	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	<b>SWADVENTURE</b>		Interchange Object	\$15
<b>BAUDVILLE</b>		% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	<b>SWADVENTURE</b>		Interchange Object	\$15
% Award Maker Plus	In Stock!	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	<b>SWADVENTURE</b>		Interchange Object	\$15
% Award Maker Sports Disk	\$20	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	<b>SWADVENTURE</b>		Interchange Object	\$15
% Dream Zone	\$31	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	<b>SWADVENTURE</b>		Interchange Object	\$15
<b>B.E.S.T. INC.</b>		% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	<b>SWADVENTURE</b>		Interchange Object	\$15
All Products	Call	% Byte By Byte		% Mind Roll	\$32	% Turbo	\$15	<b>SWADVENTURE</b>		Interchange Object	\$15

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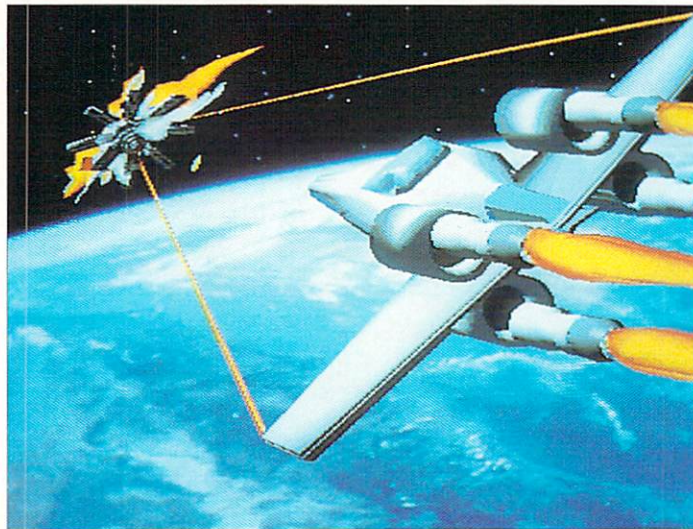
# WHAT'S NEW?

*There's much to be thankful for this month—  
roll up your sleeves and dig in . . .*

Compiled by Jan Jackson

## SPACEY

LIVEN YOUR ANIMATIONS with 3-D futuristic spacecraft drawings. The **Starships 2050 Model Library** (\$39.95 for three-disk set) contains moon bases, fighter craft, probes, satellites, and weapons machinery plus digitized NASA photographs of our solar system for backgrounds. You can use these renderings with either Byte by Byte's Sculpt-Animate series or Impulse's Turbo Silver. Take to the stars by calling Polar Arts, 14145 Janna Way, Sylmar, CA 91342, 818/362-8565. *Reader service number 511.*



Out-of-this-world images.

## SIMULTANEOUS

CONTROL SOUND, graphics, and text in your multi-media presentations with **UltraCard** (\$50). UltraCard can make any portion of your screen a "hot spot." By clicking on this spot with your mouse, you can play a sound, display information, or run other programs. UltraCard supports PAL and NTSC modes, ARexx, and hypertext. Contact Intuitive Technologies, 2700 Garden Rd., Suite 6, Monterey, CA 93940, 408/646-9147. *Reader service number 504.*

## HARMONIOUS COEXISTENCE

OPERATE YOUR flickerFixer and external NTSC genlocks simultaneously in an A2000 with the **flickerFixer Genlock Compatibility Option** (\$50). Your system can generate high-quality VGA-compatible display while genlocking an NTSC sig-

nal because the module mounts onto the flickerFixer board and not in an expansion slot. To bring harmony to your workstation, contact MicroWay, PO Box 79, Kingston, MA 02364, 508/746-7341. *Reader service number 505.*

## GEOGRAPHER'S CORNER

YOU CAN VIEW the terrain of any area of the continental US with **Digital Landscape** (\$124.95). The program produces hi-res 3-D wire-frame renderings and color-coded contour maps. You can adjust the line intervals to see more or less detail on your maps and scale and rotate the wire-frame models 360 degrees.

Saving the renderings as IFF files enables you to load them into other programs to add text, rivers, forests, highways, cities, and so on. Chart a course toward Digiscape Software, PO Box 113058, Carrollton, TX 75011-3058, 214/241-9891. *Reader service number 514.*

## CROSSOVERS

READ AND WRITE 360K and 720K MS-DOS-, PC-DOS-, or Atari ST-formatted disks directly from AmigaDOS with **CrossDos** (\$30) file system. CrossDos works with standard Amiga hardware. With it, you can create directories, set file/directory dates, seek file positions, and allocate cache buffers. To broaden your focus, call Consultron, 11280 Parkview, Plymouth, MI 48170, 313/459-7271. *Reader service number 508.*

## HOUSE OF CARDS

TREAT SCREEN FLICKER in your Multisync monitor with **Flick-Off**. The unit plugs into the Denise socket and uses the Amiga D/A converter and video output. A shrink option lets you fit two non-interlaced screens together on one interlaced display.

**Maximegs** supplies your A500 with fast RAM, chip RAM, and a battery-backed clock. No matter which configuration you choose (512K, 1MB, 1.5MB, or 1.8MB), with a super Agnus chip, your machine will recognize the first 512K as chip RAM. The remainder is used as slow RAM. For pricing and more information on Maximegs or Flick-off, contact M.A.S.T., 3881-E Benatar Way, Chico, CA 95928, 916/342-6278. *Reader service number 510.* ►



### IVS Trumpeard Hard Drive Packages for A2000 Series

Seagate	
8T-157N 49 MEG	519 DEL
8T-177N 60 MEG	749 DEL
8T-277N 180 MEG	819 DEL
8T-296N 80 MEG	649 DEL

Quantum Pro Drive	
40 MEG SCSI Pro Drive	629 DEL
80 MEG SCSI Pro Drive	949 DEL
100 MEG SCSI Pro Drive	1029 DEL

these kits include IVS Trumpeard 6801 hard drive ctrl, cable, software and FREE delivery in the contiguous USA. This is not assembly kit! It is a package.

### Hard Drive Cards (A-2000)

Seagate	
8T-157N 49 MEG	539 DEL
8T-177N 60 MEG	769 DEL

Quantum Pro Drive	
40 MEG SCSI Pro Drive	649 DEL
80 MEG SCSI Pro Drive	969 DEL
100 MEG SCSI Pro Drive	1049 DEL

these cards include IVS Trumpeard ctrl, mounting brkt, cbl, software, and FREE delivery in the contiguous USA.

### IVS INFINIT 40

Removable Media Cartridge Drive Packages	
INFINIT40/.....	1199
INFINIT40S *	1299
INFINIT40D *	1399

\* Requires Trumpeard or Trumpeard 500

### Trumpeard 500 Hard Drive Packages for Amiga 500

Seagate	
ST-157N-49 MEG	579 Delivered
ST-177N-60 MEG	799 Delivered

Quantum Pro Drive	
40 MEG SCSI Pro Drive	679 DELIVERED
80 MEG SCSI Pro Drive	999 DELIVERED
100 MEG SCSI Pro Drive	1079 DELIVERED

These Packages include Trumpeard 500 enclosure, IVS Trumpeard SCSI hd drive Ctrl, Software & free delivery in the contiguous USA.

Trumpeard 500 Ram Expander available  
**512k • 1 MEG • 2 MEG • 4 MEG**

### Seagate SUPER SALE

ST-125N 20 MEG - SCSI	279
ST-157N 49 MEG - SCSI	349
ST-177N 60 MEG - SCSI	569
ST-225N 20 MEG - SCSI	265
ST-251N 40 MEG - SCSI	375
ST-277N-1 60 MEG - SCSI	449
ST-296N 80 MEG - SCSI	479

### Quantum Pro Drives

40 MEG SCSI Pro Drive	529
80 MEG SCSI Pro Drive	899
100 MEG SCSI Pro Drive	929

### XETEC Fast Card

Seagate	
ST-157N-49 MEG	519 Del
ST-177N-60 MEG	749 Del

Quantum Pro Drive	
40 MEG SCSI Pro Drive	629 DEL
80 MEG SCSI Pro Drive	949 DEL
100 MEG SCSI Pro Drive	1029 DEL

Card features Xetec's DMA hard, autoboot ROM, auto-config circuitry, 25 pin SCSI conn, disk, utilities manual. **FREE DELIVERY IN THE CONTIGUOUS 48 STATES**

### XETEC Fast Card System

Seagate	
ST-157N-49 MEG	689 Del
ST-177N-60 MEG	819 Del

Quantum Pro Drive	
40 MEG SCSI Pro Drive	819 DEL
80 MEG SCSI Pro Drive	1139 DEL
100 MEG SCSI Pro Drive	1219 DEL

System includes Adaptor with autoboot ROM, enclosure, manual, Fast Track disk with utilities & shielded SCSI cable. With power supply and fan. **FREE DELIVERY IN THE CONTIGUOUS 48 STATES**

**CALL US FOR ALL YOUR COMMODORE AMIGA NEEDS**

### MASTER 3A Disk Drive

1010 Compatible	<b>\$125</b>
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\*Free Delivery to the Contiguous States

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**PANASONIC 1410 CAMERA**  
**16MM LENS WITH VARIABLE IRIS**  
**COPYSTAND WITH LIGHTS**  
**DIGIVIEW GOLD**  
**\$419 DELIVERED!**

### PRINTERS

Panasonic 1180 NEW NEW NEW	185
Panasonic 1191 NEW NEW NEW	CALL
Panasonic 1124 NEW 24 Pin	299
Star NX-1000	159
Star NX-1000 Multi Font 2 NEW NEW NEW	179
Star NX-1000 Rainbow (color)	219
Star NX-2400	275

### Modems

Amiga 1680 Modem	99
Avatec 1200E	69
Avatec 2400	139
Avatec 2400E	109
Avatec 9600 External NEW!	839
Supra 2400z Internal (A2000)	139

**Supra 2400 Ext. Modem & Cable**  
**• \$125 •**  
**FREE DELIVERY to the 48 Contiguous States**

1943	25.95	Combat Course	25.95	Federation	31.95	Jigsaw	30.95	Off Shore Warrior	24.95	Raw Copy	34.95	T.V. Sports Basketball	30.95
3D Options	31.95	Comic Serfer	59.95	Femur Formula 1	31.95	Jinls	18.95	Omega	31.95	Reel Lighting	38.95	T.V. Sports Football	30.95
3D Road	22.95	Comic Art Disk (each)	20.95	Fendish Freddy	31.95	Joan of Arc	28.95	Omni Baseball	31.95	Reel Fish'n	29.95	Talepin	31.95
4th and Inches	28.95	Contrit	25.95	Fire Print	28.95	Joe Blade	19.95	Omniplay Baseball 5 on 5	31.95	Renegade	22.95	Tanglewood	24.95
4th and Inches	28.95	Crasy Cars	24.95	Fire and Forget	24.95	Journey	31.95	On Line Platinum	58.95	Return to Atlantis	13.95	Technopac	31.95
4th and Inches	28.95	Crasy Cars	24.95	Free Zone	22.95	Kampgruppe	38.95	Operation Clean Streets	25.95	Revenge of Defender	21.95	Temple of Doom	31.95
4th and Inches	28.95	Cribbage King/Gin King	38.95	Free Zone	22.95	Karofants Headline 1 or 2	44.95	Operation Wolf	22.95	Rhyming Notebook	31.95	Tetrisquest	24.95
4th and Inches	28.95	Crytal Clear Turbo	17.95	Right Simulator II	31.95	Karofants Subhead	44.95	Optics	117.95	Rick Dangerous	31.95	Tetris	20.95
4th and Inches	28.95	Cyber Buster	19.95	European Scenery Disk	21.95	Keep the Thief	31.95	Orkoid	23.95	Rick Davis Soccer 1 Meg	29.95	Test Ed Plus	48.95
4th and Inches	28.95	Cyber Complex	21.95	Flow	59.95	King of the Ring	31.95	Orkoid	23.95	Rick Davis Soccer 512K	24.95	Test Drive 2: The Duel	27.95
4th and Inches	28.95	Daily Double Horse Racing	19.95	Focus Video	107.95	King's Quest V	31.95	Page Reader 3-D	24.95	Ring Side	24.95	Test Drive 2: The Duel	27.95
4th and Inches	28.95	Daily Double Horse Racing	19.95	Forgotten Worlds	24.95	King's Quest V	31.95	Page Reader 3-D	24.95	Ring Side	24.95	Test Drive 2: The Duel	27.95
4th and Inches	28.95	Daily Double Horse Racing	19.95	Formation	44.95	King's Quest V	31.95	Page Reader 3-D	24.95	Ring Side	24.95	Test Drive 2: The Duel	27.95
4th and Inches	28.95	Daily Double Horse Racing	19.95	Front Page	24.95	King's Quest V	31.95	Page Reader 3-D	24.95	Ring Side	24.95	Test Drive 2: The Duel	27.95
4th and Inches	28.95	Daily Double Horse Racing	19.95	Future Design Disk	72.95	King's Quest V	31.95	Page Reader 3-D	24.95	Ring Side	24.95	Test Drive 2: The Duel	27.95
4th and Inches	28.95	Daily Double Horse Racing	19.95	Galactic Conqueror	28.95	King's Quest V	31.95	Page Reader 3-D	24.95	Ring Side	24.95	Test Drive 2: The Duel	27.95
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4th and Inches	28.95	Daily Double Horse Racing	19.95	Indiana Jones	30.95	King's Quest V	31.95	Page Reader 3-D	24.95	Ring Side	24.95	Test Drive 2: The Duel	27.95
4th and Inches	28.95	Daily Double Horse Racing	19.95	Indiana Jones	30.95	King's Quest V	31.95	Page Reader 3-D	24.95	Ring Side	24.95	Test Drive 2: The Duel	27.95
4th and Inches	28.95	Daily Double Horse Racing	19.95	Indiana Jones	30.95	King's Quest V	31.95	Page Reader 3-D	24.95	Ring Side	24.95	Test Drive 2: The Duel	27.95
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4th and Inches	28.95	Daily Double Horse Racing	19.95	Indiana Jones	30.95	King's Quest V	31.95	Page Reader 3-D	24.95	Ring Side	24.95	Test Drive 2: The Duel	27.95
4th and Inches	28.95	Daily Double Horse Racing	19.95	Indiana Jones	30.95	King's Quest V	31.95	Page Reader 3-D	24.95	Ring Side	24.95	Test Drive 2: The Duel	27.95
4th and Inches	28.95	Daily Double Horse Racing	19.95	Indiana Jones	30.95	King's Quest V	31.95	Page Reader 3-D	24.95	Ring Side	24.95	Test Drive 2: The Duel	27.95
4th and Inches	28.95	Daily Double Horse Racing	19.95	Indiana Jones	30.95	King's Quest V	31.95	Page Reader 3-D	24.95	Ring Side	24.95	Test Drive 2: The Duel	27.95
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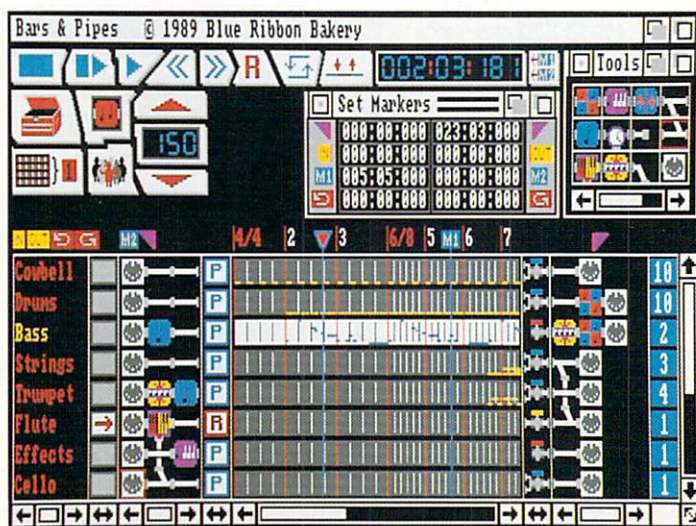
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## CARRYING TUNES

**BARS & PIPES**, an object-oriented musical composition system, helps you guide your musical input from conception to performance. The package consists of four elements. Within the Pipeline module, you arrange pipe-and-valve graphics (each pipeline represents one track) to determine the flow of your input. In the Toolbox, you will find icons

each of two MIDI inputs, MIDI merging, two independent processors, universal-channel changing, event filtering, selectable auxiliary MIDI output, and programmable battery-backed memory. Get the details from Future Music, Box 1090, Reno, NV 89504, 702/826-6434. *Reader service number 515.*

A "dynamic riff sequencer,"



Musical plumbing.

for a note splitter, transposer, and other tools. Click these icons and place them on individual pipes in any order to modify the information that flows through them. You can record any number of tracks in the Sequencer, and then fine tune your scores with the Editor. You can edit key, rhythm, and chord-change information for algorithmic compositions and hear each note as you alter it. Call Blue Ribbon Bakery, 1248 Clairmont Rd., Suite 3D, Atlanta, GA 30030, 404/377-1514. *Reader service number 512.*

For musicians with MIDI connection problems and limited space and funds, the compact **Pelican MIDI Processor** (\$149) might be a viable solution. The unit features a channel and event-processor for

**Hyperchord** lets you manipulate sequences of 40 notes or less (riffs) by varying rhythm, pitch, and order in real time. In Design mode, you can create riffs and variations of them using functions such as smear, rotate, weave, reverse, and mix. Plat mode lets you improvise and loop riffs in the bank provided. To create larger musical movements, simply string your sequences together.

On the lighter side, **Pix-ound** provides an unusual diversion—a musical screen interpreter. Load any graphic into the program, and Pix-ound translates the red, green, and blue content of each pixel into chords. Then, simply move your mouse cursor



across the screen to hear what you see. Both Pixound and Hyperchord use MIDI in addition to the Amiga's internal voices. For artistic motivation,

call Hologramophone Research, 331 E. 14th St., Suite 4B, New York, NY 10009, 212/529-8845. *Reader service number 513.*

## WITH DESIGN IN MIND

THE ORIGINAL developer of X-CAD, Cadvision International, regained control of the product and has now produced a streamlined version. In addition to a revised interface, **X-CAD Designer** (\$149.95) features architectural, electrical, electronic, or mechanical symbol libraries. External file formats supported include AutoCAD DXF, IFF, and Aegis Draw Plus. To get back to the drawing board, contact American Software Distributors, RR 1 Box 290, Bldg. 30, Urbana, IL 61801, 217/643-2050, or in the UK: Cadvision International, Lon-

don, England, 1-602-2627. *Reader service number 506.*

**DataPlot** lets you turn ordinary numeric data into graphs of various sizes. The program accepts ASCII files generated by other programs and plots them onto your screen or, with its print option, onto paper. You can label your charts with scale information and other text in file as text strings. Bytes and Bullets can fill you in on details: Rt. 3 Box 3532, Manchester, TN 37355, 615/596-2077. *Reader service number 507.*

## PERIODICALS

GETTING YOU INTO print via desktop publishing is **Saxon Publisher's** intent with features like professional four-color separations, bitmapped textures on text, and structured drawings. For \$445 you get EPS support, vertical justification, and drop caps. If this package suits your style, contact Saxon Industries, 14 Rockcress Gardens, Nepean, Ontario, Canada, K2G 5A8, 613/226-2355. *Reader service number 502.*

**Professional Page VI.3** (\$395 US), the latest version of Gold Disk's desktop-publishing package, includes Compu-graphic outline-font technology supporting dot matrix, inkjet, and LaserJet compatible printers. The program's proprietary font-caching scheme allows on-screen character representations at any point size.

In addition, Gold Disk is offering two-supplementary products both retailing at \$59.95 for use with Pro Page. The **Professional Page Templates and Design Guide** contains over 50 configured templates on disk and a manual with design and layout tips. Preset type specifications include typeface, size, style, justification, and text run-around. The **Structured ClipArt** package includes graphics for a variety of topics: sports, holidays, maps, food, and basic symbols. For full-page coverage, contact Gold Disk, PO Box 789, Streetsville, Mississauga, Ontario, Canada, L5M 2C2. *Reader service number 503.* ■

## MOZART NEVER HAD IT THIS GOOD!

Sure, ol' Wolfgang Amadeus was a prodigious musician. And how many composers of the 18th century can say they've been on Broadway, won an Oscar and had an obnoxious German pop song written about them? *But Mozart never reached his full potential.* Why? Simply put, he never used **Bars&Pipes**, the creative musical advantage.

Take a look at **Bars&Pipes'** four major elements and prepare to break the barriers of your imagination!



The **Pipeline** guides your musical input from conception to performance. By arranging the pipes and valves, you can direct the flow of musical information on a track-by-track basis. Each **Pipeline** can process information prior to or after it's recorded for the ultimate in flexibility.



**Bars&Pipes' Toolbox** is chock full of musical magic that processes MIDI information as it flows through the Pipeline. Explore new horizons with such Tools as the *keyboard splitter, event filter, randomizer, chord substituter, inverter, transposer, phrase-shaper, harmony generator, counter-*

*pointer and quantizer*, just to name a few. Or, invent your own macrotools with **Bars&Pipes, Create-a-Tool** feature. Because **Bars&Pipes** is an open-ended system, there's no limit to what you can do as new tools become available.



**Bars & Pipes, Sequencer** has no limit to the number of tracks you can record. Simply drag your tools of choice onto the **Pipeline**, tickle the ivories (or plastics as the case may be) and presto-change-o, a star is born! Features include: Global cut, copy and paste commands; Auto-locate registers; Punch in and out; Looped mode recording; Global display of music on all tracks; A-B-A global song construction and editing; High resolution timing (192 clicks

per quarter note); Tempo maps; Sync to external MIDI or MIDI Time Code; Audible Metronome; Rhythm, chord, key, lyric and time signature input; MIDI file format compatibility.



**Bars&Pipes** sports the most complete **Editor** of any musical package. Take your pick of a piano roll format or see your music displayed as bars on a staff. Open multiple edit windows at once. Drag notes with the mouse. Cut, copy or paste your music. Use **Tools** to process sections on a note-by-note or phrase-by-phrase basis. Type your lyrics directly over the music and **Bars&Pipes** will print out a lead sheet. Edit key, rhythm and chord change information for algorithmic composition.

With **Bars&Pipes**, you'll never have to carry a tune in a bucket again! And, you don't have to have some bizarre Latin middle name to become a virtuoso.

So, for all the details we couldn't squeeze into a 1/2 page ad, write or call us at:

**Blue Ribbon Bakery**  
1248 Clairmont Road, Suite 3D  
Atlanta, Georgia 30030  
(404) 377-1514





# HORS D'OEUVRES

*An assortment of tips and techniques*

*from fellow Amiga users.*

**Compiled by Tim Walsh**

## WORDPERFECT SPELL CHECKING

IF YOU USE WordPerfect with one or more megabytes of RAM, you're in for a treat the next time you want to spell check one of your documents.

The Amiga version of WordPerfect is painstakingly slow when performing a spell check, simply because the computer has to access the disk drive to check the spelling of each word. Not only is this inefficient, but it also puts a lot of wear and tear on your disk drive.

Here's a way to copy the spelling checker to RAM to make this process lightning fast. First, enter the following script file on your favorite text editor, such as ED or TextED Plus:

```
CD DF0:
ECHO "Copying LEX.WP to RAM:"
COPY SPELL.THES:LEX.WP
  to RAM:
Path RAM:
CD DF0:
ECHO "Spell checker is now in RAM!"
```

For demonstration purposes, save this file to disk with the filename RAM-SPELL. When ready, activate it from the CLI with the following command:

```
EXECUTE RAMSPELL
```

(Since the LEX.WP is quite large (290K), it takes a while to copy to RAM.) Now, activate WordPerfect, load the document to be spell checked, and select the "Spell. . ." option from the Special menu. At the "Enter path to dictionary file:" prompt, enter RAM:LEX.WP and the spell-checking process will proceed as it normally does, except in a fraction of the time and with no floppy-disk access.

When you're finished, the spell checker can be removed from memory by entering DELETE RAM:LEX.WP.

The only limitation to this process is that it is not a good idea to run WordPerfect, its accompanying Print program, and my RAM spell checker all at once. Not only does it create unnecessary overhead, but insufficient-memory errors could occur on systems equipped with 1.5MB or less RAM.

*Mark Gillman*

*Winnipeg, Manitoba, Canada*

## SAVING PRECIOUS MEMORY

MINIMIZING MEMORY USAGE is essential when running word processors and other application programs on A500s and A1000s equipped with only 512K. Programs such as excellence! and PageStream won't print on 512K machines. Likewise, even Amigas equipped with one megabyte of RAM occasionally crash or get bogged down when multitasking on memory-intensive programs.

One simple solution is to run your applications with Workbench deactivated, which saves 16880 and 13480 bytes of Fast and Chip memory, respectively. This is enough additional free memory to print with both excellence! and PageStream on 512K machines.

Eliminate Workbench by holding down the CTRL and D keys simultaneously during power-up or after a reset; this will bring up a \*\*BREAK - CLI window. At the prompt, enter CD DF0: or the appropriate drive name that holds the file to be activated and press Return. Next, enter STACK 16000 at the next prompt and press Return again. Finally, enter the name of the file to be activated (e.g., ATALK3, EXCELLENCE!, WP, etc.). The only disadvantage to this process is that all other applications also need to be activated from the CLI until

you bring Workbench back to life by either resetting the computer or running the startup-sequence from the CLI.

*K. W. Spry*  
*Huntersville, NC*

## AUTOMATIC AMIGA BASIC BACKUP

IF YOU'VE EVER lost an Amiga Basic program because you forgot to back it up, here's some unique AmigaDOS 1.3-compatible program-protection insurance. Just add the following lines to the beginning of your BASIC code:

```
version$ = MID$(STR$(CLNG
(TIMER)),2)
PRINT "Saving as rad:BACKUP";
version$;
SAVE "rad:backup" + version$
PRINT "...done!"
'the program continues here
```

The TIMER command in the first line assigns the filename an incrementing number, to prevent erasing earlier versions of the program already saved. RAD is used in place of RAM as the destination device, because its contents are not as volatile and can survive a warm reboot, which RAM contents cannot.

*Mark Kelly*  
*Swan Hill, Victoria, Australia*

*Editor's note: To configure a RAD disk with the default AmigaDOS 1.3 filename of RAMB0, execute the following from a CLI:*

```
MOUNT RAD:
IF NOT EXISTS RAD:c
MAKEDIR RAD:c
COPY C:COPY TO RAD:c
COPY C:DIR TO RAD:c
ENDIF
PATH ADD RAD:c ■
```



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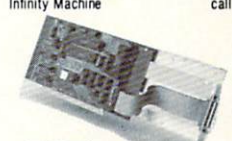
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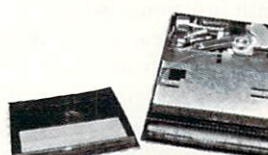


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# HELP KEY

*The techie talks turkey to untangle  
your troubles.*

By Louis R. Wallace

## SCIENTIFIC GRAPHING

**Q:** *I have been looking for a scientifically oriented graphing program for quite some time, but I have failed so far. What I need is data graphs, best fit curves, linear regression, and so on. Have you heard of anything like that for the Amiga?*

**Benis Babusis**  
Downey, CA

**A:** While I can't think of anything specific, a couple of "maybes" come to mind. One that I know of is Descartes! (Mindware International, 110 Dunlop St. W., Barrie, Ontario L4M 5R3, Canada). This is a scientific, programmable graphing package with a fair number of math functions, including some calculus features, such as derivatives. You can create graphs of your data sets and save them as IFF images that can be used in paint or desktop-publishing programs.

Another possibility is I.C.E. (King Publishing, 921-32nd St., Sioux City, IA 51104), which creates custom programmable calculators with a built-in BASIC-like language that supports some data graphing. Besides general math and trig features, the programming language has commands like CORL (returns correlation coefficient), MEAN and STANDARD DEVIATION. Using I.C.E., you

could create dedicated calculators for your needs.

## MISPLACED FORMAT

**Q:** *I have a problem using the FORMAT command from the CLI. Under 1.2, you could type:*

*FORMAT DRIVE DF1:  
NAME DISKNAME*

*and it would format a disk in drive 1. Whenever I try to use FORMAT under 1.3, I get an "unknown command" error message. The weird part is that it works fine from the Workbench using the Initialize option. Was the CLI FORMAT command removed in 1.3?*

**S. Whitehall**  
Akron, OH

**A:** You can still use FORMAT from the CLI in 1.3, but the command was moved from the C: directory to the System directory. Just type:

*SYS:SYSTEM/FORMAT  
DRIVE DF1: NAME  
DISKNAME*

and the CLI will get the FORMAT command from the System drawer on whatever drive you are using as your Workbench.

## QUICK CAN BE SLOW

**Q:** *Has MicroSoft ever released an Amiga version of their QuickC? I saw it listed in the AmigaWorld Software Buyer's*

*Guide (December '88), but so far I haven't been able to buy it.*

**J. Elam**  
Dunwoody, GA

**A:** To date, the only Amiga product that MicroSoft has released is Amiga Basic. I have heard of possible ports of some MicroSoft products to the Amiga, but so far these remain merely rumors.

## BETTER BRIDGES

**Q:** *I have an A2000HD with an A2088 Bridgeboard. Can I boot MS-DOS directly from my hard disk? Will Commodore upgrade the PCWindows software to handle EGA graphics?*

**P. Heinrich**  
Eugene, OR

**A:** When booting with the Bridgeboard you can bypass your MS-DOS floppy disk. The trick is to use the /s option with the FORMAT command when you format your MS-DOS hard disk. This will install the proper MS-DOS files on the disk, making the hard disk bootable. After formatting, copy all your MS-DOS files to the hard disk so they will be available on bootup.

As for EGA compatibility, I haven't heard of any plans to upgrade the Bridgeboard to support EGA display modes via the Amiga, and I doubt we will see such an upgrade any time soon. For now, you can

install an EGA graphics card in one of the A2000's PC slots and connect an EGA compatible monitor to the card. Such a two-monitor system has the advantage of the Bridgeboard display updating at full speed.

## POPULATION GROWTH

**Q:** *I want to upgrade my A500's memory and have seen ads for 1.5 megabyte boards with OK. Would I have to buy the RAM for such a board, or would the board already have the 1.5 megabytes so I wouldn't have to add any RAM?*

**V. Nhan Lam**  
Arncliffe, Australia

**A:** The OK means the board has no RAM on it; you will have to buy the chips yourself and plug them into the board. Boards are sold empty so that the customer can shop around for the best RAM price.

## HIT A GUSHER

**Q:** *In reference to "Gone Dry" (Help Key, September '89, p. 92), you can order ink cartridges for the Canon PJ1080A from Canon USA. Call the main office at 516/488-6700 and ask where the nearest Canon office is in your area.*

**J. Tice**  
Oxford, AL

**A:** Thanks Jerry! ■



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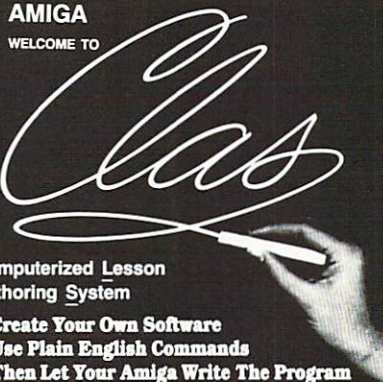
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52	57	62	67	72	252	257	262	267	272	452	457	462	467	472
53	58	63	68	73	253	258	263	268	273	453	458	463	468	473
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176	181	186	191	196	376	381	386	391	396	576	581	586	591	596
177	182	187	192	197	377	382	387	392	397	577	582	587	592	597
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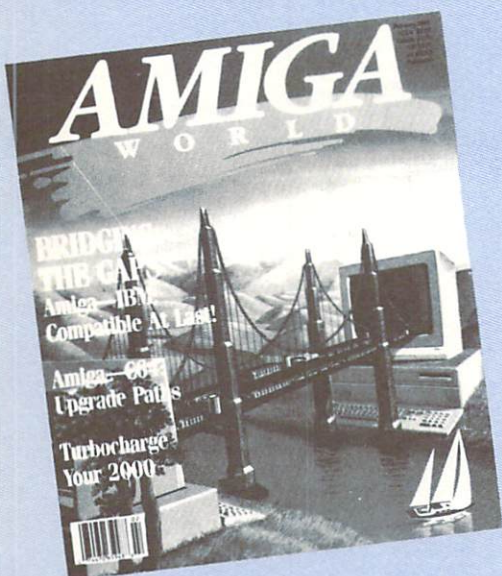
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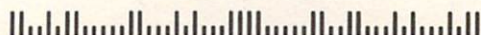
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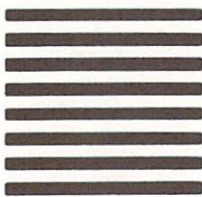
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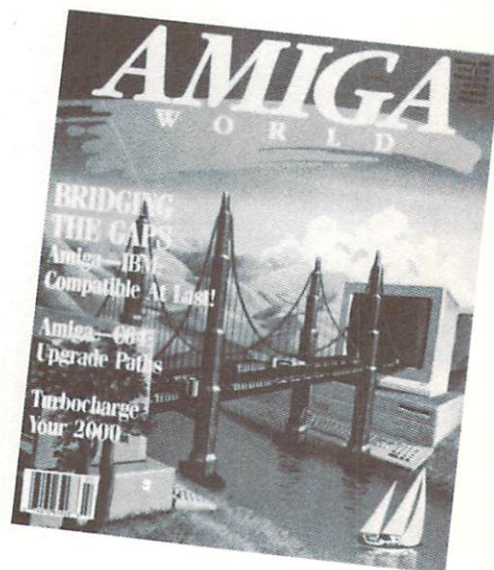
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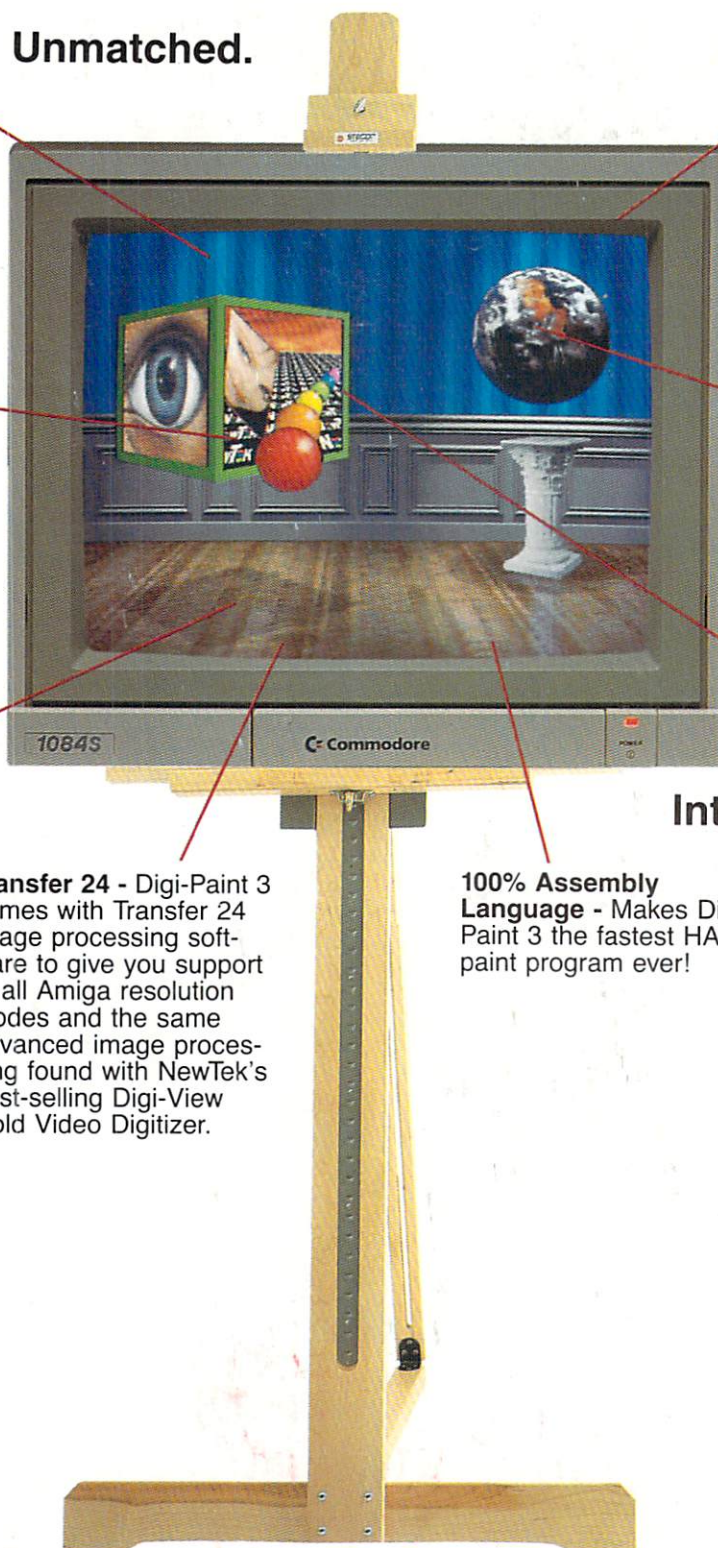
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