

**DISK
INSIDE!**

TOP SECRET! Commodore's Hot New Machine Revealed!

AMIGA

**SPECIAL
\$12.95 USA
\$12.95 Can.**

AMIGA®

RESOURCE

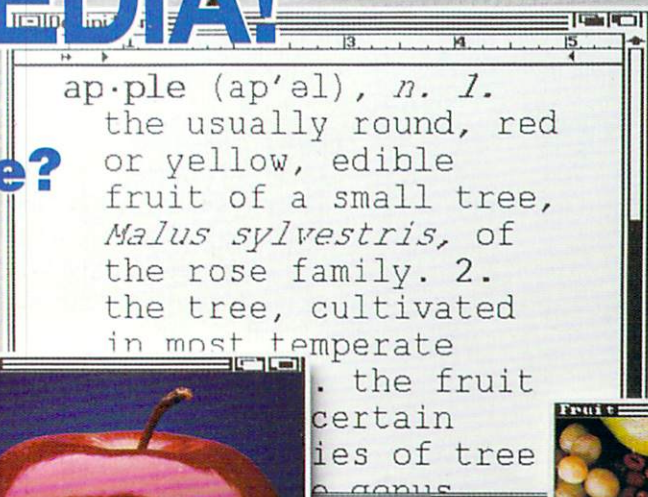
JUNE 1990

• 76046

A **COMPUTE!** Publication

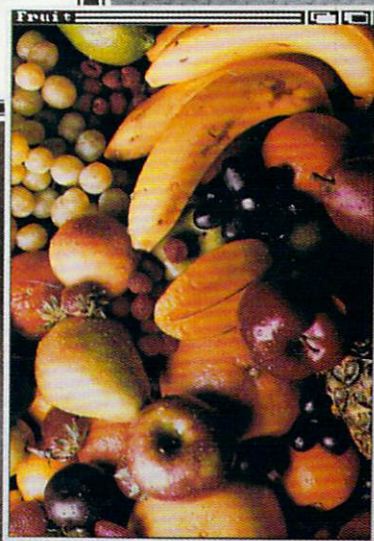
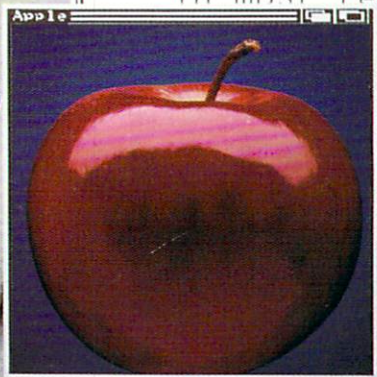
HYPERMEDIA!

- **What Is It?**
- **What's Available?**
- **How Can It Work for You?**

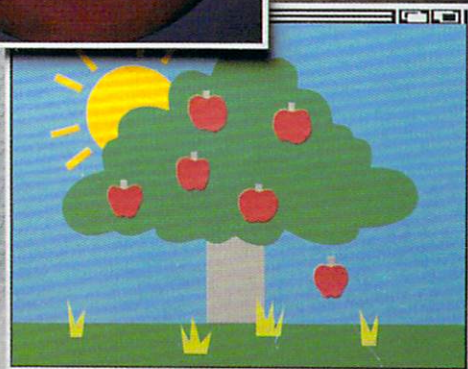


GRAPHICS & VIDEO

- **In-Depth Scanner Comparison**
- **Desktop Video Software Explained**
- **Interview with Artist Brad Schenck**



STOP INTERLACE FLICKER



1990 READER SURVEY

READY-TO-RUN PROGRAMS ON DISK!

BREAK DOWN
Killer graphics and sound make this game a knockout

FACE
Creates custom interfaces for hard-to-use programs

ROTAR
Aligning tubes placed on rotating disks is harder than it looks

RD
A small, fast, and flexible file reader

ICON MASTER
Design colorful icons with this shareware classic
And More!

USA \$12.95 Canada \$12.95



0 14018 76046 7 06

Three New Releases From Free Spirit Software

BARNEY BEAR *Goes To School*



It's the first day of school for Barney Bear!

Barney Bear Goes to School is a musical, colorful game for children ages 3-8. The game contains counting games, letter games, colors, shapes, and a painting easel where you can fill-in-the-colors on over a dozen different pictures. Even young children can enjoy **Barney Bear** with no adult supervision required.

Retail Price \$34.95

Sick of space shoot-em-ups? Ever wanted to fly around on the back of a giant green dragon?

Well, here's your chance!

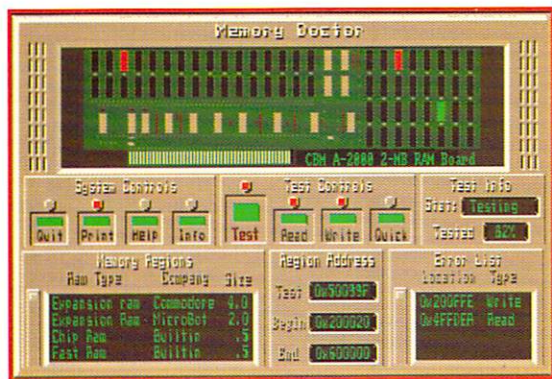
DRAGONSCAPE

Dragonscape is the wackiest, fastest, toughest, most addictive fantasy shoot-em-up to appear on the Amiga.



Retail Price \$39.95

DOCTOR AMI..



From the creator of **Ami..Alignment System** comes **Doctor Ami..**, a hard drive and memory diagnostic utility for the Amiga line of personal computers.

Doctor Ami.. can be used by any average Amiga user to test the integrity of both system RAM (including all expansion cards) and a hard drive. Bad memory locations and bad hard disk sectors are identified and mapped out.

Retail Price \$49.95

Free Spirit
Software



To order, see your local dealer or contact:
Free Spirit Software, P.O. Box 128, 58 Noble Street, Kutztown, PA 19530. Or call (215) 683-5609.

Circle Reader Service Number 108

Rings of Medusa



GAME OF THE YEAR 1990?

You'll love
this game—
We
guarantee it!

Discover on your own if this claim is true as you, the young Crown Prince of Morenor, challenge the evil goddess Medusa. Conduct trade, gamble in the Casino of the Trolls, find treasures, equip an armada of ships and engage in sea battle. Hire and fire warriors for your land army and go into battle. Explore 33 cities, 13 castles and 3 islands. Find the five magic rings of the kingdom and put them together in the Temple of the Athenians. It is your only hope to call Medusa into battle.

- 3500 Kbyte of data, over 500 Kbyte of digitized sound
- Beautiful graphics, excellent strategy and game action
- Weeks and months of game experience

STAR GAMES
708 W. BUFFALO AVE., SUITE 200
TAMPA, FL 33603

Can't find RINGS OF MEDUSA? For orders only, call: 1-800-783-8023. Retail price: \$49.95. Available for: Commodore Amiga, IBM PC, Tandy, 100% Compatibles and Atari ST. All product and brand names are trademarks or registered trademarks of their respective companies.



DR. OXIDE SLICES PRICES!

Comp-U-Save's cost-cutting clinician is at it again! This month Dr. Oxide, a bargain-basement surgeon if ever there was one, offers the industry's lowest prices on hardware and software, plus special deals on products available only through Comp-U-Save!

BUILD YOUR OWN HARD DRIVE KITS!

5 1/4" powered hard drive chassis with fan
3 1/2" powered hard drive chassis with fan **only \$120.00 each**

500 SCSI interfaces w/passthru and software

\$189.99 w/room for 2 megs

*All you need is a SCSI hard drive
and you're ready to Rock and Roll!*

A1000 SCSI—\$215.00

Call for SCSI hard drive prices

AMIGA PUBLIC DOMAIN

OVER 900 DISKS!

Largest Amiga PD Library in the World!

also C-64 & C-128 — Amiga PD — \$4.00 each

Write for Free Catalogue

VIDEO/DESKTOP PUBLISHING

Video and desktop publishing packages are our specialty. Please call for advice on what package will suit your needs. From beginner to professional our staff can help you make the right decision on the hardware and software you need, at the right price to fit your budget.

M.A.S.T.

UNIDRIVE		\$125
TWINDRIVE		\$239
AMIG-A-TOSH		\$175
AMIG-A-TOSH+		\$209
MICROMECS 512K		\$125
MINIMECS	A500	A1000
1 MEG	\$340	\$375
2 MEG	\$499	\$535
TINY TIGER II HD		CALL
INFINITY MACHINE		CALL

Amiga Hard Drives 500 - 1000 (add \$75)

20 Meg—\$525.00 32 Meg—\$645.00 45 Meg—\$720.00

Amiga External Drive \$139.99

Only Uses Half the Power of 1010—with Pass thru

Amiga 2000 Internal Drive \$95.00

Panasonic WV 1410 Video Camera

For Digitizers—\$189.99 16 MM Lens—\$25.99

Special 2400 Baud Modem w/cable—\$129.99

Comp-U-Save

410 Maple Avenue, Westbury, NY 11590



DR. OXIDE
VOTED
BEST-LOOKING
DEALER
2 YEARS
IN A ROW!

A2000 HARD CARDS!

30 megabyte	25 ms	\$565.00
40 megabyte	11 ms	\$640.00
45 megabyte	25 ms	\$659.00
80 megabyte	11 ms	\$975.00

MEMORY BOARDS!

A2000	8 meg board w/2 megs	\$349
A500	2 meg board w/2 megs	\$440
A1000	1.5 meg board w/1.5 megs	\$375

SONY DISKS DS/DD 3.5" \$79

*NEW! ADVANCED GRAVIS JOYSTICK \$36.99

NEW GRAVIS MOUSESTICK \$79.99

CHIPS — CHIPS — CHIPS... call!

★ We carry tons of hardware and software
for the Amiga. Call for prices.

We welcome dealer inquiries on all our products.

MONTHLY HARDWARE SPECIALS

SYQUEST 44 MEG REMOVABLE - 5.25"
W/CARTRIDGE - 25 MS **\$799**

PRORAM 1.8 MEG A500 OK **\$125**
HURRICANE BOARDS **CALL**

In NY State (516) 997-6707 (Tech Support)

Outside NY State (800) 356-9997 (Orders Only)

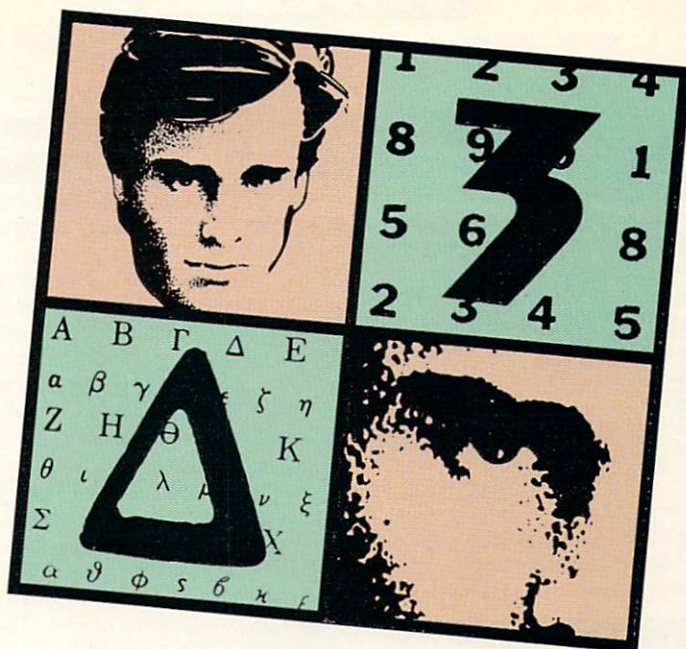
FAX (516) 334-3091

FEATURES

- 28 Hypermedia**
Where it's been and where it's going
Steven Anzovin
- 34 Scanners**
It's a new video world with today's scanners
Sheldon Leemon
- 42 Desktop Video for Beginners, Part II**
More helpful tips and useful programs
Fred Hurteau
- 50 Profile of Brad Schenck**
The award-winning artist and his work
Ben and Jean Means
- 74 Readership Survey Results**
Our typical reader finds a voice

DEPARTMENTS

- 4 The Window**
AmiExpo, cherry blossoms, and Jay Miner
- 5 Trends**
News, new products, and rumors
Mickey McLean and Sheldon "The Ear" Leemon
- 9 Readers' Feedback**
Bridgeboard sound, flicker fixing, and more
- 19 Spotlight on Telecommunications**
Modem tips for online addicts
John Foust
- 21 CLI Clips**
Commands and data
Jim Butterfield
- 23 Ask Rob Peck**
Straight answers to common questions
Rob Peck
- 76 Programmer's Page**
Disk-based fonts
Daniel Stockton
- 91 Best of the Boards**
IconMaster—the popular icon editor
- 94 Amiga Art Gallery**
Computer art on display



COLUMNS

- 17 Abstractions**
The Amiga X—Commodore's new baby
Arlan Levitan
- 25 Just for Fun**
Space: the final frontier
Shay Addams
- 96 Taking Sides**
Hacking the hardware
Rhett Anderson vs. Randy Thompson

28

REVIEWS

- Bars & Pipes**
Peggy Herrington
53
- Metaphor Memory Board**
Morton Kevelson
55
- DeluxeVideo III**
Steven Anzovin
57
- Mini-Reviews**
Amiga Resource looks at monstrous ants, weird parlor games, cyborg police, religious software, a lizard on the make, and more
59



57

ON DISK

67

Break Down, Rotar, Rd, Face, and more

How to Use the Disk 75

Perspectives from the Editors

Perhaps it was the cherry blossoms blooming, but the mood at the March AmiExpo in Washington, D.C., was decidedly positive. Maybe that's because the rumors of the new generation of Amigas were coming to a head.

On Sunday, every Amiga owner's hero, Jay Miner, said that he had seen the 3000 and the new operating system. He was impressed. He also speculated that in about a year we'll see new Amiga custom chips that display 4,096 colors on a screen in standard modes and a new HAM mode which can display over 60,000 colors at once. This would make the Amiga's graphics better than the IBM's VGA displays but still not as good as the Macintosh's 24-bit displays. Not to worry, Miner says, those Amiga owners who need true color for their applications can buy plug-in cards to give them those colors.

Other products impressed the crowds. Digital Creations, famous for its genlocks, showed a new product called DCTV, a peripheral that plugs into your RGB monitor port and your parallel port to give you television-quality images. You can capture video images from a color camera, videodisc, or high-quality VCR. These images, which contain up to 4 million colors, take up a mere 64K of RAM—and even less

space on disk. Television-quality animations are possible. The company promises a paint program and more add-on hardware for the unit.

Cryogenic Software gave us a preview of *3-D Professional*, a program which will be marketed by Progressive Peripherals. This program (which has been in the works for three years) boasts the best user interface I've ever seen for a 3-D program. Although it doesn't yet have a ray-tracing option (one is promised for the near future), it does produce some impressive images.

Gold Disk was excited about its new program, *Show-Maker*, which can replace an editing studio by allowing you to string together animations and stills to create presentations and videos. The sophisticated music support that's included allows you to synchronize the onscreen action to the beat of the music. The program can also control external devices, such as genlocks and videodiscs.

It was the first time that NewTek didn't have a booth at AmiExpo, but the company still managed to steal the show. The magicians Penn and Teller used the upcoming Video Toaster to produce a videotape that made its way through the hotel parties. Just about everyone was shocked by the Toaster's broadcast-quality graphics and special effects.

On another topic, our \$10,000 programming contest has ended. We're just now in the midst of sorting through the programs to select the winners. We received some pretty amazing programs which we'll soon be including on our disks. We think you'll be pleased as the *Resource Disk* continues to get better and better. Next issue, we'll introduce you to the winners of the contest.

Although the contest is over, we'll still be looking for great programs to put on our disk. If you're a programmer, send us your best work. If we like it, we'll send you a contract.

—Rhett Anderson

Looking ahead . . .

What do word processors, Warner Brother movies, and NewTek's Video Toaster have in common? They're all featured in the next issue of *Amiga Resource*. We also have former *Amiga Transactor* editor Paul Bosacki doing a follow-up on our "Inside the 500" feature. This time we'll be dissecting an Amiga 2000.

And what about the Amiga 3000? Although we've seen it, we can't talk about it until next issue (publishing lead times and nondisclosure agreements can be quite restrictive). But never fear, this and other new Commodore products will be revealed in our usual, no-holds-barred style. Our technical staff can't wait to put these products to the test. Can the 3000 float? We'll soon find out.

By the way, Rhett and Randy seem to have gone off the edge and are now arguing about grocery sacks: paper or plastic, which should you choose? (It must be the North Carolina heat.) By next issue, however, we promise to get them back on track. Paper or plastic? Sheesh! Don't these guys have anything better to do?

COMPUTE! PUBLICATIONS

Group Vice President,	William Tynan
Publisher/Editorial Director	Lance Elko
Associate Publisher/Editorial	
Associate Publisher/	
Advertising	Bernard J. Theobald, Jr.
Managing Editor	Kathleen Martinek
Editorial Operations Director	Tony Roberts
Features Editor	Keith Ferrell
Editorial Marketing Manager	Caroline D. Hanlon
Advertising Marketing Manager	Kathleen Ingram
Manager, Disk Products	David Hensley, Jr.

AMIGA RESOURCE

EDITORIAL DEPARTMENT

Associate Editors	Rhett Anderson
	Randy Thompson
Senior Art Director	Janice R. Fary
Senior Program Designer	Tim Midkiff
Assistant Technical Editor	Dale McBane
Programming Manager	Richard C. Leinecker
Programming Assistant	Troy Tucker
Editorial Assistants	Elizabeth Casey
	Mickey McLean
Copy Editors	Karen Siepak
	Karen Uhlenhuth
Contributing Editors	Shay Addams
	Jim Butterfield
	John Foust
	Sheldon Leemon
	Arian Levitan
	Rob Peck

ART DEPARTMENT

Assistant Art Director	Robin L. Strelow
Mechanical Art Supervisor	Robin Case
Junior Designers	Scotty Billings
	Meg McArn

PRODUCTION DEPARTMENT

Production Director	Mark E. Hillyer
Assistant Production Manager	De Potter
Advertising/Production	
Assistant	Tammie Taylor
Production Assistant	Barbara A. Williams
Typesetting	Terry Cash
	Carole Dunton

ADMINISTRATIVE STAFF

Executive Assistant	Sybil Agee
Senior Administrative	
Assistant	Julia Fleming
Administrative Assistant	Linda Benson
Customer Service	
Coordinator	Elfreda Chavis

ABC CONSUMER

MAGAZINES, INC.

President	Gary R. Ingersoll
Senior Vice President	Richard D. Bay
Director, Financial Analysis	Andrew D. Landis
Director of Circulation	Harold Buckley

CIRCULATION DEPARTMENT

Subscriptions	Jeanne Andrews
	Maureen Buckley
	Jenny Lam
	Raymond Ward
Newsstand	Peter J. Birmingham
	Jana Friedman
Customer Service	(800) 727-6937

ABC Consumer Magazines, Inc. 

CHILTON Company, One of the ABC Publishing Companies,
a part of Capital Cities/ABC, Inc.

Robert G. Burton, President
825 Seventh Avenue
New York, NY 10019

ADVERTISING OFFICES

New York: ABC Consumer Magazines, Inc., 825 Seventh Ave., New York, NY 10019, (212) 989-7553. Bernard J. Theobald, Jr., Associate Publisher/Advertising.

Greensboro: COMPUTE! Publications, 324 West Wendover Ave., Suite 200, Greensboro, NC 27408, (919) 275-9809. Kathleen Ingram, Marketing Manager.

New England & Mid-Atlantic: Bernard J. Theobald, Jr. (201) 889-7553. Kathleen Ingram (919) 275-9809.

Midwest & Southwest: Jerry Thompson, Lucille Dennis (312) 726-6047 [Chicago]; (713) 731-2605 [Texas]; (303) 595-9299 [Colorado]; (415) 348-8222 [California].

West, Northwest, & British Columbia: Jerry Thompson (415) 348-8222, Lucille Dennis (415) 878-4905.

Southeast & International: Bernard J. Theobald, Jr. (201) 889-7553. Kathleen Ingram (919) 275-9809.

Address all advertising material to Tammie Taylor, COMPUTE! Publications, Inc., 324 West Wendover Ave., Suite 200, Greensboro, NC 27408.

Editorial inquiries should be addressed to The Editor, *Amiga Resource*, Suite 200, 324 West Wendover Ave., Greensboro, NC 27408.

PRINTED IN THE U.S.A.

The 2000HD Facelift



Without much fanfare, Commodore has changed some of the components of the Amiga 2000HD. The old 2000HD had a 2090A hard drive controller and a fairly slow 40-megabyte Rodime hard drive. The 2090A accommodated cheaper (and slower) IBM-style drives as well as SCSI drives but had some problems keeping up when in hi-res overscan modes. New models of the 2000HD feature the 2091 controller and a fast **Quantum hard drive**. The 2091 doesn't support IBM-style drives, but since SCSI drives have become plentiful and relatively cheap, it doesn't really have to. Moreover, the

2091 will let you **mount a drive directly to the card**, and it contains sockets for up to two megabytes of expansion RAM. This makes the new 2000HD expandable to three megabytes without adding any memory cards.

Right before the changeover, Commodore offered purchasers of the old-style 2000HD a **free XT Bridgeboard** with every system, presumably to quash complaints from those who bought the older package only to find that a newer one would soon be offered. This deal also allowed Commodore to deplete inventories of its XT Bridgeboard packages, perhaps in anticipation of the newer version that features a 3½-inch disk drive. —S.L.

New Titles from Taito

Taito has unveiled two new titles for the Amiga market.

Operation Thunderbolt, the sequel to *Operation Wolf*, sends Roy Adams, commando of *Operation Wolf*, to infiltrate a hostile African country and free 23 hostages. The game features three-dimensional forward-scrolling graphics and a simultaneous two-player option. The game has a suggested retail price of \$34.95.

In *New Zealand Story*, Tiki the kiwi pursues an agitated seal who has kidnapped Tiki's kiwi friends from the zoo. You must assist Tiki in his mission by making him leap, climb, fly, and swim his way to save the day, while avoiding arrows and other obstacles. The new release retails for \$34.95.

Taito, 267 W. Esplanade, North Vancouver, B.C., Canada V7M 1A5

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

News and New Products edited by Mickey McLean

Developer Conference News

In early February, the City of Light played host to the Third European Amiga Developers Conference. More than two-hundred Amiga developers from around the world came to Paris, France, to hear the latest about the new Amiga 3000 and AmigaDOS 1.4.

Aside from the insider view of new products, a developer conference boils down to three days of hour-long briefings on programming techniques, hardware design, and specifications for new Commodore products. Much of the material was a rerun for those developers who attended last summer's developer conference in San Francisco.

In a lab of a dozen Amiga 3000 prototypes, developers got a chance to test their software and hardware under AmigaDOS 1.4. Losers in the compatibility game are those who depend on now-extinct BCPL calls or direct ROM calls.

Available in 16- and 25-megahertz versions, the Amiga 3000 is not a radical departure from the Amiga 2000. It's based on the faster 68030 processor, with up to 2 megabytes of chip memory, 16 megabytes of fast memory and built-in flicker-fixing hardware, all packed into a slimmer case. Developer response was remarkably positive, although with hindsight, some design decisions weren't optimal for today's workstation market.

Security was tight in Paris. Access to the Amiga 3000 prototypes was by appointment only, accompanied by a Commodore technical representative. Attendees were bound by a heavyweight nondisclosure agreement designed to prevent leaks about the Amiga 3000 until its official announcement at the CeBIT show in Germany, two months after the conference. Violators were subject to a \$10,000 fine.

A back room at the conference held a secret-within-a-secret showing of a prototype CD-ROM system based on an Amiga 500 motherboard. The consumer-oriented computer was previously shown to a select few at the fall COMDEX show—for example, a well-known encyclopedia publisher. As a prototype, it is not known whether the device will become a Commodore product.

—JOHN FOUST

Sunken Treasure

With *Treasure Trap* from Electronic Zoo, you can explore 100 rooms in the sunken shell of the Esmeralda, where a priceless cargo of solid gold bars rests undisturbed in a watery grave. To find the gold, you must solve puzzles, locate keys, and search for additional air tanks to stay alive. The waters around the vessel are patrolled by poisonous jellyfish and electric eels, as well as some creatures you may not have seen before, making your quest difficult. Make friends with groupers and red snappers, and your exploration becomes safer and easier.

The suggested retail price of *Treasure Trap* is \$39.95. It requires 512K and supports stereo sound.

Electronic Zoo, 3431-A Benson Ave., Baltimore, MD 21227 ▸



Centre of Activity

Commodore has donated eight Amiga 2000 and 2500 systems to the Southern Alberta Institute of Technology (SAIT) in Calgary, Alberta, Canada, to be used in a training center specializing in corporate media production.

The Commodore Corporate Media Centre supports instruction of multimedia techniques to corporate clients and students in SAIT's full-time communications programs. The computer equipment, valued at about \$50,000 (Canadian), enables the institute to train its students in techniques such as capturing video frames from a camera or videotape, painting, animation and titling, desktop publishing, slide-show

production, sound and music digitizing, and MIDI music production. In addition, a complete range of support devices, including video, audio, and print equipment, have been linked to the Amigas to provide full production capabilities.

Evening courses in graphics, animation, and desktop video are underway, and a two-year program in Corporate Media Production is being developed. The Centre also provides additional training for students in SAIT's popular two-year Cinema, Television, Stage, and Radio Arts diploma program.

Established in the early 1900s, SAIT is one of Canada's oldest technical institutes.

Commodore's "New" Products



By the time this issue hits this streets, we may know whether we're dealing with a new Commodore—one that is able to keep to its schedule for new products. When the **new management team took over last year**, it said that its policy would be not to talk about

new products until they were ready for release. Since then, whenever I've asked Commodore employees about new products, I've been told, "Ask that question again sometime around **March or April**." Taking into account the usual **Commodore fudge factor**, I figured that to mean we wouldn't be seeing any of the new goodies before June or July. But well into February, I was still being told that **we wouldn't have to wait until June**. It appears that Commodore wants to pull the whole bundle out of its hat at one time.

Of course, longtime observers know that some of these "new" products have long white beards. Products like the A2024 high-resolution monochrome monitor, Amix (Amiga UNIX), A2410 high-resolution color display card, and the Enhanced Chip Set (ECS) have been kicking around **for over two years now**. And most Amiga watchers won't be too surprised to hear that there's an Amiga 3000 model.

One proposed product that we've been hearing less and less about is the **A2350 Professional Video Adapter**. Originally shown sometime in 1987, this combination genlock/frame store/digitizer **has been drifting** ever since. Members of the NYIT Computer Graphics Lab, who are designing the board, have been heard complaining that **Commodore kept changing the specifications** and that there never was any clear vision of what the final release should be. This would have been an innovative product when announced, but it looks like its time has passed, particularly since **NewTek's Video Toaster** is about to come out. Unless Commodore has more up its sleeve than most of us imagine, you can forget about the PVA.

—S.L.

ECS vs. flickerFixer • • • • •



If nothing else, the introduction of Commodore's new products will put to rest

some of the **rumors and misconceptions** surrounding them. There has been a lot of confusion, for example, about just what the new **Enhanced Chip Set** will provide. Many people think that it will function just like the MicroWay flickerFixer, a **hardware deinterlace board** that gets rid of the flicker in 400-line video modes.

Actually, the ECS is quite different because, while the flickerFixer gets rid of flicker in existing video modes, the new

chips must go to a **totally new video mode** (called **productivity mode**) in order to generate a 640 × 480 noninterlaced display. This video mode can display a maximum of 4 colors out of a palette of 64, and even with only 4 colors, it **uses up most of the system DMA**, slowing down processing significantly. In order to avoid this slowdown, you'd have to use a single bitplane, resulting in a **640 × 400 black-and-white display**.

The 1.4 Workbench software will allow you to **open the Workbench in 640 × 480 noninterlaced mode**, which means software that can run on the Workbench screen can

take advantage of the new mode. Software that uses its own screen, however, will have to be revised in order to take advantage of the new display modes. Besides 640 × 400 noninterlaced mode, the new chip set can also create displays at resolutions like **1280 × 400 or 640 × 800 interlaced**. The 1280 × 400 interlaced display should be particularly interesting to users involved in video applications.

Some other rumors that have fired up some people concern the **A2410 high-resolution color display adapter**. These rumors started a couple of years ago, right after the company exhibited an

experimental board developed by a group at the University of Lowell with approximately 1000 × 1000 resolution and **millions of onscreen colors**. Although this board has since been adopted as a Commodore product, all of the software support is being done by Rich Miner and his University of Lowell cohorts. There is no indication that Commodore will develop Workbench-level support for such high-resolution displays anytime soon. At best, it will function as a **frame buffer** that must be used with a second monitor, like the Targa boards on the PC, or as a UNIX display. Sorry, guys. —S.L.

The MTV Encyclopedia Arcade

Over a year ago, I wrote that Commodore was developing a \$200 game machine that was essentially an Amiga 500 without a disk drive or keyboard. My feeling at the time was that you had to be pretty suicidal to want to go head to head with Nintendo.

Now, as Arlan Levitan reports in his column, Commodore is once again making noises about bringing out a stripped-down 500 with a CD-ROM as a "multimedia, home entertainment, and information center." This time, I think that it could be a brilliant success, if Commodore plays its cards right.

Why the change of heart? Well, I'm right in the bulge of the baby-boom generation. My children are seven and nine years old and are starting to do reports for school. In other words, I (and a host of similarly situated, balding, paunchy fossils from the sixties) am in the peak of my encyclopedia-buying years. But now that I've had a taste of home computers, I am less than enthusiastic about spending hundreds or even thousands of dollars on a set of hardcopy volumes that contain a lot of out-of-date information about the Communist government of East Germany and the Berlin Wall.

So if somebody offered me an \$800 device that would hook up to the home TV or monitor, would come with a completely updatable, searchable reference library on a single CD-ROM, and could (just incidentally) play a ton of killer videogames, I would be hard-pressed to think up a reason not to buy it. It would be downright un-American to oppose an encyclopedia that could play both Martin Luther King Jr.'s "I have a dream" speech and *The Shadow of the Beast*.

So if anybody from Commodore is listening out there, lose the multimedia angle and promote this thing as an MTV Encyclopedia Britannica/Home Arcade. Then, next year, Nintendo could be thinking of a way to catch up to you, for a change.

—S.L.

Long Live the 1000

There may be an ulterior motive behind the latest Commodore deal. In March, Commodore offered a trade-in on the 1000, allowing owners to upgrade to a 2000 for \$1,000. This time, however, Commodore is trying to take the machines out of circulation

by taking back the keyboard from each unit that is turned in. This makes sense because it's becoming increasingly difficult to support the older machines. The next version of Kickstart, for example, is going to take up 512K instead of 256K. The other 256K can only come from user RAM, meaning that a 512K 1000 will only have 256K available under the new Kickstart. Also, the new Enhanced Chip Set won't fit in the 1000, since it uses a version of the Agnus chip that is physically smaller than the new chips that go into the 500 and 2000.

The 1000 may be harder to kill than people think, however. Michigan Software is already selling a \$30 adapter that lets you plug a 2000 keyboard into a 1000. And two companies have announced upgrade boards, the Rejuvenator and the DVS-Wonder, that will let you use the new Kickstart and ECS chips in your 1000 as well as install a megabyte of chip RAM.

—S.L.

Secret Team

The latest strategic simulation from Interstel puts you in command of an elite antiterrorist strike force assigned to a series of top-secret missions around the world. In *D.R.A.G.O.N.*

Force, you are commander of a secret team of 14 soldiers, each possessing individual combat specialties and attributes. For each mission, you select the seven best men based on information found in their classified dossiers. You must also choose the most effective weaponry for each team member from a selection of 16 modern combat weapons.

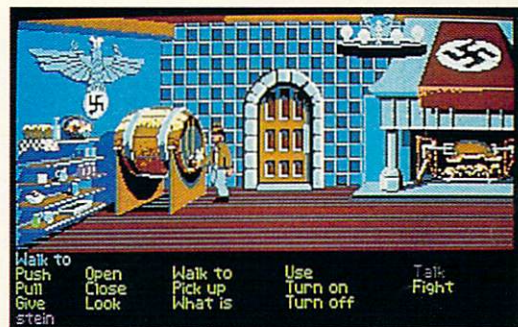
The game features 12 different missions, each with unique locations, terrain, combat conditions, enemy activity, and objec-

tives. Assignments include rescuing hostages, raiding a cocaine lab, and freeing captured teammates from a POW camp.

Commands to each unit can be issued using onscreen menus and can be executed simultaneously. An overhead view of the action helps you keep track of the action and strategy. When you successfully complete a mission within the given time limit, your men increase in experience, making the team stronger for future missions.

D.R.A.G.O.N. Force requires a minimum of one megabyte of memory and has a suggested retail price of \$49.95.

Interstel, P.O. Box 57825, Webster, TX 77598



Video Value

You can live out your Indiana Jones fantasies on both your computer and television screens.

Lucasfilm Games is offering a special promotion in conjunction with the release of the movie *Indiana Jones and the Last Crusade* on videocassette.

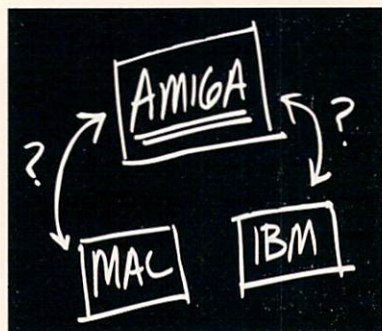
If you buy one of the games based on the hit movie, you can purchase the VHS video for only \$10.00. Buy both games and you'll receive the video, which retails for \$24.95, for free.

To qualify for the offer, you must have pur-

chased the games from a participating retailer between February 1 and June 30, 1990. *The Action Game* takes some of the film's best chase and fighting sequences and translates them into arcade action, while *The Graphic Adventure* places you in the role of Indy as you take on his perilous quest for the Holy Grail.

Details concerning proof-of-purchase and other requirements are available at participating retailers throughout the U.S. and Canada.

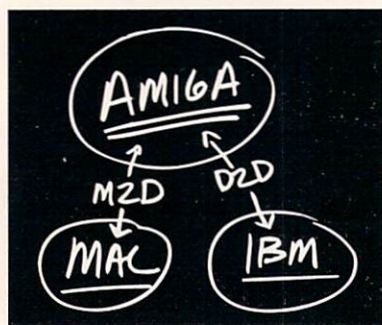
Lucasfilm Games, P.O. Box 2009, San Rafael, CA 94912



PROBLEM

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

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



SOLUTION

File transfer programs MAC-2-DOS and DOS-2-DOS from Central Coast Software! Using these simple and easy-to-use Amiga programs, you can now quickly and easily transfer the Mac/IBM/Atari data and images you need to and from the Amiga.

MAC-2-DOS connects a Mac floppy drive directly to the Amiga • Reads and writes 400K/800K Mac disks • Converts MacPaint images to/from IFF • Imports Mac clip art for use on the Amiga • Converts ASCII text files both ways • Converts PostScript files both ways • Supports MacBinary format • Includes

conversion utilities for PICT files and Mac fonts • Creates icons, as necessary • Formats 400K/800K Mac disks.

DOS-2-DOS uses your Amiga's floppy drives to read/write IBM/Atari 3.5-inch disks • Reads/writes 5.25-inch IBM disks (using an external 5.25-inch Amiga drive) • Converts ASCII text files both ways • Supports international character sets • Formats IBM/Atari disks • Use with IBM program HIJAAK (from Inset Systems, not included) to capture/convert IBM graphic images to/from IFF.

MAC-2-DOS — *when it absolutely, positively has to get to or from a Mac disk, immediately.*

DOS-2-DOS — *when it absolutely, positively has to get to or from an IBM PC (or Atari) disk, immediately.*

And to preserve your entire presentation, all supporting data and graphic files, as well as the programs:

QUARTERBACK — *the fastest and most reliable Amiga hard-disk backup program!*



Central Coast Software

424 Vista Avenue Golden, Colorado 80401

(303) 526-1030 • (303) 526-0520 (fax)

Dealer Inquiries Welcome



READERS FEEDBACK

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

Bridgeboard Speakers

In the April 1990 "Feedback," you stated that you couldn't get a Bridgeboard speaker kit from your local dealer. Computers Etc!, which has an ad on page 25 of that same issue, sells the kit. I bought one from that company. I was surprised that the ad in the April issue did not list this product; it's listed in the ad on page 90 of your February 1990 issue.

Bud Leffel
Hemet, CA

Decisions, Decisions

I am planning the purchase of either the Amiga 2000 or the 2500. However, I am unable to obtain any information about these models. Would you perform a side-by-side comparison of these two systems? Can the Amiga 2000 be upgraded to the performance level of the 2500? In the Fall 1989 issue of your magazine, there was an article concerning the Commodore Bridgeboard. The article only spoke of the 2000. Does the 2500 have this feature of MS-DOS capabilities?

I will be using the system for mechanical, naval, musical, and architectural projects. I have over 20 years of experience in computer systems maintenance, operation, programming, and training. Perhaps you can provide me with aid in my quest to find out more about the Amiga.

Monticello Austin
West Pittsburg, CA

The choice you face is not as difficult as it seems. The 2000 and 2500 differ only in the nameplate and the installed boards. Basically, the 2500 is a 2000 with a 2630 board (which boosts per-

formance by adding a 68030 micro-processor and speedy 32-bit RAM to the system). The 2630 board is available separately, and all boards designed for the 2000 work fine in the 2500—you'll win no matter which Amiga you select.

Here's a rundown of the models in the 2000 family. You'll have to make the decision based on your needs and the amount you're willing to pay.

- *Amiga 2000. Comes standard with one floppy drive and 1 meg of RAM.*
- *Amiga 2000HD. Comes standard with one floppy drive, 1 meg of RAM, a 40-meg hard drive, and a 2091 hard drive controller that can house an additional 2 megs of RAM.*
- *Amiga 2500. Comes standard with one floppy drive, 1 meg of RAM, a 40-meg hard drive, a 2091 hard drive controller that can house an additional 2 megs of RAM, and a 68030-driven 2630 board with 2 megs of 32-bit RAM and sockets for 2 more megs.*

Note that Commodore no longer makes the 68020-based Amiga 2500/20.

Going Pro

I've been programming on the Amiga for a while now, and I was wondering how to go about selling my programs, especially with regard to starting my own business, or maybe having a company buy my game and give me royalties. If it helps, I'm interested in role-playing games, strategy, and user-interactive programs.

Rich Depro
Marquette, MI

Starting your own company is not a trivial matter. If you wish to start a company, you'll have to do some research. It would probably help to discuss the matter with an attorney. If you need a loan, you'll need to draw up a business proposal. Your local bank or savings and loan may be able to guide you in the right direction. If you're really interested in this option,

you should consult your local Small Business Administration. Be sure you understand what taxes you'll need to pay before you get started.

These days, most programmers (especially game programmers) choose to distribute their software through large companies like Electronic Arts, Mediagenic, and Accolade. These companies are used to dealing with independent programmers and groups. It's best to have your program completed (or very nearly completed) before you send it in to have it reviewed. A great product draws a lot more attention than a great proposal. Before sending in your program, verify that the company is accepting program submissions.

Be careful when you sign a contract. Be sure that it adequately explains your rights and the rights of the company you're signing with. Also be sure that the contract states explicitly when you will receive your initial payment and/or royalties. You'll have to pay taxes on your earnings, so a trip or call to the local IRS office is in order.

As a final piece of advice: It helps to have contacts in the right places. If you can make it to an AmiEXPO or World of Amiga show, do so. Try to meet programmers and managers from the software publishers at the show. Telecommunications services are another great way to make ties with developers, especially the online conferences and message areas.

Boot Disks and Distribution

I wouldn't have written this letter if your Resource Disk weren't first-class. Each disk has useful and easy-to-use programs, many of which I find myself using on a regular basis, such as HotKey!, V, and Snap!Plus, just to name a few. Oh yes, I can't forget the games. My nephew tells me that most of them are first-rate.

I have a couple questions, or criticisms. Why does the disk have to be bootable? And why is it that a subscriber has to wait for the magazine

BRIWALL

P.O. Box 129/58 Noble Street
Kutztown, PA 19530

24 Hour FAX Line 1-215-683-8567
Customer Service 1-215-683-5433
Technical Support 1-215-683-5699

SOLID PRODUCTS

CALL

1-800-638-5757

Outside the USA (1-215-683-5661)

ACCESSORIES

64 Emulator	\$52
Amtrac (trackball)	68
Camera Lens 16mm - No Iris	22
Copy Stand with Light Fixtures	64
Covers	call
DigiView Adapter Gender Chang..	16
Flicker Master	14
Ink	call
Joystick - Gravis	35
Joystick - Super 3 Way	25
Maxx Yoke Flight Cntrl	79
Mouse Master	29
Paper	call
Ribbon	call
Safeskin Keyboard Protectors	20
Switch Box A/B D25f Connectors	29
X-Specs	89
Zoomer Console Controller	46

BOOKS

AMIGA C for Beginners+	\$15
Advanced Amiga BASIC	15
Advanced System Prog Guide+	27
Amiga Machine Lang Prog Guide	17
Amiga 3D Graphics Programming+	17
Amiga BASIC Inside & Out+	20
Amiga C for Advanced Progs+	25
Amiga DOS Inside & Out+	17
Amiga DOS Quick Ref Manual	8
Amiga Desktop Video Guide	17
Amiga Disk Drives Inside & Out+	24
Amiga Graphics Inside and Out+	27
Amiga Hardware Reference Review	18
Amiga Machine Language+	17
Amiga Programmer's Guide	15
Amiga Prog's Handbook Vol1	20
Amiga Prog's Handbook Vol2	20
Amiga System Prog's Guide+	27
Amiga Tips & Tricks+	17
Amiga for Beginners	15
AmigaDOS Reference Guide v1.3	17
Dungeon Master Hint Book	11
Guru's Guide, Meditation #1	14
Inside the Amiga With C	21
Kids and the Amiga	13
MORE Amiga Tips & Tricks+	17
Prog Guide Amiga - C Disk	12
Prog Guide Amiga - Modula 2 Disk	12
Programmer's Guide to the Amiga	22
ROM Kernel Ref:ExecLib&Devs	28
ROM Kernel Ref:Includes&AutoDoc	27

GENERAL BUSINESS

ACE1000 Catering	\$48
Advantage (The)	129
BGraphics*	126
CAL: Calendar Maker	33
Data Retrieve	52
Desktop Budget	52
Excellence	150
Family Tree (Your)	35
FreeD Speed-Dialer	33
Microfiche Filter	69
Microlawyer	52
NAG Plus V3.1	52
Nimbus Accounting V1.3	109
Pagesetter II	84
Page Stream DM Fonts #1-13	27
Page Stream V1.9	129
Pen Pal	99
Professional Draw	139
Professional Draw 2.0*	129
Professional Page 1.3	189
Professional Page Template	42
Prowrite V2.5	75
Scribble - Platinum Edition	72
Service Industry Accounting	252
Tax Break	59
Tax Plan 1989/1990	28
Word Perfect v4.1	149
Works - Platinum Edition	140

EDUCATION

Adventures of Sindbad	\$32
Aesop's Fables	32
Barney Bear Goes To School	20
Chicken Little	20
Designasaurus	33
Dinosaur Discovery Kit	29
Discover Alphabet	13
Discover Chemistry	13
Discover Math	13
Discover Numbers	13
Discover US History & Geography	13
Distant Suns (Galileo 3)	46

Barney Bear Goes to School

It's the first day of school for Barney Bear!

This colorful, musical game combines pictures, speech, sounds, a short interactive story and a number of entertaining educational activities into a delightful program for children ages 3-8.

Briwall Price -- \$23

First Letters & Words (3 - 8)	30
First Shapes (3 - 8)	30
Fraction Action	32
Fun Keys	23
Kid Talk (5 - 15)	30
Linkword:German	20
Linkword:Italian	20
Linkword:Spanish	20
Little Red Hen	20
Math Odyssey	33
Math Talk (5 - 13)	30
Math-amation (College)	55
Mavis Beacon Typing	34
Mixed Up Mother Goose	30
Mypaint	33
Noah's Ark	20
Planetarium	49
Three Bears	20
Three Little Pigs	20
Ugly Duckling	20
Word Master	32
World Odyssey	33

ENTERTAINMENT

3D Pool	\$23
688 Attack Sub*	34
AD&D - Champions of Krynn*	35
AD&D - Dragons of Flame	27
AD&D - DungeonMaster Asst 1	21
AD&D - DungeonMaster Asst 2	21
AD&D - Pool of Radiance*	35
Adventures Through Time	33
After Burner	33
All Dogs Go To Heaven	33
Altered Beast*	34
Aquanaut*	27
Archipelagos	27
Artura	27
B.A.T.*	39
Bard's II: Destiny Knight	34
Batman The Movie	33
Battle Squadron	24
Battlehawks 1942	36
Beyond Dark Castle	24
Blockout	26
Blood Money	29
Blue Angels*	30
Breach 2	33
Bride of the Robot	15
Bubble Bobble	23
Budokan*	27
Clown-O-Mania	23
Clue: Master Detective	26
Cribbage & Gin King*	41
Data Storm	26
Double Dragon II	26
Dr. Doom's Revenge	25
Dr. Plummert's House of Flux	23
D.R.A.G.O.N. Force	34
Dragon's Lair	39
Dragon's Lair II: Singe's Castle	39
Dragonscape	27
Dungeon Master	26
Earl Weaver Baseball	35
Earl Weaver Commissioner's Disk	17
Earl Weaver Stats '88 Disk	17
Eye Of Horus	27
F/16 Combat Pilot	34
F18 Interceptor	36
F40 Pursuit Simulator	30
Falcon	33
Falcon Scenery: Oper Countr Strike	17
Federation	27
Flindish Freddy's Big Top of Fun	33
Flight Simulator 2	33
Flight Sim Hawaiian Odyssey	19
Fool's Errand*	37
Forgotten Worlds	27
Gauntlet 2	33

Halls of Montezuma*	27
Hardball	29
Hardball II*	30
Heat Wave: Offshore Racing*	30
Hockey League Simulator	23
Hollywood Strip Poker	23
Honda RVF	26
Hound of Shadow	27
Hoyle's Book of Games	23
Hunt for Red October	20
Ice Hockey: Wayne Gretzky	35
Imperium	27
Indiana Jones: Last Crusade (Graphic)	34
Iron Lord	27
It Came From the Desert	33
Jack Nicklaus Golf	35
Jack Nicklaus' Course Int'l*	15
Jet	33
Jetsons (The)	26
Jigsaw!	26
Joan of Arc	30
Keep the Thief	34
Kings Quest I, II, III each	36
Kristal	34
Laser Squad*	27
Lead Duel	27
Leaderboard Dual Pak	26

DRAGONSCAPE

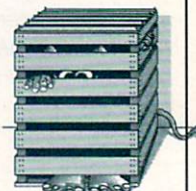
Sick of space shoot-em-ups?
Ever wanted to fly around on the back of a giant green dragon?
Well, here's your chance!
Dragonscape is the wackiest, fastest, toughest, most addictive fantasy shoot-em-up to appear on the Amiga.

Briwall Price \$27

Leaderboard World Class	29
Leisure Suit Larry 2	33
Licence to Kill	23
Lords of the Rising Sun	35
Lost Duthman Mine	30
Magic Johnson's Basketball	33
Manhunter - San Francisco*	33
Maniac Mansion	31
Mean 18 Famous courses Vol2	17
Mean 18 Golf	27
Might & Magic 2*	41
Monopoly*	26
NY Warriors*	33
Never Mind	23
Neuromancer*	31
Night Hunter*	27
Nuclear War	35
OmniPlay Horse Racing	33
Operation Wolf	20
Out Run	34
Persian Gulf Inferno	24
Pipe Dream	15
Planet of Lust	27
Pocket Rockets	27
Populus	34
Pro Football Simulation	23
Puffy's Saga*	27
Qix	23
R. Davis Soccer	33
Rick Dangerous	23
Rings of Medusa*	23
Romance of the Three Kingdoms	46
Savage	45
Sex Vixens from Space	15
Shadow of the Beast	33
Shark Attack*	26
Shinobi	33
Shoot'em Up Kit	13
Shufflepuck Cafe	17
Side Arms	27
Side Show	33
Sim City	30
Sim City Terrain Editor	15
Skate or Die*	27
Space Ace (Drag Lair Sequel)	39
Space Quest 3	39
Space Rogue	33
Star Command	33
Starflight	34
Stellar Crusade	38
Strip Poker II	27
Stunt Track Racer	27
Super Hang On	30

WHY CHOOSE BRIWALL?

- ✓ No Surcharge on Charge Orders
- ✓ 24-Hour Toll-Free Ordering
- ✓ Our Fifth Year in Business
- ✓ Fast, Friendly, Reliable Service
- ✓ In-house Technical Support
- ✓ A Fair Return/Exchange Policy
- ✓ A "No-surprises" Shipping Policy



SATISFACTION GUARANTEED!

Superman	26
Sword of Aragon*	27
Sword of Sodan	34
TV Sports Basketball	33
TV Sports Football	33
Table Tennis	23
Targhan	26
Teenage Mutant Ninja Turtles	30
Test Drive 2:European Challenge*	13
Test Drive 2:Muscle Cars	13
Test Drive 2:Super Cars	13
Test Drive 2:The Duel	30
Tetris	25
The Cycles: Grand Prix Racing	30
Their Finest Hour:Battle Britain*	41
Tom & Jerry	18
Triad 2 (Menace, Tretis, Baal)	27
Turbo Out Run*	34
UFO*	33
Veteran	20
Vortex	30
WWF Wrestling Game Match	27
Waterloo*	41
Weird Dreams	27
Where in USA is Carmen SanDiego	33
Where in World is Carmen SanDiego	30
Windwalker	26
Xenophobe	27

CREATIVITY/GRAPHICS

Autodroid	\$50
Broadcast Titrer	193
Deluxe Paint Version 3	99
Deluxe Photo Lab	99
Deluxe Print 2	54
Deluxe Video 3	99
Digipaint 3	69
Digiview v4.0 (for 500/2000)	139
Director	49
Director - Toolkit	29
Eclips	65
Focus Video	119
Intro CAD	52
Invision Plus	209
Kara Animfont 1	33
Kara Animfont 2	33
Kara Fonts Color	55
Kara Fonts Headlines	52
Kara Fonts Headlines2, Subheads ea	49
Masterpiece Amiga - Fonts/Clip Art	165
Media Line Dsktp & Video Package	24
Page Flipper Plus FX	99
Palette Printer	20
Performer	42
Photon Paint V2.0	99
Photon Video EDLP	315
Pixmate	45
Pro Video Gold	199
Sculpt 3DXL	116
Sculpt/Animate 4D	389
Sculpt/Animate 4D Jr	97
Turbo Silver	139
TV Text Professional	97
Ultra Design	255

SOUND & MUSIC

Bars & Pipes	192
Deluxe Music Construction	65
Dr T Copyist Apprentice (I)	65
Dr T Keyboard C.S. Level II	225
Dr T Midi Recording Studio	49
Dr T Tiger*	97
Dr T Tiger Cub*	65
Future Sound Sampler A500/2000	103
M	139
Music-x	195
Synthia II*	81

Synthia PRO	252
Take Note	59

UTILITIES/LANGUAGES

A Talk III	\$65
AC BASIC v1.3	135
Amix - Macintosh Emulator	129
Amix - Trumppard Utilities	79
Amix-Alignment	39
Amiga Workbench 1.3	24
Amikit	34
Arrex V1.0	35
Assempro	64
Aztec C Dev Pak V5 w/SLDebug*	195
Aztec C Prof Pak V5 w/Editor*	129
B.A.D Disk Optimizer	32
Baud Bandit	33
Butcher 2.0	25
C.A.P.E. 68K v2.0	59
Can Do	89
CrossDOS	20
DOS-2-DOS	39
DSM	49

DOCTOR AML.

This new title is a memory and hard drive diagnostic utility for the Amiga, designed for an average Amiga user.

Briwall Price -- \$33

Doctor Aml..	33
Dunlap Utilities	33
Express Copy	34
FACC II	25
GFA BASIC	99
Grabbit	20
Imagelink	299
Lattice C ++	219
Lattice V5.04 Dev Packagage	205
Online - Platinum Edition	60
Power Windows 2.5	59
Project D v1.1	33
Quarterback V2.3	49
Raw Copy V1.3E	39
UltraCard	33
UltraCard Plus	65
Virus Infection Protection	33

We maintain an enormous inventory of Amiga software. If you don't see what you want, CALL!

Titles marked with * were not yet released when the ad was prepared. Please call for firm price/availability. Titles in **BOLD** are new items

Australian Customers can order locally from Briwall Australia at:
(062) 88 0131, or
FAX (062) 88 0337

1-800-638-5757

Outside the USA (1-215-683-5661)

BriWALL

P.O. Box 129/58 Noble Street
Kutztown, PA 19530

VISA

PLEASE COME VISIT US!
Monday - Friday 9AM-6PM EST
Saturday 9AM-12 Noon EST

MasterCard

DRIVE
PACKAGESWe have the technical sales
staff and trained technicians
to help you with a hard drive
package purchase.These package prices are
complete, and include all
additional hardware
required. A500/A1000
packages include case and
cables. (On packages with a
"4" you can deduct \$110 if
you don't want the case and
cable.) A2000 mounting
brackets may be additional.Drive assembly is \$15, or
assemble it yourself!

HARD DRIVES

Drive Specs. Drive Price

20MB-40ms Seagate-3.5	\$293
40MB-11ms Quantum-3.5	\$403
44MB-25ms Syquest-5.25	\$673 cartridge \$98
48MB-40ms Seagate-3.5	\$360
48MB-28ms Seagate-3.5	\$382
64MB-24ms Seagate-3.5	\$498
84MB-24ms Seagate-3.5	\$532
100MB-11ms Quantum-3.5	\$720
135MB-15ms Imprimis-3.5	\$1,202
207MB-15ms Maxtor-3.5	\$1,708

Fastcard

A2000

A2000	\$139
A2000	\$251
A2000	\$324
A2000	\$550
A2000	\$159
A2000	\$169
A2000	\$346
A2000	\$595
A2000	\$315
A2000	\$313
A2000	\$223
A2000	\$346
A2000	\$308
A2000	\$595
A2000	\$705
A2000	\$710
A2000	\$620
A2000	\$751
A2000	\$705
A2000	\$1,063
A2000	\$1,068
A2000	n/a
A2000	\$1,109
A2000	\$1,063
A2000	\$662
A2000	\$667
A2000	\$577
A2000	\$570
A2000	\$708
A2000	\$662
A2000	\$684
A2000	\$689
A2000	\$599
A2000	\$730
A2000	\$684
A2000	\$800
A2000	\$805
A2000	\$715
A2000	\$846
A2000	\$800
A2000	\$834
A2000	\$839
A2000	\$749
A2000	\$880
A2000	\$834
A2000	\$1,022
A2000	\$1,027
A2000	\$937
A2000	\$1,068
A2000	\$1,022
A2000	\$1,504
A2000	\$1,509
A2000	\$1,419
A2000	\$1,550
A2000	\$1,504
A2000	\$2,000
A2000	\$2,005
A2000	\$1,925
A2000	\$2,046
A2000	\$2,000

Hardframe

A2000

A2000	\$139
A2000	\$251
A2000	\$324
A2000	\$550
A2000	\$159
A2000	\$169
A2000	\$346
A2000	\$595
A2000	\$315
A2000	\$313
A2000	\$223
A2000	\$346
A2000	\$308
A2000	\$595
A2000	\$705
A2000	\$710
A2000	\$620
A2000	\$751
A2000	\$705
A2000	\$1,063
A2000	\$1,068
A2000	n/a
A2000	\$1,109
A2000	\$1,063
A2000	\$662
A2000	\$667
A2000	\$577
A2000	\$570
A2000	\$708
A2000	\$662
A2000	\$684
A2000	\$689
A2000	\$599
A2000	\$730
A2000	\$684
A2000	\$800
A2000	\$805
A2000	\$715
A2000	\$846
A2000	\$800
A2000	\$834
A2000	\$839
A2000	\$749
A2000	\$880
A2000	\$834
A2000	\$1,022
A2000	\$1,027
A2000	\$937
A2000	\$1,068
A2000	\$1,022
A2000	\$1,504
A2000	\$1,509
A2000	\$1,419
A2000	\$1,550
A2000	\$1,504
A2000	\$2,000
A2000	\$2,005
A2000	\$1,925
A2000	\$2,046
A2000	\$2,000

SCSI CONTROLLERS

Trumpcard

A2000

A2000	\$139
A2000	\$251
A2000	\$324
A2000	\$550
A2000	\$159
A2000	\$169
A2000	\$346
A2000	\$595
A2000	\$315
A2000	\$313
A2000	\$223
A2000	\$346
A2000	\$308
A2000	\$595
A2000	\$705
A2000	\$710
A2000	\$620
A2000	\$751
A2000	\$705
A2000	\$1,063
A2000	\$1,068
A2000	n/a
A2000	\$1,109
A2000	\$1,063
A2000	\$662
A2000	\$667
A2000	\$577
A2000	\$570
A2000	\$708
A2000	\$662
A2000	\$684
A2000	\$689
A2000	\$599
A2000	\$730
A2000	\$684
A2000	\$800
A2000	\$805
A2000	\$715
A2000	\$846
A2000	\$800
A2000	\$834
A2000	\$839
A2000	\$749
A2000	\$880
A2000	\$834
A2000	\$1,022
A2000	\$1,027
A2000	\$937
A2000	\$1,068
A2000	\$1,022
A2000	\$1,504
A2000	\$1,509
A2000	\$1,419
A2000	\$1,550
A2000	\$1,504
A2000	\$2,000
A2000	\$2,005
A2000	\$1,925
A2000	\$2,046
A2000	\$2,000

Wordsync

A2000

A2000	\$139
A2000	\$251
A2000	\$324
A2000	\$550
A2000	\$159
A2000	\$169
A2000	\$346
A2000	\$595
A2000	\$315
A2000	\$313
A2000	\$223
A2000	\$346
A2000	\$308
A2000	\$595
A2000	\$705
A2000	\$710
A2000	\$620
A2000	\$751
A2000	\$705
A2000	\$1,063
A2000	\$1,068
A2000	n/a
A2000	\$1,109
A2000	\$1,063
A2000	\$662
A2000	\$667
A2000	\$577
A2000	\$570
A2000	\$708
A2000	\$662
A2000	\$684
A2000	\$689
A2000	\$599
A2000	\$730
A2000	\$684
A2000	\$800
A2000	\$805
A2000	\$715
A2000	\$846
A2000	\$800
A2000	\$834
A2000	\$839
A2000	\$749
A2000	\$880
A2000	\$834
A2000	\$1,022
A2000	\$1,027
A2000	\$937
A2000	\$1,068
A2000	\$1,022
A2000	\$1,504
A2000	\$1,509
A2000	\$1,419
A2000	\$1,550
A2000	\$1,504
A2000	\$2,000
A2000	\$2,005
A2000	\$1,925
A2000	\$2,046
A2000	\$2,000

Supra*

A500

A500	\$139
A500	\$251
A500	\$324
A500	\$550
A500	\$159
A500	\$169
A500	\$346
A500	\$595
A500	\$315
A500	\$313
A500	\$223
A500	\$346
A500	\$308
A500	\$595
A500	\$705
A500	\$710
A500	\$620
A500	\$751
A500	\$705
A500	\$1,063
A500	\$1,068
A500	n/a
A500	\$1,109
A500	\$1,063
A500	\$662
A500	\$667
A500	\$577
A500	\$570
A500	\$708
A500	\$662
A500	\$684
A500	\$689
A500	\$599
A500	\$730
A500	\$684
A500	\$800
A500	\$805
A500	\$715
A500	\$846
A500	\$800
A500	\$834
A500	\$839
A500	\$749
A500	\$880
A500	\$834
A500	\$1,022
A500	\$1,027
A500	\$937
A500	\$1,068
A500	\$1,022
A500	\$1,504
A500	\$1,509
A500	\$1,419
A500	\$1,550
A500	\$1,504
A500	\$2,000
A500	\$2,005
A500	\$1,925
A500	\$2,046
A500	\$2,000

Synergy*

A500

A500	\$139
A500	\$251
A500	\$324
A500	\$550
A500	\$159
A500	\$169
A500	\$346
A500	\$595
A500	\$315
A500	\$313
A500	\$223
A500	\$346
A500	\$308
A500	\$595
A500	\$705
A500	\$710
A500	\$620
A500	\$751
A500	\$705
A500	\$1,063
A500	\$1,068
A500	n/a
A500	\$1,109
A500	\$1,063
A500	\$662
A500	\$667
A500	\$577
A500	\$570
A500	\$708
A500	\$662
A500	\$684
A500	\$689
A500	\$599
A500	\$730
A500	\$684
A500	\$800
A500	\$805
A500	\$715
A500	\$846
A500	\$800
A500	\$834
A500	\$839
A500	\$749
A500	\$880
A500	\$834
A500	\$1,022
A500	\$1,027
A500	\$937
A500	\$1,068
A500	\$1,022
A500	\$1,504
A500	\$1,509
A500	\$1,419
A500	\$1,550
A500	\$1,504
A500	\$2,000
A500	\$2,005
A500	\$1,925
A500	\$2,046
A500	\$2,000

Trumpcard

A500

A500	\$139
A500	\$251
A500	\$324
A500	\$550
A500	\$159
A500	\$169
A500	\$346
A500	\$595
A500	\$315
A500	\$313
A500	\$223
A500	\$346
A500	\$308
A500	\$595
A500	\$705
A500	\$710
A500	\$620
A500	\$751
A500	\$705
A500	\$1,063
A500	\$1,068
A500	n/a
A500	\$1,109
A500	\$1,063
A500	\$662
A500	\$667
A500	\$577
A500	\$570
A500	\$708
A500	\$662
A500	\$684
A500	\$689
A500	\$599
A500	\$730
A500	\$684
A500	\$800
A500	\$805
A500	\$715
A500	\$846
A500	\$800
A500	\$834
A500	\$839
A500	\$749
A500	\$880
A500	\$834
A500	\$1,022
A500	\$1,027
A500	\$937
A500	\$1,068
A500	\$1,022
A500	\$1,504
A500	\$1,509
A500	\$1,419
A500	\$1,550
A500	\$1,504
A500	\$2,000
A500	\$2,005
A500	\$1,925
A500	\$2,046
A500	\$2,000

Many other package deals available! Please call!

SUPRA
CORPORATIONA500 RAM
Supra RAM 500 (501 type) \$96A500 Hard Drive Packages
22MB Supra Drive \$495
40MB-Quantum Supra Drive \$739
60MB Supra Drive \$859
80MB-Quantum Supra Drive \$999
2MB RAM for SDRA A500 \$319New Modem
Supra Modem Plus MNP Level 5 \$158

CITIZEN GSX-140

New 24-pin, narrow cartridge, dot matrix printer.
The GSX-140 emulates the Epson LQ series and the
IBM Proprinter X24 with a maximum resolution of
360x360 dpi. Printing speed ranges from 192cps in
draft mode to 64cps in letter quality mode with a total
of six resident fonts. All printer settings are made
through a set of six front-panel buttons, with a 16
character LCD providing prompts. The GSX-140
features top, rear and bottom paper-feed, an 8K data
buffer and a 2-year parts and labor warranty.Suggested Retail Price \$499
Briwall Price -- \$379
Optional Color Kit for 7-color printing \$50P
M
A
C
K
A
G
E
S

BOARDS	0K	512K	1MB	2MB	4MB	8MB	
A 2 0 0 0	8-up! 1MBx1	\$185	n/a	\$374	\$566	\$950	
	Supra 1MBx1	n/a	n/a	\$311	\$511	\$887	
	Minimegs 256Kx4ZIP	n/a	\$276	\$376	\$536	n/a	n/a
A 5 0 0	EXP-8000 1MBx1	n/a	n/a	n/a	\$434	\$626	\$1,010
	Inboard 256Kx1 150m	\$239	\$308	\$384	n/a	n/a	n/a
	MD 540 256Kx4ZIP	\$164	\$239	\$319	\$479	\$799	n/a
	Xic Fastram 1MBx8SDMM	\$210	n/a	n/a	\$424	\$644	call
	Starboard2 256Kx1 150m	\$269	\$334	\$410	\$608	n/a	n/a
A 1 0 0 0	Minimegs 256Kx4ZIP	n/a	\$276	\$376	\$536	n/a	n/a
	Inboard 256Kx1 150m	\$239	\$308	\$384	n/a	n/a	n/a
	Xic Fastram	\$210	n/a	n/a	\$424	\$644	call

READERS FEEDBACK

when the local computer store gets it two to three weeks earlier?

G. O'Neill
Whiting, NJ

Our disk doesn't have to be bootable. We make it a boot disk so it's easier to use—you just pop it in the drive and turn on your computer. You don't have to boot with our disk, of course, but we think it's convenient to have that option.

Providing a boot disk also ensures that all of our programs run properly. Many programs require certain system files that you may not have on your Workbench disk. If our disk weren't bootable, you'd have to go through an installation procedure before you'd be able to use these programs. Because we license AmigaDOS from Commodore, we're able to include all the necessary support files on our disk. So when you boot with our disk, all of the programs are guaranteed to run.

We realize that a boot disk can't hold as much data as a nonboot disk, and we've been forced to do some pretty creative things to make sure all of our programs fit on one disk. But we feel that the benefits of providing a boot disk are worth the extra work.

Your second question has to do with how and where our magazines are distributed. Like most publications, Amiga Resource has an on-sale date that determines when the magazine is supposed to be available from newsstands and computer dealers. For example, this issue's on-sale date is May 1.

Three weeks prior to the on-sale date, we ship our magazine to wholesalers and certain dealers who purchase the magazine directly from us. This ensures that the magazines arrive prior to the on-sale date. More importantly, it gives wholesalers enough time to distribute Amiga Resource to their dealers.

When retailers receive Amiga Resource early, they're supposed to wait for the on-sale date before placing the magazines on the shelves. Unfortunately, not all stores follow this rule. So

even though we ship the magazines to subscribers a full two weeks before the on-sale date, certain dealers may be selling the magazine before you receive your issue.

Flicker Solutions

I purchased an Amiga 500 with memory expansion and Turbo Silver so I could do some ray tracing and 3-D modeling. I've been having a great time and I'm astonished at what I've been able to do for less than \$1,350. I do, however, have one major gripe: interlace flicker. On that note, I have a number of questions.

Will expansion boxes such as the ToolBox allow you to use a flicker-Fixer on the Amiga 500 or 1000?

Since I don't own a multisync monitor, I cannot use M.A.S.T.'s Flick-Off. Does anyone plan to make a board for Commodore's 1084 monitor?

I've been told that the interlace flicker stems from a problem with the Amiga's timing crystal. If this is so, why doesn't Commodore just raise the price of the computer to solve the problem?

Bill Longworth
Springfield, MA

Expansion boxes, such as the ToolBox from Expansion Technologies, provide Amiga 500 and 1000 owners with Amiga 2000-style slots so they can make use of cards designed especially for the 2000. Some expansion boxes, including *The Surgeon* from Comp-U-Save, also have IBM-compatible slots for use with the Bridgeboard and its related products. Expansion boxes do not, however, provide you with a video slot, which is where MicroWay's flickerFixer plugs in.

M.A.S.T.'s Flick-Off, on the other hand, plugs into the Amiga's Denise chip socket, so it works on all model Amigas. (It's also more difficult to install, since you must carefully extract and replace a 48-pin chip.)

All flicker-eliminator products, including Flick-Off, require either a

multisync or VGA-compatible monitor. We doubt that anyone will come out with a flicker-eliminator that is compatible with the 1084 or its cousins. This restriction has nothing to do with the Amiga's timing crystal but with the limitations of standard TVs and RGB monitors. To understand these limitations, you must first understand how these monitors generate a picture.

Televisions and monitors use an electron gun (RGB monitors use three guns, one for red, one for green, and one for blue) to paint a beam of pixels across the screen, starting in the top left corner and moving in a straight line to the right. When this beam has been drawn, the electron gun turns off and returns to the left side. It then moves down, turns back on, and draws another line. On a standard noninterlace Amiga display, there are 262 such lines, 200 of which form the visible screen area. To keep the image on-screen, the 262-line display is redrawn approximately 60 times a second. (The video display on European PAL systems contains 312 lines, which are redrawn 50 times a second.)

Interlace mode doubles the vertical resolution of your Amiga's display. Because most monitors are incapable of drawing much more than 350 lines—called video beams—in 1/60 second, the Amiga uses a simple trick to achieve the higher resolution: Each complete scan of the screen contains only half of the screen's lines. In one scan, only the even-numbered lines are drawn. In the next scan, only the odd-numbered lines are drawn. The drawing of even and odd numbered lines continues to alternate, thus "interlacing" the video beams into a complete picture. Because video beams on a normal-persistence monitor don't hang around for too long, the lines drawn in one scan tend to fade before the next set of lines appears, thus causing the dreaded interlace flicker.

Using an internal video buffer, the flickerFixer and the Flick-Off combine the Amiga's even- and odd-numbered lines before sending them to the monitor. This way, all 524 (262 × 2) lines

READERS FEEDBACK

are drawn at the same time. And because every other set of lines is buffered, the screen is redrawn approximately 30 times a second instead of 60. To accommodate these changes, your monitor must be able to synchronize on a somewhat non-standard video signal. This is why flicker-eliminator products require special monitors.

Why didn't the Amiga come with these capabilities? Cost and compatibility. Multisync monitors cost considerably more than standard monitors, and one of the reasons the Amiga is so popular in video production is because it directly supports NTSC composite video standards, which requires an interlaced signal. Believe it or not, the picture generated by your television set is interlaced just like the Amiga's. You just don't notice a flicker problem because televisions use millions of colors for smoother line transitions.

There are less expensive solutions for reducing interlace flicker. The easiest one is to mute your screen colors using Preferences or the Palette program found on the 1.3 Extras disk. You can also turn down your monitor's brightness and contrast levels. And, believe it or not, you can wear a pair of polarized sunglasses (this really helps!). You can also put "sunglasses" on your Amiga by placing T. S. R. Hutchinson's Flicker Master smoked-plexiglass monitor cover over your computer screen.

In the soon-to-be released department, Commodore's upcoming Amiga 3000 will have flicker-eliminator capabilities built right in, and the Enhanced Chip Set (ECS) will provide Amiga owners with new flicker-free high-resolution modes. The ECS does not reduce the flicker in any of the computer's current video modes. For more information on the ECS, see Sheldon Lee-mon's "ECS vs. flickerFixer" segment in this issue's "Trends."

Taking Command of Your Modem

I am trying to write a modem program. I know there is a set of commands that deal with the modem, but I don't know what they are. Can you help?

Peter Laird
Linton, IN

The commands you're looking for are from the Hayes command set. You can usually find these commands listed in the manual that came with your modem. Most modems these days are Hayes compatible, but some are more compatible than



Great Prices! Shipping based on weight and zone.
For Information & Catalog Call:
Voice: 414-544-2066
Pursuable BBS: 414-544-6567

Stunt Car Racer 31.99
TV Sports - Basketball 36.99
TV*Show 59.99

Spotlight on Software!

Advantage 120.00
ARexx 31.10
Artura 29.00
Bars & Pipes 170.00
Batman: The Movie 28.99
Bermuda Project 25.75
Can Do 88.99
Clue 25.75
Cross DOS 20.99
Cygnus Ed Professional 2 65.00
Deluxe Paint III 100.00
Deluxe Video III 100.00
Digi-Paint 3 61.99
Digi-View Gold 140.00
Distant Suns 42.99
Federation 36.99
Hard Drivin' 31.99
Hoyle's Book of Games 23.00
Infestations 25.50
K.C.S. 3.0 159.99
K.C.S. Level II 3.0 219.00
Lattice 5.0 190.00
Opticks 120.00
PageSetter II 80.99
Pen Pal 90.00
PIC-Magic 60.00
Compugraphic Fonts 130.00
Pro Video Gold 185.00
Quarterback 43.00
Quasar Sound 39.99
Risk 26.75
Shoot 'Em Up Construction 15.00
Space Ace 36.99
Stryx 18.50
Circle Reader Service Number 142

Spotlight on Books!

3D Graphics Programming 16.30
Amiga Companion, 2nd Ed. 18.75
Amiga Desktop Video Guide 16.00
Amig DOS Inside/Out 16.30
Amiga Graphics Inside/Out 26.75
ROM Kernel: Hardware Man 20.00
ROM Kernel: Lib/Devices 26.00

Spotlight on Hardware!

501 Memory Board, Supra 95.00
8-Up! Board 0K 170.00
8 Meg Board, Supra 0K 160.00
Camera, Panasonic WV1410 215.00
Floppy Drive, Int. 2000 90.00
Floppy Drive, Unidrive 135.00
Master Sound 60.99
Modem, Supra 2400 120.00
Mouse, Jin Mouse 50.00
Mouse Master 31.00
MouseStick, Adv. Gravis 88.00
Perfect Sound 3.0 74.50
Scanner, JX100 799.00
SCSI Controller, Word/Sync 170.00
SCSI Controller, Byte/Sync 170.00
SCSI/RAM 8 Meg GVP (2000) 300.00
Spirit Boards 0K 500/1000 224.99
Spirit Board SIN 0K 500 224.99
Starboard2 1000 0K 245.00
Tool Bus 500/1000 225.00

Orders Only Please:
Outside WI: 800-544-6599
Inside WI: 414-544-6599
Visa/MC/CODs

2414 Pendleton Place ■ Waukesha, WI 53188 ■ 9 AM to 5 PM M-F

BRIDGEBOARD USERS!

Don't waste money, slots, or desk space buying extra IBM-compatible or Amiga floppy drives! The **Bridge Drive Commander +** gives you direct access to all your internal and external Amiga drives from the Bridgeboard, and direct access to IBM type 360K and 720K drives from AmigaDOS. **Bridge Drive Commander +** is totally transparent and automatic. Put an IBM type disk in any drive and use it just like on any IBM compatible! Put in an Amiga disk and return to Amiga use! Just that simple, just that fast! One drive can use Amiga disks at the same time another is using IBM-compatible disks. Disks are completely usable by other Amiga and IBM-compatible computers. All hardware, no software drivers to load, no precious memory or expansion slots used up. Plugs onto motherboard at internal drive connector. (No soldering or wiring changes.) Compatible with all Bridgeboards (8088, 80286), SideCar, all accelerator boards (any 680x0), hard disks and other hardware and software.

Bridge Drive Commander + \$ 97.50

MJ SYSTEMS

Dept 10A, 1222 Brookwood Road, Madison, WI 53711

1-800-448-4564

(24 hours MasterCard/VISA)

Product names are trademarks of their respective companies.

Circle Reader Service Number 157

READERS FEEDBACK

a limited subset of the full set of Hayes commands, while others include commands that are above and beyond the standard Hayes set. If your modem is not fully Hayes compatible, some of these commands may have no effect.

Here is a list of the most useful Hayes commands.

- AT A Answer the phone without waiting for a ring.
- AT Dn Dial a number, where *n* is the number to dial.
- AT Fn Select duplex mode (*n* is 1 for half duplex, 0 for full duplex).
- AT Hn Select hook status (*n* is 1 for off hook, 0 to hang up).
- AT O Switch from command state to online state.
- AT P Use pulse dialing.
- AT T Use tone dialing.
- AT Z Reset the modem to its default configuration.
- A/ Repeat last command (useful for redialing a number).

All but the last of these commands are preceded by the letters AT. The AT prefix tells the modem to pay ATtention to the following characters. (Hayes modems require that the AT characters be in uppercase; some compatibles allow both upper- and lowercase characters.) To use any of these commands, send them to your modem as you would any other piece of information. In fact, as a user you can enter these commands using a simple terminal program—just type them in from the keyboard and press Return.

Be sure to issue the AT commands before your modem makes a connection with another computer. You have to be in command mode (the modem's default state) in order for your modem to acknowledge any of these commands. If the modem is currently connected to and communicating with another computer, you can invoke command mode by waiting about a second, entering three plus signs

(+++), and then pausing a second again. Be advised that the +++ escape code will terminate your connection as well as return you to command mode.

Special Offer

Two years ago, *COMPUTE!* Publications put together a special Amiga games disk containing 16 games written in Amiga Basic. The disk has three card games, five arcade games, and eight strategy games. Most of these programs were originally published as type-in programs in *COMPUTE!* magazine. Three of them were designed especially for the disk.

We've long since made our money back on the games disk, but we still have a few in stock. If you'd like a copy, we're offering the disk at a special price of \$6 (the original price was \$10 plus shipping).

Full instructions for playing the games are included on the disk along with an easy-to-use file reader. The file reader also prints files, so you can make a paper copy of any of the program's instructions.

The games found on the disk are Monte Carlo, Euchre, Canfield, Biker Dave, Boulder Bob, Climber 5, Marbles, Jump Ball, IFF Slide Puzzle, Rememory, Switchbox, Karma, The Hermit, Word War, Chain Reaction, and Laser Chess, the precursor to the popular Advanced Laser Chess program published in *Resource's* Summer 1989 issue. Because the programs are written in BASIC, you must copy Amiga Basic onto the disk in order to play the games.

If you'd like a copy of this disk, send a \$6 check or money order along with your name and address to

COMPUTE!'s Amiga Games Disk
P.O. Box 5188
Greensboro, NC 27403

Please allow 4–6 weeks for delivery.

Pixelations' Phone Number

The area code of the phone number listed in our April 1990 *PixelScript* review is incorrect. The correct phone number for Pixelations is (508) 393-7866. We apologize for any inconvenience that this may have caused.

Where to Write

Question, comment, problem, or submission? If you want to get in touch with us, here's how.

Subscription inquiries, problems, and change-of-address information:

Amiga Resource
P.O. Box 3253
Harlan, IA 51537

Single-copy or disk orders:

Amiga Resource
Single-Copy Sales
P.O. Box 5188
Greensboro, NC 27403

Editorial inquiries:

The Editor
Amiga Resource
324 W. Wendover Ave.
Suite 200
Greensboro, NC 27408

All other correspondence:

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

Be sure to include the correct department in the address:

Amiga Feedback

For questions or comments about the *Amiga* or this magazine

Ask Rob Peck

For programming questions

Programmer's Page

For programming tips

Submissions Reviewer

For "On Disk" program submissions

Amiga Art Gallery

For art and animation submissions

User Group Update

For your group to be included in our regular listing

Amiga Technical Staff

For bug reports and technical questions about the *Resource* Disk

Advertising Complaints Department

For reporting complaints about any of our advertisers

COMPUTER GAMES +

MULTI GAME PACKS - MANY GAMES ONE LOW PRICE
EACH PACKAGE CONTAINS COMPLETE VERSIONS OF INDICATED GAMES

AMIGA GOLD 34.95	WINNERS 39.95	SUPER QUINTET 34.95	Precious Metal 37.95
BIONIC COMMANDO ROLLING THUNDER JINKS - LEADERBOARD	BLASTEROIDS - LED STORM IMPOSSIBLE MISSION 2 THUNDERBLADE	BUBBLE GHOST-WARLOCK'S QUEST-CHAMONIX CHALLENGE PASSENGERS ON WIND I & II	CAPTAIN BLOOD SUPER HANG ON CRAZY CARS - XENON
COMMANDOS 34.95	Prem Collection II 39.95	HIT DISK #2 34.95	HIT DISK I 34.95
ACTION SERVICE WANTED - SKRULL WARLOCK'S QUEST	CUSTODIAN MERCENARY-ELIMINATOR BACKLASH	LEATHERNECK - TANGLEWOOD TIME BANDIT MAJOR MOTION	LEATHERNECK TIME BANDIT - TANGLEWOOD MAJOR MOTION
TRIAD II 34.95	THRILL TIME 34.95	MEGA PACK 34.95	VIDI-AMIGA REAL TIME VIDEO DIGITIZER 149.95
BAAL MENACE TETRIS	Ikari Warriors-Thundercats-Bombjack Beyond The Ice Palace-Live And Let Die Buggy Boy-Battleships-Space Harrier	WINTER OLYMPIAD 88-PLUTOS MOUSE TRAP-SUICIDE MISSION SECONDS OUT-FROST BYTE	

ARCADE IMPORTS

Afterburner.....	29.95
Altered Beasts.....	34.95
A.P.B.....	29.95
Chase HQ.....	34.95
Double Dragon II.....	29.95
Dragon Spirit.....	29.95
Dugger (Dig Dug).....	29.95
Dynamite Dux.....	34.95
Forgotten Worlds.....	29.95
Galaxy Force.....	34.95
Gauntlet II.....	29.95
Gemini Wing.....	29.95
Ghouls & Ghosts.....	34.95
Hard Drivin.....	29.95
Last Duel.....	21.95
New Zealand Story.....	34.95
Outrun.....	29.95
Power Drift	34.95
Road Blasters.....	29.95
Star Wars.....	19.95
Strider.....	34.95
Turbo Outrun.....	34.95
Vigilante.....	24.95
Vindicators.....	24.95
Xybots.....	29.95

MORE IMPORTS

Advanced Ski Simultr.....	29.95
Armada.....	34.95
Austerlitz.....	34.95
Bangkok Knights.....	34.95
Beverly Hills Cop.....	34.95
Bloodwych	34.95
Bloodwych Data.....	24.95
Bombuzal.....	34.95
Bordino.....	39.95
Captain Blood.....	29.95
Chess Player 2150.....	34.95
Colossus Chess X.....	34.95
Cosmic Pirate.....	34.95
Custodian.....	29.95
Detector.....	19.95
Dogs Of War.....	29.95
Dominator.....	29.95
Elite.....	26.95
Eskimo Games.....	34.95

F-16 Combat Pilot.....	29.95
Fast Lane.....	29.95
Fed Of Free Traders.....	37.95
Fernandez Must Die.....	29.95
Fighter Bomber.....	39.95
Fighting Soccer.....	34.95
Fusion.....	34.95
Future Tank.....	19.95
Giants.....	39.95
Grand Monster Slam.....	24.95
Hostages.....	27.95
Ikari Warriors.....	14.95
Indy Jones - Action.....	24.95
Interphase.....	34.95
Iron Lord.....	34.95
Kennedy Approach.....	29.95
KULT.....	34.95
Laser Squad.....	29.95
Licence To Kill.....	29.95
Lombard Rally.....	34.95
Mechanicus.....	19.95
Mickey Mouse.....	24.95
Millennium 2.2.....	29.95
Mr. Heli.....	34.95
Munsters.....	29.95
No Excuses.....	29.95
North & South	34.95
Oil Imperium.....	34.95
Onslaught.....	34.95
Operation Neptune.....	29.95
Phobia.....	34.95
Pictionary.....	34.95

Populous	31.95
Promised Lands.....	19.95
Final Frontier.....	8.95
Predator.....	34.95
Pro Tennis Tour	29.95
Quantox.....	29.95
Quartz.....	34.95
Quest For Timebird.....	37.95
Rally Cross.....	29.95
Rick Dangerous.....	29.95
Robo Cop.....	29.95
Roller Coaster Rmbl.....	29.95
Scapeghost.....	29.95
Skweek.....	29.95
Slayer.....	29.95
Sleeping Gods Lie.....	34.95
Space Ace	39.95
Steel.....	29.95
Steigar.....	29.95
Stir Crazy.....	29.95
Storm Lord.....	29.95
Stunt Car Racer.....	34.95
Tank Attack (deluxe).....	29.95
Thunderbirds.....	34.95
Time.....	34.95
Trivial Pursuit II.....	29.95
Turbo Cup.....	29.95
Twin Worlds.....	34.95
Voyager.....	34.95
Wicked.....	34.95
Wierd Dreams.....	34.95
Xenon 2	34.95

Xenophobe.....	34.95
DOMESTIC	
Art Of Go.....	37.95
Batman The Movie.....	32.95
Battlechess.....	29.95
Battlehawks 1942.....	34.95
Battle Squadron.....	27.95
Beyond Dark Castle.....	24.95
Blood Money.....	24.95
Carrier Command.....	26.95
Dragon Force.....	37.95
Dragons Of Flame.....	29.95
Dungeon Master.....	24.95
Dungeon Maps.....	4.95
Dungeon Mastery.....	12.95
D. Master Editor.....	17.95
Falcon.....	32.95
Mission Disks.....	17.95
Hex.....	24.95
Hillsfar.....	34.95
It Came From Desert.....	31.95
Knight Force.....	34.95
Lost Dutchman Mine.....	34.95
M Johnson Bsktbl.....	34.95
Maniac Mansion.....	34.95
Nuclear War.....	37.95
Omega.....	34.95
Omniply Basketball.....	34.95
Pipe Dream.....	27.95
Pocket Rockets.....	27.95
Shadow Of Beast.....	34.95
Shoot Em Up C. Kit.....	17.95
Side Arms.....	27.95
Sideshow.....	32.95
Stryx.....	24.95
UMS.....	29.95

Enlightenment.....	14.95
4x4 Off Rd Racing.....	9.95
Golden Path.....	19.95
Impossible Mission II.....	9.95
Kelly X.....	14.95
Motorbike Madness.....	14.95
Nord & Bert.....	14.95
Pandora.....	9.95
Realm Of The Trolls.....	19.95
Return To Genesis.....	14.95
Roadwars.....	14.95
Space Cutter.....	14.95
Space Sta. Oblivion.....	9.95
Speedboat Assassin.....	14.95
Spidertronic.....	19.95
Starglider.....	19.95
Sub Battle.....	14.95
The Games.....	9.95
Wanted.....	19.95
Warlock's Quest.....	19.95
Whirligig.....	9.95
IMPORT MAGAZINES	
AMIGA ACTION.....	6.95
AmigaComputing(disk).....	8.95
AMIGA FORMAT(disk).....	8.95
THE ONE.....	6.95
ACE.....	6.95
Comptr+VideoGames.....	6.95
GAMES MACHINE.....	6.95

DISK DRIVE	119.95
INDUS Disk Drive.....	149.95
MOUSE (Imported)	49.95
VIDI-AMIGA	149.95
Supra 2400 Modem.....	119.95
COLOR Monitor	319.95

**LOWEST PRICES
GUARANTEED-CALL**

come visit our store at
1839 E. Chapman
Orange CA, 92667
Store Hours Noon-6 Mon-Fri
(714) 538-1234
Mail Order Hours 9-6 Mon-Sat
(714) 639-8189

BEWARE OF GREY MARKET GOODS On
VIDI-AMIGA Only the units that carry
manufacturers warrantee are subject to
upgrade. These units contain a
registration card from COMPUTER GAME
SERVICES. Legitimate VIDs are the only
ones we sell. Be safe not sorry.

DEALERS: contact us if you are having trouble
finding the real thing.

**SEGA GENESIS
IN STOCK**

ORDER LINE

INQUIRIES & CA. ORDERS

(800)-443-8189

(714)-639-8189



NO EXTRA COST FOR CHARGE CARDS Hardware shipping - call for quote.
Software shipping-\$3.50. For 2 day air add \$1.75 per title. COD orders + \$3.75.



COMPUTER GAMES + • Box 6144 • ORANGE CA 92667 • (714) 639-8189

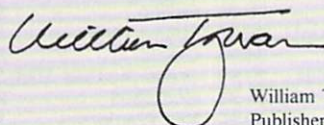
Join Our Reader Research Panel!

Open House . . . and you're invited to participate in a new and extremely important program for *Amiga Resource* readers. In order to fully understand your opinions, attitudes and reading preferences, we are establishing a Reader Research Panel.

Scientifically selected samples of our panel members will receive up to four survey mailings over the next 12 months. Survey results will help us to better design *Amiga Resource* with your interests in mind.

Please apply to participate in our Reader Research Panel today by completing the attached application form and mailing it back to Data Processing Firm, Media Research Associates, no later than June 31, 1990. All statistical information must be provided in order to select a panel representative of our entire readership. All information will remain confidential.

If selected, you will be contacted accordingly. Thank you for your cooperation.



William Tynan
Publisher

RSVP to: Media Research Associates
230 Park Avenue, Suite 1567, New York, NY 10169

Application Form *Amiga Resource* Reader Research Panel

ALL INFORMATION WILL REMAIN CONFIDENTIAL.

- | | | | |
|---|---|--|--|
| 1. Are you | Male <input type="checkbox"/> | \$35,000-\$39,999 <input type="checkbox"/> | 7. How did you acquire this copy of <i>Amiga Resource</i> ? |
| | Female <input type="checkbox"/> | \$40,000-\$49,999 <input type="checkbox"/> | (Please check only one answer.) |
| 2. What is your marital status? | | \$50,000-\$64,999 <input type="checkbox"/> | I subscribe and received it through the mail <input type="checkbox"/> |
| Married <input type="checkbox"/> | | \$65,000-\$74,999 <input type="checkbox"/> | Another member of this household subscribes and received it through the mail <input type="checkbox"/> |
| Single <input type="checkbox"/> | | \$75,000-\$99,999 <input type="checkbox"/> | I bought it at a grocery, newsstand, drugstore, etc. <input type="checkbox"/> |
| Widowed <input type="checkbox"/> | | \$100,000+ <input type="checkbox"/> | Another member of this household bought it at a grocery, newsstand, drugstore, etc. <input type="checkbox"/> |
| Separated or Divorced <input type="checkbox"/> | | | Other (specify) <input type="checkbox"/> |
| 3. What is your age? | 5. What is the highest level of education that you have attained to date? | | |
| Under 25 <input type="checkbox"/> | Attended High School <input type="checkbox"/> | | |
| 25-29 <input type="checkbox"/> | Graduated High School <input type="checkbox"/> | | |
| 30-34 <input type="checkbox"/> | Attended College <input type="checkbox"/> | | |
| 35-39 <input type="checkbox"/> | Graduated College <input type="checkbox"/> | | |
| 40-44 <input type="checkbox"/> | Post-Graduate Study <input type="checkbox"/> | | |
| 45-49 <input type="checkbox"/> | 6. What group below best describes your occupation? | | |
| 50-54 <input type="checkbox"/> | Professional/Technical <input type="checkbox"/> | | |
| 55-59 <input type="checkbox"/> | Manager/Administrator <input type="checkbox"/> | | |
| 60-64 <input type="checkbox"/> | Clerical/Sales <input type="checkbox"/> | | |
| 65+ <input type="checkbox"/> | Craftsman/Foreman <input type="checkbox"/> | | |
| 4. What was your total household income (from all sources) in 1989? | Other Employment <input type="checkbox"/> | | |
| Under \$25,000 <input type="checkbox"/> | Student <input type="checkbox"/> | | |
| \$25,000-\$34,999 <input type="checkbox"/> | Not Employed <input type="checkbox"/> | | |

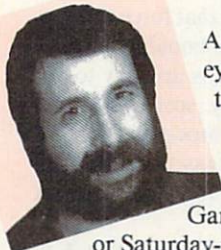
Name _____
Address _____
Apt. # _____ Phone _____
City _____
State _____ ZIP _____

AMIGA[®] RESOURCE

ABSTRACTIONS

Arlan Levitan

The New "Amiga X"



Ask software developers where the money is, and they'll tell you in no uncertain terms. Game machines. Measure the floor space at any of the last three Consumer Electronics Shows and announce the square-footage champion. Game machines. Watch an hour of MTV or Saturday-morning kideo and see what the advertising is pushing. Game machines.

The microcomputer industry has pretty much treated the Nintendo/Sega market with profit envy masquerading as high-brow disdain. This elitist attitude was successful in keeping many of the big-name software houses in the fold for a while, but the stakes have climbed to the point where yesterday's high rollers are playing an increasingly sour-noted second fiddle. A single Nintendo developer, Acclaim Entertainment, reportedly grossed more bucks on sales of its Nintendo games last year than the total revenue associated with sales of *all* games written for "real" computers. Last February, a handful of thugs in New Jersey hijacked a truck full of Acclaim cartridges.

Last year was another banner year for game machines, a.k.a. home entertainment systems. As the impressive new 16-bit machines from NEC and Sega duked it out with Nintendo's Game Boy for Most Coveted Gift honors, merchants who specialize in personal computers for the home suffered through a dismal holiday selling season. The most fortunate dealers reported sales to be relatively flat. A disconcerting number faced absolute disaster.

The most recent doom and gloom predictions from industry analysts portray 1990 as another big shakeout year for microcomputer manufacturers. IBM and Apple are cutting personnel and costs with head-snapping ruthlessness. Commodore is scrambling to hold on to what market share it has with a cornucopia of special Amiga packages and lowball direct-sale deals for full-time students. My neighborhood sage, Jimmy the Geek, puts the odds of Atari finally biting the dust at a pessimistic 50/50, but that assumes that anyone would notice.

As tough as it may be to come to terms with, let's accept the fact that there are tens of millions of people out there who like to play electronic games and have absolutely no desire to learn more about computers than where the power switch is. We all know that the Amiga is a terrific game machine as well as a great computer. The problem is

that Commodore marketing is convinced that selling the 500, or anything that looks remotely like it, as a game machine would impinge upon the credibility of the Amiga as a serious computer. The long-rumored \$200 Amiga game machine might sell like hotcakes, but don't hold your breath waiting for one. Instead of aiming for the low end of the market, Commodore will attempt to define a new market niche and supply the hardware to fill it.

At last January's Consumer Electronics Show, Commodore began testing the computer-as-an-appliance waters by giving dozens of software developers, selected dealers, and a few "friendly" members of the press a brief look at its answer to computer phobia. Word must have got out that I dropped out of charm school during the first week, since I didn't receive a personal invite. Never one to be deterred

by the lack of a proper invitation, your determined columnist set out to dig up the dirt concerning Commodore's consumer-oriented Amiga. Assisted by the power of a pair of X-Ray specs picked up at a local novelty shop and a callous disregard for Gestapo-inspired nondisclosure agreements, I was magically transported inside the private trailer outside the West exhibition hall, where a prototype of the new system was being showcased.

Commodore likes to call its new baby an *interactive graphics player* rather than a computer. That's OK with me, but let's just

call it Amiga X for the time being. Commodore doesn't have to worry about Amiga X being mistaken for a computer. It's much more likely to be taken for a VCR, and its sleek brushed-chrome face fits right in with the current styling of today's high-end audio equipment. On the inside, the Amiga X is based on a variant of the Amiga 500 motherboard with a full megabyte of memory. An RF modulator for displaying Amiga X's output on a plain-vanilla television is built in, as is a Super-VHS output jack for owners of high-end TV monitors.

Although the X sports all of the connectors normally found on an Amiga 500, no keyboard or 3½-inch disk drive is included. User input is provided via a wireless mouse and a pair of wireless controllers with numeric keypads and joystick buttons. The wireless system is also said to be compatible with wireless joysticks that are currently available.

According to Commodore, existing Amiga programs that rely solely on joystick and mouse input can be readily ported to the X. Programs that require use of the function

The Amiga X is a
variant of the Amiga
500, with a full
megabyte of memory
and a CD-ROM drive.

key or other keys will have to be modified. Once the owners of X machines get over their fear of being mugged in dark alleys by computer salespersons, they can add disk drives and a wired or wireless keyboard at an extra cost. According to most accounts, the X also preserves the 500's expansion bus, so a hard drive can be added as well.

Completing the hi-fi-component illusion of the X is a slide-out tray for a built-in CD-ROM (Compact Disc-Read Only Memory) drive. CD-ROM, for those of you who have been assiduously ignoring the IBM PC and Macintosh world for the last few years, is a high-density storage medium that uses discs that are identical in appearance to audio compact discs.

CD-ROMs hold digital representations of computer data rather than music. Odd as it may seem, storing computer data on CD-ROM is more efficient than slapping sound on a CD. Because of the complex nature of sound, a CD can only hold about 70 minutes of music. A CD-ROM can hold up to 550 megabytes of data. As their name implies, the CD-ROMs used by the Amiga X (and your audio CD player) are a read-only medium, although Tandy has promised to deliver a compatible read/write technology (dubbed THOR-CD) within the next few years.

Amiga X's CD-ROM drive will also play audio CDs, incorporating four-times oversampling and the ability to read subcode graphics. Subcode graphics (SCGs) are just beginning to show up on some musical artists' CDs. Using SCGs, still video images relating to the music or lyrics can be displayed on a TV while the music plays. Most of the controls on the front of the X are those that users of audio CDs are already familiar with, such as track select, search, and skip.

Contrary to previous reports, the Amiga X will not be marketed without the integrated CD drive. Apparently, Commodore sees the built-in CD drive as its ticket into new distribution channels such as audio/video specialists and department stores.

As lucrative as the game market may be, firms such as Nintendo maintain an iron grip on developers with a proprietary chip that must be present in any Nintendo cartridge. Nintendo constrains both the supply of these chips and the actual manufacturing of cartridges. The X's CD-ROM will conform with established industry standards for optical data storage (ISO 9660). By using a nonproprietary medium, Commodore won't be accused of "locking" the X from software developers. As exotic as CD-ROM may seem, the cost of releasing software on CD has become quite accessible. Commodore estimates the pressing and packaging cost of software on CD-ROM to be less than three dollars. At those prices, software houses can leave most of a CD-ROM's capacity unused without a second thought.

The X's CD-ROM drive may represent an open envi-

ronment to software developers, but it's likely to be sealed off tight at the user-interface level. Since there's currently no such thing as copy-protected CD-ROMs, allowing access to a CD-ROM at the AmigaDOS level would be an open invitation to wholesale piracy. There are only a couple of solutions to the problem that seem viable. One would be to rely on external-key systems that force the user to enter information found in instruction booklets, a situation which the targeted market for the X is unlikely to put up with. The other, and far more likely, scenario is that software written for the X will be machine-specific. The bottom line for current owners of Amigas is that a CD-ROM add-on for the 500 and 2000 may be an even longer time coming.

The PR flacks who were showing off the Amiga X at CES claimed that design specs would be formalized by the end of last February. And if all goes well, the X may be formally unveiled at Summer CES this June. Commodore is reportedly committed to bringing the machine to market

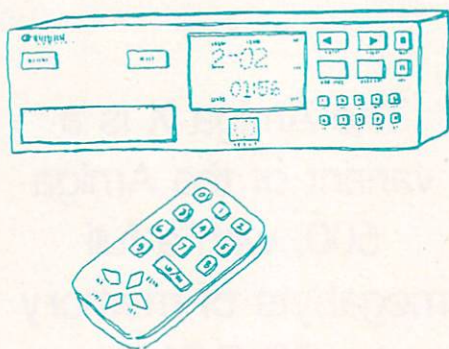
this fall and is targeting the X initially for the U.S. market only. Estimated retail price for the machine is \$600-\$800. However, several prospective big-name developers I spoke with voiced the opinion that the sneak peek was more market research than a glimpse of an imminent product.

Other aspects of the Amiga X's configuration are supposedly up in the air. One contingent in Commodore is pushing for an add-on accessory pack that bundles a 2400-baud modem with an expanded remote control and software for IBM's Prodigy information service. Another group apparently feels that an

add-on home-security package should be offered, complete with wireless BSR X10-style sensors and controllers.

Whatever the Amiga X's merits or faults, there is an undercurrent to Commodore's reasoning that I can't help but agree with: It's downright unreasonable to expect everyone in the world to get excited about computers. The only way to sell systems to the masses may be to market computers that masquerade as something that simply and easily performs functions deemed fun or useful without requiring a significant investment of intellectual attention or understanding. If Commodore actually has the guts to market such a machine, it will need a lot of luck and more than a little tolerance from the press (to which the Geek assigns probabilities of .20 and .0001, respectively).

There's no point in belittling the concept or execution of such a machine. The truth, as painful as it may be, is that the microcomputer manufacturers and hobbyists of this country have failed, for the most part, to enrich the lives of Joe and Joan Average with the wonderfulness of computing, be it on the Amiga, Mac, Atari, or PC. We need a machine like the Amiga X to show that there is life beyond Nintendo and that you don't have to be a computer nerd to get there. ▲



SPOTLIGHT

John Foust

Telecommunications



Since the introduction of the Amiga, the price of a 2400-baud modem has dropped from about \$500 to about \$120. No other hardware product has become so affordable so quickly. This month in "Spotlight," I'll give tips on choosing a modem, plus hints on using your modem more effectively.

Selecting a modem is easy. Modem prices have dropped because of advances in chip technology. Instead of dozens of chips, modems can be built with just a few custom chips. Reliability increases while the price drops. Ah, the benefits of capitalism. If you want a new modem, don't bother with anything less than 2400 baud. Due to the price drop, it's a buyer's market for used modems. You should be able to find a used 1200-baud modem for about \$50.

An external modem connects via the serial port, but Amiga hardware companies such as Supra and Aprtek also offer an internal modem for the Amiga 2000. If you can spare the serial port, the external modem is a safer investment because it can be used with almost any computer. Someday you can resell your modem to an IBM PC owner. Hayes AT command compatibility is a must. This describes a standard set of commands for telling the modem to dial the phone. If you see a modem price that's too good to be true, it might not be Hayes-compatible. Along with the modem, you need a telecommunications program. There are great ones to be found in the public domain, such as *Comm* by D. J. James. Last issue's *Amiga Resource Disk* featured the popular *JR-Comm*.

Why do you need a modem? It brings you in contact with more Amiga owners. Living in a mid-sized Midwestern city, I'm sympathetic to the Amiga owners who live in tiny towns in remote areas. They feel isolated because they don't have a user group, much less a local Amiga dealership. With a modem, you can link up with thousands of Amigaphiles on national networks such as CompuServe, People/Link, BIX, and GENIE. Networks are like user groups that meet every night. There's always someone there willing to lend a hand, from the simplest questions about the ARC program to esoteric texture tips for *Turbo Silver*. (Modems bring the added benefit of physical isolation, too. This can be a plus, especially if you've been sacrificing personal hygiene for your computing hobby.)

If you're on a budget, don't bother downloading files

from the national networks. It's clearly cheaper to buy public domain disk collections if you're patient enough to wait for them to arrive in the mail. On the other hand, the modem can get you a copy of the latest *DiskSalv* in minutes, saving you behind in the wee hours of the night.

Computer bulletin boards (BBSs) are popping up everywhere. Even if you belong to a local Amiga user group, it probably has a BBS. BBSs are a WPA project for outdated IBM PCs. Or, your office might have a computer that allows dial-in connections, giving you an easy way to transfer files between your home Amiga and the office computers. I deliver these columns to *COMPUTE!* by calling its typesetting system with my modem. My local university library has a dial-up card catalog. Businesses are adding BBSs, too. Many print shops add BBSs so computer owners can upload PostScript files for laser printing. My cable television company has a BBS. It's a new, sophisticated way of ignoring customer complaints.

Beyond BBSs and national networks, you can make private data calls with a modem-equipped friend across town. There are even games such as flight simulators and tank battles that allow a second player to participate over the modem. Surprisingly, some of even my most technologically advanced friends are afraid to do this. With practice, it's rather easy.

To begin, you might want to make a voice phone call to confirm that your computer is about to call. Next, each of you needs to start your telecom programs. Usually you can use a Modem menu that sets the baud rate of the Amiga serial port. Select the baud rate of your modem, such as 2400, as well as the number of data bits to send (usually eight) and the parity (usually None). Both parties need to choose the same values. With a Hayes-compatible modem, you can confirm that everything is correct by entering ATH followed by Return. You should see OK on a new line. ATH is the Hayes hang-up command.

One person initiates the call. To do so, you enter ATDT5551234. If the modem has a speaker, you should hear the touch tones. As the other person's phone rings, the telecom program should display RING. At this point, your friend enters ATA, which tells the modem to answer the phone. It will pick up the phone and attempt to synchronize with your modem. When the connection is made, CONNECT or CONNECT 2400 appears on both screens.

Don't press any keys until a second or two after you see CONNECT. I think this is the most common mistake

Don't press any keys
until a second or two
after you see
CONNECT.

people make when dialing a friend. Any extra keystrokes at this moment tend to confuse the modem, causing it to hang up the phone.

Now, any keys you press are immediately sent to your friend's computer. If no character is displayed when you press a key, toggle the setting of the Duplex item on your Modem menu, setting it to half duplex. If the Return key only moves the cursor to the left of the current line, enter a Ctrl-J to move the cursor down one line.

Noise on the phone line can cause data-transmission errors. At best, the noise will be ignored by the modem. If it's too loud, you might see random characters now and then. At worst, you'll see a constant stream of random characters after CONNECT.

You're free to type at each other all night, but it might be more exciting to transfer a file. To sidestep noise problems that could corrupt data or destroy program integrity, telecom programs use *transfer protocols* to ensure error-free transmission of files. In short, the file is sent a piece at a time, along with a few extra bytes to help verify that it arrived intact. As each piece is sent, the receiving telecom program checks the extra bytes. If no error occurred, it asks for the next piece. Piece by piece, it reassembles the file.

There are many protocols, such as XMODEM, YMODEM, ZMODEM, and Kermit. As long as you both use the same protocol, you can send files. Your telecom program's protocols are listed in a menu or submenu. First,

warn the other person you're about to send a file. You initiate the transfer by selecting the menu item that says Send File and then choosing a file with a file requester. Your friend selects Receive File. As the transfer progresses, you'll see status messages about the success and failure of the transmission of each piece of the file. When the transfer is finished, your telecom program will probably beep or flash the screen.

By the way, *upload* means to send a file to another computer; *download* means to receive a file. Improper use of these terms is a linguistic red flag to modem-heads. Say "upload" instead of "download" and they'll try to sell you a non-Hayes-compatible modem. You can remember the difference by imagining you're connected to a large mainframe computer looming over your head. Once upon a time, people admired big mainframe computers.

After you've finished typing and transferring files, press the plus key three times in succession. This is the Hayes command to bring you back to the OK prompt. Enter ATH to hang up the phone. Or, you can always cycle the modem power switch to disconnect.

As your telecom addiction grows, a second phone line becomes necessary so you won't tie up the family phone during the evening. It's not well known, but the telephone company doesn't bother to verify the purpose of your second phone line when it's listed in the phone book, so you're free to list it as the maid's quarters or guest cottage if you want to improve your status in the neighborhood. ▲

UTILITIES UNLIMITED OF OREGON, INC.

P.O. Box 532
North Plains, OR 97133

ORDERS TAKEN BY PHONE 24 HOURS A DAY AT (503) 647-5611
FAX: (503) 243-1333

SUPER CARD AMI-II

Copy protection gets tougher ... we laugh ...
Competitors get tougher ... we still laugh ...
Software manufacturers ... cry ...

\$99⁹⁵

Super-Card Ami-II is the best, most powerful archiving system available for Amiga computers.

Super-Card Ami-II is the NEW version of our hardware copier. Super-Card Ami-II installs into the back of your Amiga 500/1000/2000/2500 using an external disk drive. ALL of your external drives function normally. NEVER making it necessary to remove the hardware unit! Completely transparent! Amiga 2000 owners with TWO INTERNAL drives, we NOW have the version you need - Super-Card Ami 2000! The hardware unit installs INTERNALLY and is completely transparent.

Super-Card Ami-II also has a VERIFY option, eliminating the need to re-copy disks over and over. Super-Card Ami-II will copy ALL 3.5" software made ... including (but not limited to) Atari St, Apple Mac, IBM and of course, Amiga. 100% guaranteed! No exceptions ... it really works!

Let's face it, disk copying times vary from disk to disk. Oddly formatted disks take longer than others. Super-Card Ami-II uses highly advanced routines to obtain the quickest RELIABLE copy possible. Amiga DOS disk can be copied in as little as 37 seconds, but averages about 45 seconds!

The response has been overwhelming with our original Super-Card Ami. Here are a few letters we have received from our customers:

C.I.A. USER GROUP ... Super-Card Ami does it all! We tried every known publisher!!! Tested 4 different external drive manufacturers!!!!!! This is the best copier any of our members ever experienced!!! Our Amiga, Atari, and I.B.M. users wish to thank you!!!!

ODDWINN ... OOH!!! YEAHHH!!!!!! The Super-Card Ami makes me squirm in ecstasy! I can not find a title it can not back up. Super-Card works.

Mr. R.J.G. of Hall Summit, LA. ... The Super-Card Ami is truly amazing!!! Super-Card Ami has so far copied everything I have tried it on. Even the toughest programs have fallen before the onslaught of this copying juggernaut!!! So, thank you for a fine product and the best service I have ever received.

S.H. ... The product has succeeded where others have failed. It's well worth the cash.

We wish to thank our customers for the hundreds of letters we have received.

While it is true that our product costs more than that of our competitors, the extra spent will be well worth it! We welcome you to compare our customer support, service and copying ability with that of our competitors. We know that we rank #1 in all respects!

*** CUSTOMER APPRECIATION MONTH ***

With every Super-Card Ami-II order received by May 30th, you will receive NIB V2.0 absolutely free! Retail Value: \$44.95

NIB V2.0

The most popular shareware copier joins the commercial market. NIB will backup most commercial software made today. Ease of use and reliability are the strong points of NIB. NIB will actually by-pass "documentation" style copy protection making your backup "protection free"! NIB supports single or multi-drives and has a FULL VERIFY function. NIB will also be supporting SUPER-CARD AMI in the future to provide the ULTIMATE backup system. So if you are tired of thumbing through pages of documentation and losing your original disks, get the most popular copier on the market today... NIB.

\$44⁹⁵

SUPER-TRACKER AMI

Have you ever wanted to know where problem tracks are located? Now, with Super-Tracker AMI, you can tell! This beautiful digital track display simply plugs into the last drive in your Amiga System (all Amiga computers will work.) The head location (track), side (top or bottom head), and write protect position are all displayed.

\$79⁹⁵

AMIGA 500 REPAIRABLE POWER SUPPLY

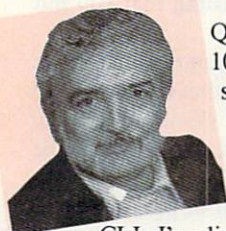
\$109⁹⁵

Add \$4.00 shipping and handling • Add \$3.00 C.O.D. in USA only. VISA and MasterCard accepted • Allow 3 to 4 weeks for delivery. All sales are final unless authorized by management. SOFTWARE AND HARDWARE SUBMISSIONS WANTED

CLI CLIPS

Jim Butterfield

Commands and Data



Quick tip for beginners: There are over 100 commands available in a typical CLI system. Learning them all seems like an insurmountable job. Don't panic; you need only a dozen or so to become proficient with the CLI or Shell.

To help you enter the world of the CLI, I've listed my favorite commands in the accompanying tables. The tables divide the commands into three groups: simple, sophisticated, and advanced. You can put the simple commands to work right away. With a little practice, you'll be ready to try the sophisticated list. The advanced commands will expand your skills when you're ready.

There's such a rich set of commands in the Amiga that beginners often feel swamped. But there's no need to be intimidated; just learn the system a little at a time.

Command and Data: the CLI Line. It takes awhile to get used to the idea that when you type in a command such as DING DONG DELL, the first word (in this case, DING) is the name of a program, and the remainder of the line is data that the program will use. Sometimes that data gives file or directory names; sometimes it's just information. For example, the command LIST DF0: gives the List program the identity of a disk drive (DF0:) to work with. In contrast, LIST FILES tells the List program to work in a certain way, that is, to list only files, not directories. In this case, the keyword FILES is not a drive, directory, or filename.

In other words, the first word of a CLI line is the name of a program. The rest of the line may be anything: It's some sort of information for that program to use.

Most of the CLI commands we use are programs stored in the C directory of the disk you started with (the boot disk). We don't need to type the directory path of such commands. Thus, we may say LIST rather than SYS:C/LIST, although either would work. How does your Amiga, given the name of the command, know how to look in the right directory? It searches in several directories; the search is defined by a path. You can see this search path: Type PATH and you'll see the directories that the Amiga will check when looking for a command.

You can change the path, of course, with the Path command. And you can completely bypass the normal search path by specifying the program's path explicitly.

For example, suppose you had decided to save space on a work disk by dropping the Edit command from the C directory. Later, using that work disk, you decide that you'd like to use the Edit command. No problem; you just slip any disk containing the Edit command into a drive (say, DF0:) and type DF0:C/EDIT.

Speedy commands. There are a couple of cases where the Amiga doesn't need to search for a command. The 1.3 Workbench Shell has a built-in Alias command. And you could make some commands resident, which causes them to sit in memory, waiting for you to call them. In either case—by using Alias or resident commands—the computer uses the command without the need to search the path for the program.

The Alias command is a handy way to save typing.

For example, suppose you know that you'll want to list the contents of several directories, looking for filenames. You expect to type LIST QUICK FILES a number of times, but Alias can save your fingers. Just type ALIAS LS LIST QUICK FILES and, from that point on, the command LS will do the job for you. You may cancel the command at any time with ALIAS LS, and you may view all current aliases by typing ALIAS.

Alias saves your fingers, but it doesn't save time in searching for and loading the actual commands. In the above example, the Amiga would still need to go looking for

List each time you gave the command LS. To speed up the search and load operation, you'd use RESIDENT.

If a program is *pure*—that is, if the *p* protection bit is set—the Resident command will bring that program into RAM, ready for instant use. For example, RESIDENT C:LIST will bring in the List command from the C: directory.

When you make a program resident, it's held in memory in executable (ready-to-go) form. It uses less memory in RAM than it does on disk. Even so, if you're running short of memory you may wish to remove these programs when you no longer need them; the command is RESIDENT REMOVE, as in RESIDENT DIR REMOVE.

A program must be pure in order for you to safely make it resident. A pure program is one that can be safely used several times at once. Most commands in the C: directory are pure; type LIST C: and look for *p* in the protection-bit area of the listing.

The pure bit can be set using the Protect command,

Table 1. Simple Commands

Dir	Show the contents of a disk or drawer
List	Show contents as Dir does, but give more detail
Delete	Remove a file or an empty directory
Avail	Show available memory
Type	Display a file in ASCII or hex format
Copy	Make a copy of a file
Rename	Change name or directory path of a file
Makedir	Create a new directory
Info	Show mounted devices
EndCLI or EndShell	Cancel the CLI or Shell

but be careful! Setting the bit doesn't make the program truly pure; it must be written in the right way. Still, if a command has accidentally lost its pure bit, you can easily restore it by typing a command like `PROTECT LIST +P`.

Workbench Insight. Once a user understands the CLI format of program followed by data, the knowledge may be extended to the Workbench. The elements of a CLI line are often very much like the elements of a Workbench *multiple selection*.

Here's the idea: suppose you have a file called `DF0:ReadMe` that you wish to read using the More program. From the CLI, you would type `MORE DF0:README`. More, which is located in the Utilities directory (part of the normal path) would go to work, bringing in `ReadMe` and showing it to you one screen at a time.

You can do exactly the same thing from the Workbench. Open the Utilities drawer, and you'll see an icon for the More program. Leaving this on the Workbench screen, open the disk or drawer containing the `ReadMe` file. Arrange the windows so that you can see the icons for both More and `ReadMe`.

Now, click on the More icon. That's the left mouse button, one click; don't touch the Shift keys. You'll see that More is selected. Next, move the pointer over to the `ReadMe` icon. Now hold down either Shift key and click twice. As before, More will go to work, displaying the file `ReadMe`.

Let's review what has happened. In the CLI, we typed something like `MORE README`. In the Workbench, we clicked on More and then held down Shift and double-clicked `ReadMe`. The result was the same.

The Workbench rules are not hard. If you don't press Shift, clicking selects the command. When you hold down Shift, clicking supplies data for the command to use. Doesn't this seem like the CLI, where the first word is the command and following words supply data? The double-click is like pressing RETURN in the CLI; it supplies a go signal.

You'll start to get the feeling that there's a unity to the design of the Amiga. At first, the CLI and the Workbench seem like totally different, almost unrelated, systems. As you gain experience, you'll start to see the two as part of an integrated concept.

If you talk to Workbench-only users, they'll start to benefit from your CLI-based knowledge. The above procedure, using More to read files, is a useful example. Many documentation and `ReadMe` files have become separated from their file readers. A naive user who clicks on such a file icon would see only a screen flash and might conclude that the file is unreadable. Calling up the Workbench menu's Info item would display the identity of the Default

Tool (the misplaced read program) and allow the situation to be corrected. But if you just want to read the file, multiple selection on More will get you there fast.

Ghost Disks. Have you ever clicked on an icon and gotten a message like `PLEASE INSERT VOLUME ZONK IN ANY DRIVE?` You might have used a disk with that name at some time in the past. You might even be sure that there's nothing on that ancient disk that's of any value to the file. But there is the requester, insisting that you put that old disk in your drive.

This kind of thing can be an annoyance to hard disk users, who have happily put everything that might ever be needed onto their mammoth storage device. Even so, certain programs seem to demand that a floppy disk be inserted. The same kind of thing can happen to floppy-based users who have gathered a group of programs and files on a single convenient disk. Then they discover that the programs insist on the insertion of the original disks.

It's usually not a protection scheme at work here, just

a programming style. For example, suppose you have just upgraded from Electronic Art's *DeluxePaint II* to version *III*. You pull out a favorite picture and double-click on it; then the system demands `PLEASE INSERT VOLUME DPAINT IN ANY DRIVE`. The new paint program is on a disk named `DeluxePaintIII`, not `DPaint`. It seems as if the system wants you to use the old program.

You can see why this is happening by clicking on the icon and selecting Info from the Workbench menu. For the example above, you would see the Default Tool given as `DPaint:DPaint`, which means load the `DPaint` program from a disk named `DPaint`. Wrong disk!

How do you fix this? The obvious way, in this example, is to change the default tool to `DeluxePaintIII:DPaint` and save the result.

But if you have dozens (or hundreds) of pictures, that could be a lot of work.

A quick way of looking at the picture is by using the same multiple-selection method we used a moment ago. Click on the program, hold down Shift and double-click on the picture; you're ready to admire the artwork.

There's a third way, which uses the CLI, and it's usually the best. If you know that you'll be asked for a disk with a certain name, and that the needed data is available on another disk, just assign the old name to the new one.

In our example above, we know that there will be a search for a disk called `DPaint`: but that disk `DeluxePaint-III` will contain the needed program. Just type `ASSIGN DPAINT: DELUXEPAINTHIII`. When the system starts a search for disk `DPaint`, it will immediately switch over to the other disk. If you plan to do this kind of thing on a regular basis, add the Assign command to your startup-sequence. That way, the name switch will be permanent.▲

Table 2. More Sophisticated Commands

NewCLI	Start a new window for multitasking
NewShell	Start a new window for multitasking
Run	Do the following command as a separate task
Echo	Output a message
Say	"Speak" a message, impress your friends
Resident	Put a command into RAM, speeding it up
Alias	Give an alternate name to a command
Execute	Perform commands given in a script file
Date	Display or set the system date and time
Assign	Give a logical name to a disk or drawer
Format	Prepare and clear a disk before use
Install	Make a disk bootable
Protect	Set or clear file characteristics
Ed	Create or edit a text file
More	Display a text file on the screen

Table 3. Advanced Commands

Prompt	Set format of CLI/Shell prompts
Status	Report status of all CLI/Shell processes
Search	Look through text files for specific text
Mount	Attach a new device to the system
Path	Adjust where the system will look for commands
Relabel	Change the name of a disk
Join	Join several files together into a single file
FileNote	Add a text "note" to the file
SetClock	Set or read the realtime clock
Version	Display the current system version
Stack	Show or set the amount of stack memory for commands

ASK ROB PECK

Rob Peck

Straight Answers to Common Questions



Instead of limiting the scope of this column to programming questions, from time to time I'll also be answering some of the user questions that are sent to *Amiga Resource*. Here are a few that seem to come up quite often, particularly from relatively new users.

What makes my Amiga 500 say Software error - task held. What can I do to solve the problem or to avoid it altogether? And a similar question, What causes my Amiga 500 to say Guru Meditation?

Both of these error messages are often related to the same basic problem—some piece of software that you have run either did not follow the rules that are specified for Amiga software development or were insufficiently tested before the software reached your hands.

The Amiga is a multitasking machine, letting you perform many jobs at once. When you find a useful utility, such as a clock, screen blanker, mouse accelerator, word processor, or whatever else, it's tempting to install it on your Workbench disks and perhaps put it into your startup-sequence so it will run automatically every time you boot your Amiga. Each of these (often indispensable) utilities takes its toll on the system, however.

When you run a program on the Amiga, that program needs to use some of the computer's memory and a percentage of the system resources. An Amiga 500 usually has only 512K or 1MB of memory. The developer of the program may have tested the program on an Amiga 500 with the minimum memory and determined that it runs perfectly well on such a system. But the developer may not have tested the program while other programs were running or on a computer system similar to yours.

Many users add external disk drives to their system. Each additional external floppy drive uses 22K of RAM. Other peripherals and their device drivers (the software that knows how to talk to the peripheral) use RAM also. If a developer doesn't test his or her program with some of the memory used in this way, software errors that are caused when a program runs out of memory will go unnoticed.

Recovery May Be Possible. It is possible to keep your data from being destroyed by some software errors.

A software error message tells you that a task has found a problem that it knows would crash the system. Note that the program that found the error may *not* be the one that caused it. It simply means that this piece of

software located a problem. If you're working on something when a software error occurs and you wish to save your work, keep a blank formatted disk handy. Here's how I handle the situation—it might or might not work for you, but it's something to try anyway.

Press Left Amiga-N to pull the Workbench screen to the front. If there are several tasks running (besides the one that has the software error showing) try using the screen-to-back gadget (in the upper right corner of the screen) to move to the next screen and try selecting the program's save-as option to save your work to the new disk. I always save to a new disk just in case something is seriously wrong, in which case the save operation might trash my work disk.

Continue to flip through the screens and try to save your work. Do this for any project that you have in progress. Sometimes it works, and sometimes it causes the program to get a software error because, during the save, the program may find the same error condition that caused the first program to lock up. When you finally acknowledge the software error by clicking on the requester's Cancel gadget, perhaps you will have been lucky enough to have saved some of your work.

If you see a guru meditation error, it's almost certainly too late to do anything. The guru meditation number is a message to programmers. It tells which piece of

system software found a problem and what kind of problem it is. This helps programmers find problems that are caused by their software. It does not help the casual user, however.

Avoiding Errors. The best way to avoid software errors and guru meditations is to eliminate the source of the problem. Try to remember exactly what you did just before the error occurred; then try to duplicate the problem in as few steps as possible. If you have added programs to your startup-sequence, boot your computer with an original Workbench disk and try to crash the program again. If the program refuses to crash, add items from your normal startup-sequence, one at a time, to the original Workbench startup-sequence until you find out which one causes the problem.

If the error is caused by a memory conflict, you may find that several program combinations cause the computer to crash. In this case, it's probably just one insufficiently tested program that's at fault, not any of the utilities you're running with it. Better still, you might find several combinations of utilities that allow the program to run



Does this look familiar?

without crashing! If this is the case, think about how important this program is to you. If it's very important, can you stand to use it without a few of your favorite utilities active?

Learning to avoid problems comes from experimentation on your part because your system and the programs you run are unique; you can't expect manufacturers to check their programs under *all* possible conditions. It would be nice, though, if the program would at least issue an error message instead of choosing to crash.

When you discover a problem, report it to the program's manufacturer, explaining in the smallest number of steps possible how its programmers can duplicate the error. Perhaps others will have reported the same problem, and by contacting the manufacturer, you'll be able to obtain a low-cost or free software upgrade that corrects it.

Copy Protection. *Why can't I copy some disks? And why can I copy some disks, but the software still asks me to insert the original disk before it starts the program?*

Some manufacturers believe that the only way to protect their investment in software development is to make it impossible for purchasers to copy their programs. These manufacturers assume that a purchaser might be a *pirate* (someone who illegally copies and often distributes copyrighted software). These people may give copies of the software to all of their friends, thus cheating the manufacturer out of many potential sales. As a result, some companies apply *copy protection* to their disks. This not only prevents people from making copies for giving away, but it also prevents users from making backup copies of valuable software. Disks sometimes wear out and develop errors. Many users find it nerve-racking to have to use their one-and-only copy of a program in order to make that program work.

The latter copy-protection question indicates a better situation. Here the computer seems to think that it has successfully copied your program, but there's something special about the original disk that didn't quite make it to the new disk. In these cases, most of the disk activity happens on your copy of the program, and when the computer asks for the original disk, the software usually reads only one track from that disk (now called a *key disk* because it unlocks the software). There is less wear and tear on the master disk, and it still gives the manufacturer the feeling that its investment is protected.

Many manufacturers have stopped copy-protecting their disks; some allow you to copy their disk but force you to enter a word from the program's manual in order to unlock the software. This is certainly a more trusting approach.

Software manufacturers must convince themselves as to what is the best. Rather than choosing a side on the

issue, I'll just report that some people vote with their wallets and refuse to purchase copy-protected software. If the software is far better than any other package, however, boycotting it might be carrying things a bit too far. One must weigh the benefits of having and using copy-protected software against compromising a principle and avoiding something wonderful; oh, how difficult it is to sit on this fence (grin). Of course, what you do about it is entirely up to you.

Redundant Hard Drives. *I have an early Amiga 2000HD with an A2090 hard disk controller. The disk has two partitions on it. I looked at the contents of the two partitions, and it appears as if they both contain almost exactly the same stuff! Do I have to keep all of it?*

What you see on the two partitions are the normal contents of a Workbench floppy disk. One is the boot partition (used to start up the machine), and the other is for normal use after the machine has been booted. In fact, the reason for the Workbench program *CopyPrefs* is to copy

the computer's Preferences file from the normal-run partition to the boot partition: When you first boot the computer, your Amiga uses the Preferences file from your boot partition, but when you run the Preferences program, it modifies the Preferences file found on the normal-run partition. By using *CopyPrefs*, you put Preferences in the right place so that at the next reboot, the correct color settings, pointer shape, printer driver, and so on are put to use.

Do you have to keep it all? Well, the only things that you really need to have in the boot partition are the programs that are run by the

startup-sequence in the S: directory of your boot partition. The designers of your hard disk system put an entire Workbench on the boot partition so that it would be possible to run any system command from the startup-sequence. That is, if you leave all of the files there (particularly those found in the C: directory), you can customize your startup-sequence in any way you wish.

Keeping both partitions the way they are has some other advantages. You can create and test a startup-sequence in the normal-run partition, rename your original startup-sequence, and then copy the new one into the S: directory of your boot partition. The next time you reboot, the new startup-sequence will take effect. Because the two partitions are identical, your startup-sequence should behave exactly as it did when you tested it.

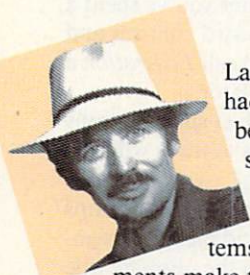
If you delete some files, be careful not to remove any programs that you may want to use later. It's also a good idea to keep at least one copy of each program, in either the boot partition or in the normal-run partition. You may find the need to use one of these files later on, so you'll be glad if you keep a copy accessible. As it is now, both partitions are ready for just about anything. ▲

Some people vote
with their wallets and
refuse to purchase
copy-protected
software.

JUST FOR FUN

Shay Addams

Space: The Final Frontier



Last week I boldly went where no man had gone before—only to find I'd already been there in 1986! But this time I boldly stayed and played a lot longer than when I first ventured to the 270 star systems and 800 planets in Binary Systems' *Starflight*, for a number of enhancements make the Amiga version of this classic space game far more fun than the MS-DOS original.

The story commences in 4619, when magnetic fluxes in space have begun destabilizing on one star system after another. The Arth system, where your ship is based, will suffer the same fate unless you determine the source of the fluxes and stop them. Don't waste time, though, or you may return from a long trip to Mardan 2 only to find that your Starport has been wiped out, leaving you with no place to dock or sell or buy goods and therefore unable to complete the game.

You can staff the ship with individuals from assorted species before outfitting it with cargo pods and other gear. You can then read bulletin boards for clues and finally head into space to chat with aliens, mine for minerals, search for valuable and sometimes useful artifacts, and engage in other intergalactic activities.

Amid a swarm of colored stars, your ship looks like a little rocket ship in a board game. Guiding your ship with the mouse, you move from planet to planet. A new cruise-control feature speeds up this action by allowing you to click on a direction and watch the ship follow that course until you change it again. (In the original game, you had to click once for every square that the ship moved.) On the surface of a planet, the new Auto-Mineral Pick-Up option lets you snare a few pounds of mercury or prothenium without going through several tedious steps required in the MS-DOS version.

Another novelty appears when you're presented with a Yes/No option. Rather than asking you to glide the cursor over and click on one of the boxes marked Yes or No, you'll initially see the cursor itself appear as Yes. Just moving the mouse a bit will change it to No, and you simply click when you've finally made up your mind. A

healthy crop of keyboard commands augment perceptively deployed mouse and menu controls, further streamlining an already fluid game system. It's also easier to save a game in progress on the Amiga. A menu lets you save up to five games on the program disk and restore them at will. The program is not copy-protected, but it cannot be played from a hard disk. (It will run on a meager one-floppy 512K system, though.)

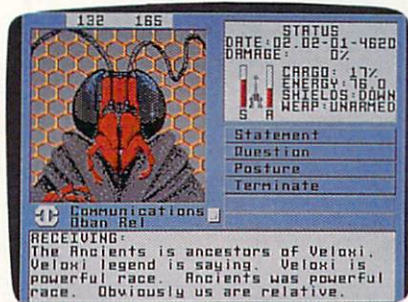
My favorite game improvement lets you bypass the landing/takeoff sequences. The fractal graphics that do such a novel job of showing the world change size and color as it spins around eat up a good four or five minutes (I never finished *Starflight* in 1986 because the original MS-DOS version made me sit through that sequence over and over and over). Illustrations of the aliens are much more detailed and colorful in the Amiga version.

It's too bad Binary Systems didn't design *Starflight* on the Amiga to begin with because it was the game that established the market for MS-DOS entertainment software, so it could have conceivably done a lot for Amiga sales in 1987. But, although the fractal graphics and other visual effects are enticing, the game lacks sophisticated animation and sound effects. At least you hear suitable tunes when dealing with the assorted aliens, and colors and sounds are employed to signal vital information like the *low on fuel* alert.

Star Command: Go for your guns. Hardcore space gamers won't power down their lasers after merely rescuing the universe from a few

flimsy fluxes; they want revenge, and *Star Command's* vast battery of weapons is loaded and ready to fire at the hordes of bug people, pirates, and other villains rampaging through a remote corner of the universe called the Alpha Frontier. While the graphics and overall design aren't as highly polished as those of *Starflight*, *Star Command's* story is told in a more linear fashion, for your eight-member team is assigned a new mission each time you complete the current one.

Designed by *Phantasia* author Winston Douglas Wood, *Star Command* puts more emphasis on combat than does *Starflight*. Your crew, for instance, includes



You can staff your
ship with individuals
from assorted species
in *Starflight*.

Marines, Soldiers, and Espers (whose psionic powers make them comparable to spellcasters in fantasy role-playing games), while no character in *Starflight* is even referred to as Ship's Gunner or a similar title. And in addition to space combat and a ship armed with all kinds of futuristic weaponry, *Star Command* lets your characters fight man-to-alien, so there's a closer feel to the tactical combat seen in other SSI games. It's also much more "hardware-heavy," offering long lists of futuristic weaponry that Mel Gibson would be proud to hang on the wall at home.

Breach II: Conquer the stars.

Breach II profits from excellent digitized voices and sound effects; animation far smoother, faster, and more frequently seen than in the above titles; and an interface that's more intuitive than Jean Dixon on a good day. Like *Star Command*, it dwells on the tactical-combat aspects of blazing a trail on the space frontier—and does it so intently that it doesn't even let you fly a spaceship.

Breach II has no story or plot, yet it incorporates minimal role-playing with a Squad Leader character, the only one appearing in all 15 scenarios and the only one whose abilities are increased as he's promoted through the ranks.

Via a well-designed and functional set of icons, you command a squad of marines with a different tactical challenge in each mission. (Even though there's no plot, several scenarios may be linked together.) The way squadrons are moved about the terrain gives *Breach II* the feel of a board game, and it's a good choice for those who don't appreciate mind-numbing, synapse-shortening logic puzzles.

Breach II includes a Builder program, so even nonprogrammers can design their own battle scenarios and play those cobbled up by other gamers. Equally alluring is the fact that *Breach II* will dovetail into Omnitrend's upcoming Interlocking Game System (IGS) line. Tentatively called *Rules of Engagement*, this system is projected to form the basis of a monumental space-combat game. *Breach II* and future releases will serve as modules that hook into a skyful of IGS game worlds. One IGS game can operate another one, so while playing one, your squad might enter a world in *Breach II* just long enough for a battle best staged in that environment. And the Squad Leader you created in one world can step back and forth among all IGS game worlds and modules.

You'll need one megabyte of RAM to play the *Breach* games; if you've got 512K, look for Omnitrend's *Universe III*, which has a similar interface but features a linear story, less combat, and a thorny collection of logical puzzles.

Two kinds of action among the asteroids. For more of

a hands-on approach to space flight, join the Federation of Free Traders in *Federation*, a British import that reminded me of *Elite* and *Starflight*. Instead of looking down at your ship as it moves across a field of stars, you'll see those 1000 points of light moving straight at you as you sit on the bridge of your Hartley Mark I spaceship. This nimble craft gets you around the universe swiftly—after you've spent a week or so mastering the system of keyboard controls and displays intricate and complex enough to call *Federation* a space-flight simulator.

You can dock at space stations or land on planets to trade with the locals, send E-mail over the ship's computer or directly to other ships in the night sky, and pick up assignments that lead to the ultimate title of Federation Admiral. It's a trading and action game, not an adventure, so there's no plot or single goal to accomplish and you can opt to focus on making a fortune as a trader rather than tackle any of the missions.

Spaceships, space stations, and other things that whiz past your vessel are conjured up with solid, 3-D graphics that scream across the screen. Sound effects and music are the best I've heard in a British game, and there are 20 different tunes. The only drawbacks are an unsociable interface and horrible documentation. Those who like their trips to space fast, furious, and full of fire fights, however, should be willing to put up with these flaws. *Federation*, after all, is the best game Cinemaware has brought over with its Spotlight Software line.

For those seeking a different kind of action, there is the Brad

Stallion series of graphic adventures for adults. In *Bride of the Robot*, Brad struggles through a series of double entendres—and single entendres—that clearly prove programmers have just one thing on their minds (and it's not a new version of AmigaDOS). As Brad, you'll have your hands full rescuing Miss Galaxy from a sex-crazed killer robot. The graphics are well executed but uninspired, and the puzzles and parser are practically nonexistent, so only those obsessed with soft-core computerotica will want to take a peek at this and the previous Free Spirit games in the series, *Planet of Lust* and *Sex Vixens in Space*, whose names are the best part of the games.

If you're planning just one trip to space this summer, keep these highlights in mind when setting your sights on the stars. *Starflight* is thought-provoking, *Star Command* is more visceral and strategic, and *Breach II* is a lush look at hand-to-hand combat in the future (and promises expandability). *Federation* is a fast-paced action-simulation game with trading elements and missions to accomplish, and *Bride of the Robot* is filing for divorce. ▲



Breach II profits from excellent digitized sound effects as well as smooth animation.

The World's **Best** Amiga Shareware!



For
Shareware

Buy
1-4
each **\$4.99**

Buy
5-9
each **\$3.99**

Buy
10 or
More
each **\$2.99**

Works with All Amiga Systems

WHEEL OF FORTUNE APPLICATIONS 1	AMG 101	TV version clone with complete speech syntheses!
GRAPHICS 2	AMG 112	Includes label maker, grocery list maker and Amigazer, a disk cataloger/viewer for stars (like Planetarium).
BUSINESS PROGRAMS 1	AMG 113	Great programs for desktop publishing and video - allows you to run AmigaDOS commands or programs for Icon.
SINKING ISLAND II	AMG 129	Programs include an address book, amortization program, talking mail manager, label printer and more. Label printer is great for making return labels in large quantities.
STAR TREK: THE GAME	AMG 137	The adventure begins... Text graphics game with 4 map scenes, underground chambers and much more. Two drives recommended. 92 disks. AMG 137 A and B)
Q.E.D. BATTLEFORCE V3.02	AMG 159	(2 disks) A brilliant masterpiece, one of the best Amiga programs we have. Extraordinary digitized sound and graphics lead you to believe that this is the real thing. Complete your 5-year mission aboard the USS Enterprise. A must for Trekkies! (1 MEG Amiga w 2 drives min.)
NIBBLER MIDI	AMG 160	Excellent text editing program for the Amiga.
	AMG 161	Ideal for Battletech players. 1-4 players can challenge each other or play against the computer.
	AMG 162	For making backup copies of just copying anything.
	AMG 164	(3 disks) A wealth of software for MIDI musicians and were previously released in Keyboard magazine. Support for all popular synths with editor/librarians, utilities, sequences, etc. Includes variety of music videos; and animation sequences not available on other disks.

**PLUS: FRED FISH TO #300
AMICUS TO #26**

LAND OF CONFUSION	AMG 165	Digitized music with voice and some graphics demo! The song "Land of Confusion" is by Phil Collins.
TIFFANY	AMG 166	Digitized music with voice! Contains the song "I Think We're Alone Now" by teen pop star Tiffany.
MADONNA	AMG 167	Digitized music with voice and picture of Madonna. Contains some of Madonna's popular music!
MICHAEL JACKSON	AMG 168	Digitized music with voice. Contains popular songs by mega-artist Michael Jackson!
POP MUSIC DEMO	AMG 169	Contains some excellent synthesized Euro-pop music! Great for showing off your Amiga sound!
BOWIE DEMO	AMG 170	Contains music of David Bowie!
DELIRIOUS 1	AMG 171	(2 Disks) Remember Eddie Murphy's video "Delirious"? Well, this it! It shows a picture of the comedy king. You select a topic from the menu and you will get the digitized version (of the video)! It's great! A must see, must hear demo! Don't forget the 2nd part of this (disk B)!
DELIRIOUS 2	AMG 173	More of the Eddie Murphy Delirious! Check it out! Contains 2 disks!
NORTHSTAR DEMO	AMG 175	The disk contains a whole bunch of awesome synthesized music, graphic demo and messages! It shows some creative special effects too!
HORROR DEMOS	AMG 176	Contains 4 very different graphics and sounds demo. The first two are very gruesome! The third and fourth demos are music and graphic messages for those strange European programmer/hackers out there. It's nothing horrifying. But the first two are the best! Unbelievable animations!
DEREK AND CLIVE	AMG 177	2 disks! This is part A. Contains digitized voices of Derek and Clive. Tells jokes for a long time.
DEREK AND CLIVE RIPPING YARNS	AMG 178	2nd disk of 2 disks!
SINNERS DEMO	AMG 179	Contains lots of synthesized music! Select them by pressing the function keys. At the same time, it shows some interesting graphics effects of you moving on a 3D plane. Use your joystick to control it.
VIDEO EFFECTS 3D	AMG 180	1) Sinners II Demo - Synthesized music! 2) Iron Maiden Demo - synthesized music with Iron Maiden pic! 3) Sound Machine - music 4) Digitech's Autobahn - music and game at the same time! 5) Hulkamania demo - Plays Obsession by Animation! Cool!
TOILET PAPER AD	AMG 181	3D special effects of titles and graphics. It twists, flips, rotates the titles for videos. Awesome demo in hi-res! Interesting and creative demo of TV commercial with digitized sounds.
INTROMAKER	AMG 182	Make great introductions with music and pictures on your self-booting disks.
INSTRUMENTS 1 UTILITIES	AMG 185	Musical instruments for your workbench demo.
WORKBENCH DEMOS	AMG 186	Contains several utility programs. Includes Arc, FunKey, Overscan, SpriteEd, QuickFlix, SysMonitor, and Slides.
INSTRUMENTS 2 UTILITIES	AMG 187	Includes speech, music, pictures, animations and more for your workbench.
FAUG 26	AMG 188	More instruments for your workbench disk demo.
FAUG 60	AMG 189	More utilities program for your Amiga!
	AMG 194	Contains raytraced pictures and The Baby, a cute long movie!
	AMG 195	Contains animations - Kahnankas, Rocker, Marketroid.

NAGEL PICTURES BASKETBALL ANIMATION	AMG 196	Over ten pictures of Patrick Nagel's famous art! Requires 1 megabyte to run this awesome animation. Also contains Rocker!
STAR WARS WALKER	AMG 197	Requires 2 megabytes memory to run this awesome demo of a snow walker from Empire Strikes Back. It walks around an Amiga 2000 and shoots laser at you! One of the best I've ever seen!!! Contains 2 disks.
EDUCATIONAL DISK	AMG 198	StarChart - Useful for astronomers. Middle East Quiz - Test your knowledge of the Middle East.
CASINO GAMES	AMG 214	Includes many fun card and casino games.
THE GOLDEN FLEECE	AMG 215	Large text adventure that allows you to save games. Similar to Infocom games.
JACK FROST	AMG 241	An electronic comic book based on the comic strip of the same name.
CHINESE CHECKERS	AMG 242	Chinese Checkers - Play up to six players in this classic strategy board game. Emulators - Commodore 64 and IBM "joke" emulators.
LARN V12.01C	AMG 250	A Dungeons & Dragons type game.
CLERK 4.0	AMG 253	A great user-friendly business application for small to medium sized businesses.
COMPUTER BIBLE	AMG 259	A 7 disk set of the King James Version of the Bible in text format.
MADONNA SLIDESHOW	AMG 260	A black & white slideshow of Madonna in her usual poses. Great for Madonna fans!
KIDS SLIDESHOW	AMG 278	Watership Down - Cute slideshow program with rabbits and other cute pictures.
PIRANAHAS	AMG 292	Piranahas Demo - A brilliant demo similar to the scene from Monty Python's "Meaning of Life." The Fishtank - A terrific demo of an aquarium.
CASTLE ADVENTURE	AMG 299	Castle of Doom - A simple adventure game with graphics for beginners.
FREWARE UTILITIES	AMG 303	An excellent disk full of utilities and tools.
NAGEL BENCH	AMG 320	More Nagel pictures, with a slideshow and more!
TV BASKETBALL GAME	AMG 326	Cinemaware Basketball Slideshow - Preview TV Sports Basketball before you buy. This is a slideshow of the game.
RALLY CROSS GAME	AMG 328	Rally Cross Demo - A 4 player super-sprint type game with new tracks and night driving! Try before you buy!
MEGA POINTERS GAMES 1	AMG 339	Over 150 pointers for you to use on your Workbench.
GAMES 2	AMG 349	Antep - Excellent Ultima-like role playing game. BTII Maps - 4 high resolution town maps of the Bard's Tale II game.
GAMES 3	AMG 350	Slot Cars - Simple game of driving a car through a maze. DM Maps I - Maps to levels 1-7 in Dungeon Masters game.
GAMES 4	AMG 351	DM Spells I - Lists priests and wizard spells in Dungeon Master game. MouseBounce - A challenging game played on Work Bench with a mouse pointer.
	AMG 352	DM Maps II - Maps to levels 8-14 for Dungeon Masters game. Metro - Be a city planner!
		FME - "Deluxe" Fire Power game map editor. Moria Chest - Information on objects found on different levels. Zerg - A fantasy role playing game like Ultima - sharp!

Entrepreneurs: Call 206-746-7671
for details of our dealer/distributor operations

These are just a few of the remarkable programs we have for Amiga! Call toll-free today for our catalog!

Programmers: Gemini is seeking quality Amiga software for our forthcoming commercial range. We would be pleased to review your submissions for inclusion on a royalty or outright purchase basis. Send submissions to the Duvall address below.

GEMINI TM
Marketing, Incorporated
P.O. Box 640, Duvall, WA 98019-0640

Toll Free 24-Hour Orders Only



1-800-346-0139



Other Inquiries & Foreign Orders: (206) 788-4295 Fax: (206) 788-0717
Circle Reader Service Number 134



HYPERMEDIA

Hypermania. It's a syndrome that has swept through the Macintosh world and seems ready to infect the Amiga universe as well. The symptoms are immediately recognizable—feverish ravings about cards, links, and buttons; an uncontrollable desire to play with multi-dimensional erector sets; and an unshakable conviction that personal computers are the information wave of the future. Even those clearly infected with hypermania, however, may not be able to explain just what has happened to them. In this article, I'll try to isolate and analyze the infectious agent—*hypermedia*—and show you the four new strains of Amiga software that you need to turn the condition to your advantage.▷

STEVEN ANZOVIN



HYPERMEDIA

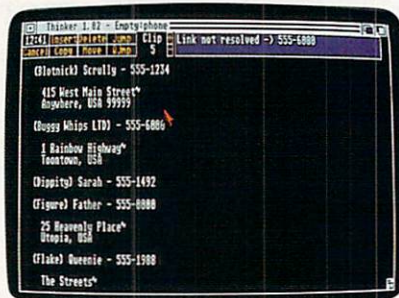
What Is Hypermedia?

Hypermedia integrates text, graphics, animation, scanned photographic imagery, sound, music, speech, and video on a computer to create new ways to access, present, and understand information. The premise behind hypermedia is that much useful information exists in nontraditional forms (such as scans, video, and sound recordings) that only the computer can combine into one coherent whole.

But hypermedia offers more. Hypermedia programs don't proceed

along a straight, one-thing-after-another path—they are multi-dimensional, associative, and intuitive. Software links connect parts of the program that need not be near each other. Simply by clicking a button, you can jump from one part of the program to any linked part, following a path of your own.

For example, a hypermedia "lecture" on the life and work of the Irish writer James Joyce might include selections from Joyce's books, recordings of the author and actors reading



Thinker lets you create multi-dimensional text documents with handy navigational aids.

Measuring Up to HyperCard

Hypermedia took the computing world by storm two years ago with the introduction of *HyperCard*, the popular "software erector set" for Apple's Macintosh computers. *HyperCard*, written by programming guru Bill Atkinson, caused a near frenzy among Mac users when it was introduced. For the first time, regular folks could create their own programs without having to master the Mac's notoriously complex operating system. *HyperCard* wasn't the first hypermedia program to be distributed commercially, but it has been the most influential, setting the standard for all hypermedia programs to follow. *UltraCard* and *CanDo* owe much of their look and feel to the *HyperCard* model.

HyperCard works a lot like a 3 x 5 inch index card file. What you see on the screen is a *HyperCard* card, containing words and pictures, as well as sounds, animation, and various controls. *HyperCard* cards can be organized, shuffled, and sorted like index cards in a file box; a group of related cards is called a *stack*. Large databases of text, data, and graphics can be assembled with this card system and made accessible to anyone who can use a mouse. Fast searching and card-sorting capabilities are built-in.

Dig a little deeper, and you discover a comprehensive set of authoring tools for the creation of cards, stacks, fields (objects that hold text and data), buttons (objects that link cards together or do work when you click on them), and bit-mapped graphics. Using these ready-made parts, you can construct custom applications without knowing a word of any programming language. At yet a deeper layer is HyperTalk, the program's English-like scripting language. HyperTalk is one of the easiest programming languages to learn, and most *HyperCard* users soon become proficient in it. HyperTalk scripts can provide detailed instructions to any object, pass messages from one object to another, and even activate other programs.

HyperCard succeeds because of its flexibility and its simplicity—everyone

can grasp the index-card metaphor the program is based on. The program can be used on many levels, from a browsing environment for the passive absorption of information to a complete authoring environment with text, graphics, animation, sound, database capabilities, and interactivity. People use it for everything from address books to interactive annual reports. Of course, *HyperCard*'s popularity hasn't been hurt by the fact that Apple distributes it free to every new Mac owner. *HyperCard* has sold a lot of Mac Pluses and SEs—something Commodore should take note of.

For all of *HyperCard*'s power, it has several glaring limitations. *HyperCard* does sport a highly compressed storage format, so it can retrieve text and graphics pretty quickly, but it's very slow when handling animation. There's no color or stereo sound. You can't view more than one card or stack at a time. Cards can't be larger than the size of the Mac Plus or SE screen (512 x 342 pixels). You need a lot of memory and a hard disk to run the program adequately. And you generally can do only one *HyperCard* thing at a time. For example, there's no way to write a script for an object and test the object while watching the script execute. (You can bet that drives HyperTalk programmers nuts.) Nor can you work with two different kinds of objects at the same time, or even with groups of the same kinds of objects. *HyperCard* imitation programs, such as Silicon Beach's *SuperCard*, suffer from many of the same problems.

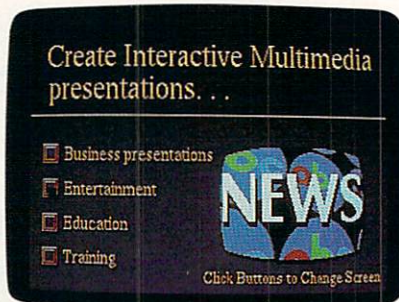
An Amiga hypermedia product that ran on a standard Amiga 500 and offered access to all graphics modes, fast animation, stereo sound, speech synthesis (or multitasked smoothly with other programs that offered these), interactivity, and a nonmodal authoring environment could blow *HyperCard* away. Seems like a natural win for the Amiga, right? It is—as long as Commodore throws its weight behind the hypermedia concept, as Apple has done. If Commodore plays the market right, in a year or two *HyperCard* might be no more than a quaint curiosity.



UltraCard Plus is based on the Macintosh program *HyperCard*, the program which popularized hypermedia.



CanDo adds the power of the Amiga to the hypermedia equation. Its scripting language is quite flexible.



DeluxeVideo III adds limited hypermedia capabilities to this venerable desktop video product.

from his works; video clips from Joyce-derived films and plays; scanned photographs of the author, his family, and literary associates; and an animated map of the path that Leopold Bloom takes through Dublin in *Ulysses*. Instead of just "attending" this lecture and hearing it start to finish, you take control of the material with your mouse. Click on an unfamiliar word in the text of *Finnegans Wake*, and the presentation will show you its Joycean etymology; select the first paragraph of that book, and you'll be taken to a photographic album of Howth Castle and the River Liffey; click on one of the photos, and you'll hear explanatory narration by a noted Joyce scholar. Another click returns you to where you began, while the computer keeps a log of all your excursions. Advocates of the hypermedia approach, and there are more of them all the time, claim that it is

ideally suited to the way the mind learns.

Any teacher can see immediate uses for hypermedia, but desktop presenters can use it, too. With a little work, you can create a business presentation that can run on your boss's Amiga and respond to his or her own directions—an approach that's both flattering and effective. On the home front, use Amiga hypermedia programs to create personal databases, organize picture collections, collate notes, and do other small jobs. Computer artists can make wild new kinds of programming that no commercial developer would ever consider.

Hypermedia on the Amiga

Constructing this kind of complex programming demands more imagination and resourcefulness from you

than do other kinds of programming. (In fact, it's pretty easy to make hypermedia that's disorganized, confusing, and sloppy, as well as irrelevant. Before you tackle a hyperproject, you have to be really sure that a simpler approach wouldn't be better.) A lot depends on the power of the hypermedia authoring environment you use.

Luckily, the Amiga offers a rich field for development of hypermedia, with several well-defined environments to choose from. Here are four Amiga programs that more or less fit comfortably into the category of hypermedia. One of these is likely to be just right for your needs.

Thinker 2.0

Thinker (Poor Person Software) is not as flashy as some of the other applications discussed here, but it's a power-

HyperHistory

The historical and theoretical antecedents of hypermedia go back more than 40 years, to the very beginning of the computer age. In July 1945, Vannevar Bush, Franklin Roosevelt's science advisor, published an article titled "As We May Think" in *The Atlantic Monthly*. In this article, Bush proposed a device called the *memex*, a technological information aid to researchers. The desk-sized *memex*, which used cameras, mechanical relays, and vacuum tubes to do its work, contained in microfilm form every document and information source that might have any bearing on the owner's work. (In 1945, computers were room-sized behemoths dedicated mostly to A-bomb research, and not even science-fiction writers had imagined a personal computer.)

Using the *memex*, a researcher could immediately call up microfilm documents on a backlit glass screen, speeding through them at will and jumping from one subject to another as necessary. The *memex* also would have the capability to allow the user to build an associative, repeatable research trail through any body of information. You could open an investigation into one topic, then immediately jump to a related topic as a new notion occurred to you, all the while photographing the documents you were consulting as you went along to create a permanent microfilm record of your train of thought. Bush imagined a new profession of trailblazers whose vital task was to establish links among hitherto unconnected regions of information.

Bush understood that *memex* information had to be extremely compressed—on the order of at least a million times more compact than the

equivalent information in paper form—to make it physically easy to handle and distribute. He also saw the need to organize and code all those documents so they could be found quickly, modified easily, and rerecorded automatically. Today, we'd call the information compression, organization, coding, modification, and storage methods the "software" part of the *memex*.

Enter Theodor Nelson, a graduate student at Harvard in 1960. Nelson learned about Bush's article and the existence of computers at about the same time. Spurred by the need to organize and provide access to his own disorganized notes, Nelson set out to write a computer program that would supply the software part of the *memex*, with a digital computer as the hardware. Nelson's goal was to store, retrieve, edit, and print his notes, with the computer keeping a complete and easily accessible record of every version of every note. Further, Nelson wanted to be able to create links from one note to any other so that he could jump from one note to the related one at any time. As in Bush's *memex*, the computer would keep track of every access and trail so they could be reproduced later.

Nelson named this new kind of document *hypertext*, text linked to related text in associative patterns. In Nelson's vision, all hypertext documents are part of a vast interconnected structure, held together by references, links, and trails that would eventually include the entire sum of human knowledge. But the actual programming task of creating a definitive hypertext environment proved rather complicated. By the mid-1970s Nelson and his followers had developed a first draft including a new kind of file

format and indexing system that could, in his view, revolutionize the world information economy. Nelson saw his effort in romantic terms and gave it an exotic name, Project Xanadu. As yet Nelson has not successfully marketed a hypertext product for any personal computer. "What is really lacking," says Nelson, "are the visionary artists, writers, publishers, and investors who can see the possibilities and help carry such ideas into reality."

While Nelson worked in relative obscurity on Project Xanadu, Doug Engelbart, an automation researcher at SRI International during the 1950s, 1960s, and early 1970s, developed many of the computer innovations that have made hypertext and hypermedia applications possible on personal computers, including the Amiga. Among Engelbart's inventions that have gained wide acceptance are the mouse, computer screens with multiple windows, files containing both text and graphics, interlinked files organized in hierarchies, outline and idea processors, the concept of a consistent user interface across programs, and one of the first working electronic-mail systems. Without these tools and techniques, access to the complex web of information in a hypermedia document would be nearly impossible.

Like other hypermedia pioneers, Engelbart is a computer visionary. His aim is nothing less than the "augmentation of the human intellect." Alumni of Engelbart's lab at SRI have spread his ideas to many of the leading computer companies, including Xerox, Sun, Apple, NeXT—and even Commodore. The multitasking, multimedia Amiga may prove to be the platform where hypermedia reaches maturity.



HYPERMEDIA

ful hypertool all the same. Billed by author Alan Bomberger as an Idea Processor, *Thinker* is intended primarily for the creation of multi-dimensional text documents, not for combining words, graphics, and sounds in the usual hypermedia style.

Thinker has aspects of both a pure hypertext product and a standard text outliner. You create a new *Thinker* document by entering statements in any order they occur to you and adding a statement name in parentheses at the beginning of each statement. A *Thinker* statement can be up to 2000 characters long, or about 300 words on average—about the size of a typical paragraph. Any statement can be linked to any other (or to all others) by inserting the name of the statement you want to link to in the body of the current statement, enclosing the statement name within < and > brackets. To jump to the linked statement, you just double-click on the bracketed word. Thus, you could include a link in a statement about biological flight that takes you instantly to another statement about *Quetzalcoatlus northropi*, the largest flying creature that ever lived, by simply inserting <Quetzalcoatlus> in the statement on flight. Intricate, branching documents can be easily created this way, ideal for documentation, manuals, online help, notes, and avant-garde novels. *Thinker* keeps you from getting lost in your own web of words by providing all necessary navigational aids, including *jump to origin*, which takes you back to the beginning to start again.

Thinker also makes a serviceable outliner. As with any outliner, *Thinker* documents are organized as a hierarchy of levels. You can view your *Thinker* document, or any branch of it, at any of up to ten *clipping levels*, or degrees of detail. At Clip Level 1, your document is collapsed so you see the big picture—only the top hierarchy of statements, usually topic names or section headings. All the rest of the text is still attached to the visible statement; you just can't see it. To quickly rearrange your document, you can cut and paste the level 1 statements and then expand to a higher clipping level to see the details.

While *Thinker* is designed mostly for writing and organizing, it can link to IFF pictures in separate files (by naming the path and picture in a link), to other Amiga programs, and through an *ARexx* port to any other program that supports *ARexx* (such as *UltraCard* and *Deluxe Video III*). So it can

be made the center of a more varied hypermedia presentation than you might guess from looking at program itself. Still, most users will turn to *Thinker* not for presentations, but to organize and make coherent their own thoughts.

Poor Person Software, 3721 Starr King Cir., Palo Alto, CA 94306; (415) 493-7234; \$80

UltraCard Plus

Amiga users have long yearned for a program that can do the wonderful things that *HyperCard* can do on the Macintosh (see sidebar). *UltraCard Plus* (Intuitive Technologies) is so closely modeled on *HyperCard* that it does just about everything *HyperCard* does, and in pretty much the same way. But *UltraCard* can also do some things that *HyperCard* will probably never do.

The Amiga offers
a rich field for the
development of
hypermedia. One
of these four
programs may be
just right for you.

UltraCard, unlike *Thinker*, is a true hypermedia application: You can create graphics, flip screens, and so on right in the program and then integrate these effects with text and numbers. An *UltraCard* document is called a *stack*, and individual screens of information within a stack are called *frames*. Each frame can contain various kinds of objects—text information in fields, clickable buttons for doing work, audio samples, and built-in or imported graphics. Hypertext links can be created between any words in text fields—even words in different stacks, something that's hard to do in *HyperCard*. In fact, you can display several stacks onscreen at the same time in different windows (as well as

multitask with other Amiga programs). One stack that always needs to be available is the Control Room stack; the Control Room provides a consistent place for starting off in the program; it also holds important parts of the *UltraCard* program itself.

You don't have to know much about the inside workings of *UltraCard* to make your own stacks. All the standard objects, like fields and buttons, can be created using menu choices and requester boxes, or they can simply be cut and pasted from the sample stacks included with the program. But behind the graphic interface is a full scripting language, *UltraTalk*, that gives you a lot more power to manipulate the behavior of objects and the contents of text fields. The *UltraCard* user who masters *UltraTalk* can really make the program jump. *UltraTalk* includes *traps* for event messages the Amiga sends (*left mouse button down*, for example) and lets you write scripts that initiate a series of actions when the event happens. It's easy to write an *UltraTalk* script for a button that waits until it's clicked on and then plays a tune or takes you to another stack.

To work most effectively with *UltraCard*, you must organize the information you want to present in screen-sized pieces, making the program most useful as a personal, freeform database for keeping large numbers of small records. It's also well suited to presenting swallowable bites of information to students or casual viewers. Since the program is by nature interactive, the information flow can go both ways. In an *UltraCard* point-of-sale presentation, for example, you could ask the viewer to type some information into a field—name, address, phone number, age, income, level of interest in the product, and so on—and store that information for use in a marketing survey.

UltraCard stacks can be run under the program itself or viewed with a runtime player called the Browser, which can be freely distributed with any stack.

Intuitive Technologies, 1199 Forest Ave., Suite 264, Pacific Grove, CA 93950; (408) 646-9147; \$49.95

CanDo

CanDo (Inovatronics) takes the *UltraCard* model to a much higher level of slickness. *CanDo* still uses links between objects such as cards, stacks (called *decks* in *CanDo*-ese), buttons, and fields in the *HyperCard*

manner, but the program really excels in the details. From the button-laden Control Panel at the bottom of the screen (modeled on the panels in NewTek products) to the array of useful little tools for working with AmigaDOS and Intuition, you've got just about all the power you need to make any kind of hypermedia program the Amiga will support. Among its particular strengths are the ability to build real Intuition windows, make any IFF brush a button, synchronize sounds with specific frames in brush animations, get online help while writing object scripts, and compile runtime *CanDo* applications without having to distribute a player utility as well. You can build quite sophisticated applications with *CanDo*, and professional programmers may find it useful as a prototyping tool for Amiga programs that will eventually be written in C or assembly language.

CanDo does have a steeper learning curve than *UltraCard* or *Thinker*. The many layers of control panels and requesters can be confusing. *CanDo*'s scripting language, while powerful and flexible, is not as easy to master as *UltraTalk*. And you simply may not need all the bells and whistles. If you do, though, *CanDo* is currently the most powerful hypermedia creation tool the Amiga offers—you can do almost anything with it.

Inovatronics, 8499 Greenville Ave., Suite 2098, Dallas, TX 75231; (214) 340-4991; \$149.95

Deluxe Video III

One powerful multimedia/desktop-video application that also provides limited hypermedia capabilities is *Deluxe Video III*, the latest version of the venerable program from Electronic Arts.

If flashy sound and pictures are what your program needs, *Deluxe Video III* is a good choice; it gives you much finer control over the timing and display of graphics and the synchronization of sound than any of the programs described above. For that, however, you sacrifice most of the linking power and interactivity that hypermedia depends on. What you can do is ask *Deluxe Video III* to wait for an event initiated by the viewer, such as a keystroke, mouse click, or joystick move, and then branch to a specified portion of the presentation. You can give the viewer any number of possible branches to choose from by showing buttons on the screen. In other words, the viewer

can decide what parts of the video to watch and in what order. So in a *Deluxe Video III* video about the history of rock-'n'-roll, one viewer could choose to skip over all that boring stuff about Elvis and get right to the exciting material on Jon Bon Jovi, while another could nostalgically replay the section on the Beatles several times and never see Bon Jovi at all.

Electronic Arts, 1820 Gateway Dr., San Mateo, CA 94404; (415) 571-7171; \$149.95

Brave New HyperWorld

Hypermedia offers something that makes up for the time it takes to create it—*independence*. With any of these programs, you'll find that you can approach your computer not as a

passive user but as a craftsman, someone with the tools to build whatever you wish, with the Amiga as your partner. You may never become a certified hypermaniac, but you will discover a groundbreaking way of doing things with your computer that you never thought possible. Just keep in mind that a piece of snazzy software alone doesn't make a useful machine. You've got to have your own vision of what hypermedia can do for you and others and be willing to devote the necessary time and sweat to realizing it. ▲

Steven Anzovin is a freelance writer, illustrator, and computer consultant. He's the author of the COMPUTE! books *Exploring HyperCard*, *Amiga Desktop Video*, and *Using DeluxePaint*.

HyperTerms

The following definitions will help you sort through the welter of new terminology used by hypermedia programmers.

authoring Creating a hypermedia application.

browsing Simply viewing a hypermedia program, rather than putting information into it.

button A screen object that initiates an action when you click on it. A button can activate a link or play a script.

card A full screen of hypermedia information; stacks are made of cards, while cards can contain buttons, fields, and graphics. In *UltraCard*, a card is called a *frame*.

desktop media Apple's term for multimedia programming on the Mac. Includes desktop publishing and hypermedia, too.

desktop presentation Using a computer to prepare and present graphic information to business, educational, and technical audiences.

desktop video (DTV) Video production using low-cost video equipment connected to desktop computers.

field In most databases and hypermedia applications, an object for holding text.

HyperCard Apple's popular hypermedia application for the Macintosh. *UltraCard* offers similar capabilities on the Amiga.

hypermedia A form of information organization in which all areas of an information base are cross-referenced and are instantly accessible from any part of the base; applies to documents

containing text, graphics, sound, video, and other media.

HyperTalk HyperCard's programming language. *UltraCard*'s *UltraTalk* is similar in vocabulary and syntax.

hypertext Multidimensional text; text cross-referenced by links to other related text. *Thinker* is an example of a pure hypertext application for the Amiga.

interactive multimedia Multimedia that responds to your directions; much the same as hypermedia.

interactivity The ability of a computer document to shape itself differently in response to input from each user. Interactive educational hypermedia, for example, tailors the lesson to match each student's abilities according to the answers the student gives to questions.

link A connection between two parts of a hypermedia or hypertext document; the link takes you immediately from one part to the other without having to traverse the intervening material.

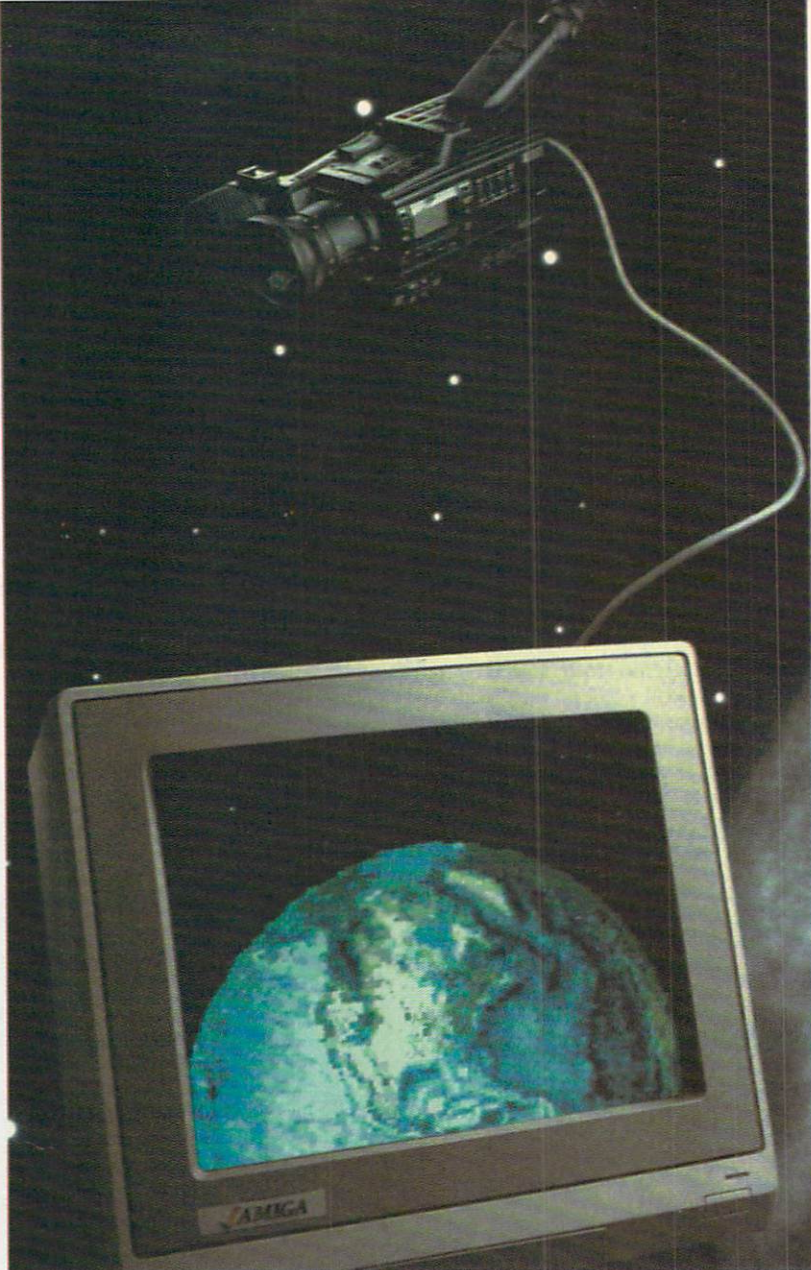
multimedia Programming that integrates text, graphics, sound, and video/film. *Deluxe Video III* is an example of a multimedia application.

object In a hypermedia application, one of the main elements of the program, such as fields, buttons, cards, and stacks.

script A series of written instructions that defines the characteristics, purpose, and action of an object.

stack In *HyperCard* and similar applications, a group of related cards that make up a document. In *CanDo*, a stack is called a *deck*.

SCANNERS



This reproduction of last issue's cover was captured using the Sharp JX-100 scanner with ASDG's ScanLab 100 software, color-separated on the Amiga using ASDG's new Art Department program, and then printed to film by Wall Klein & Associates, Inc. service bureau.

THE VIDEO ALTERNATIVE

Sheldon Leemon

Looking for the best way to bring the visual world into your computer? There's good news. Scanning has finally come of age on the Amiga.

When it comes to converting photographs into computer graphics, most Amiga owners naturally think of using a video digitizer. That's because inexpensive, high-quality digitizing devices were developed very early on the Amiga.

But while video digitizers have dominated the Amiga market, they've been almost nonexistent on the IBM and Macintosh. On those machines, the most popular device for converting line art and photographs into computer graphics has been the optical scanner, a device as little known to Amiga users as video digitizers are to Apple and IBM users. Recently, however, several companies have begun to market the interfaces and software necessary to use these scanners on the Amiga. Amiga owners now have a choice that dramatically expands their computer graphics options.

Scanners vs. Digitizers

Although video digitizers and optical scanners both turn real-world images into computer graphics, they do so in very different ways. A video digitizer uses the signal from a familiar consumer video device such as a camcorder, TV tuner, or VCR as its input. The digitizer takes that analog video signal and turns it into a digital description of the different colored dots on the computer display, using either the computer's processor and memory or special chips and memory within the digitizer itself.

Optical scanners, however, use the same technology as photocopiers and facsimile machines, devices commonly found in business offices. Using optical sensors under controlled lighting conditions, they convert graphics images directly into digital information, which is then transferred to the computer.

This means that you must consider a number of factors when deciding which of these devices to use. Video digitizers use relatively inexpensive components, some of which (such as video cameras or camcorders) you may already own. Even color digitizers are fairly cheap. Since the video camera sees what the eye sees, digitizers can capture a wide range of images—still photographs, slides, and videotape images, as well as three-dimensional objects.

The low resolution of video digitizers means that the images they capture have a relatively small number of pixels, or dots of colors. This makes them better suited to low-

resolution output devices like the computer monitor or TV than to high-resolution devices like laser printers. Video digitizers work best with photographic images and are less successful capturing line art or text. Good lighting is essential to getting good results, so the user must spend a lot of time and trouble making sure that the light is just right. Since video equipment tends to be somewhat bulky, video digitizers can be clumsy to use and require a lot of manual switching and focusing. And although most computer users own a fair amount of video equipment, they generally don't want to set up their computers right next to their VCRs, which makes it somewhat inconvenient to use the two together.

Digital scanners come with their own set of advantages and disadvantages. They are self-contained units like photocopiers and fax machines, and they provide their own controlled lighting, which makes them more convenient to use than video digitizers and guarantees consistently good results. They work at variable resolutions, which makes their output suitable for low-resolution devices like display screens as well as high-resolution devices like laser printers. They work particularly well with black-and-white images such as line art and business logos. Their chief disadvantage is cost. Most scanners are black-and-white only, and they cost two or three times as much as video digitizers. Full-page color scanners start at \$5,000, though as we'll see later, a relatively inexpensive newcomer has brought the threshold for color scanning way down.

Scanners also require a lot more memory than video digitizers do when used at their highest resolution. They can generate images that are 2400×3000 dots, which require 900,000 bytes of memory per color plane. A full page of graphics at 300 dots per inch (dpi) takes up as much as four megabytes of memory for 16 shades of gray, and color images need even more memory. Such images are much larger than can be displayed onscreen at one time, and they can only be stored on a hard disk. Fortunately, you can avoid some of these problems by scanning only a portion of a page or by selecting a lower resolution.

Whatever the relative merits of video digitizers and optical scanners, however, one thing is clear. Only scanners have the resolution required

for professional desktop publishing applications. The largest image captured by a video digitizer will print out to less than three square inches when printed at 300 dpi. If such images are enlarged, they appear blocky and unattractive. Also, scanners capture graphics using square pixels, or dots, just as printers do. Since the dots used on video screens aren't as wide as they are high, pictures captured with digitizers may look somewhat squashed when printed out. That's why every Amiga owner who is interested in incorporating external graphics images into a publishing (or video) project should at least consider using a scanner.

To help you make your decision, I'll compare several types of scanners that have recently become available for the Amiga. Please note that I'll only take into consideration their graphics-grabbing capabilities. While some IBM and Macintosh scanners come with Optical Character Recognition (OCR) software which allows them to interpret printed text and save it to an ASCII text file, there is no OCR software available so far for these Amiga scanners.

Full-Page Scanners

Gold Disk ProScan-IX12. One of the first scanners for the Amiga came, naturally enough, from Gold Disk, a company best known for its desktop publishing software. The ProScan-IX12 package bundles a Canon IX-12 black-and-white scanner with Gold Disk's own parallel interface and software. This interface comes with two ribbon cables and connectors: one which plugs into the port normally used by the printer and another which is used to hook up your printer. A slide switch on the interface lets you select either the printer or the scanner. The scanner itself is a sheet-feed model, about two-thirds the size of an 80-column dot-matrix printer. It works on the same principle as a fax machine: You feed the paper a little way in, and rollers move it through the scanning area. It accepts paper up to 11×17 inches in size and scans an area up to $8\frac{1}{2} \times 16$ inches. The paper guides adjust to widths from 8 to 11 inches.

Like the scanner itself, the ProScan software is simple to use, without a lot of fancy features. To scan a page, you place it in the scanner and select the Scan item from the menu. The page is pulled through the scanner, and a few seconds later, the image appears onscreen (you may select

SCANNERS

a lo- or hi-res display, interlaced or noninterlaced). If the image is larger than the screen (as will be all but the smallest pictures scanned at the lowest resolution), you can use the cursor arrow keys to scroll the picture around the visible display area. ProScan allows you to scan in images at four resolutions: 75, 100, 200, or 300 dpi. At 300 dpi, an 8 × 10 image

will be 2400 × 3000 pixels. You may save the entire image to an IFF picture file, or, if you wish, you may save just a rectangular clip using the Zone feature. This feature is also handy if you don't have enough memory to scan the full page at 300 dpi. You can scan the page once at 75 dpi, define a rectangular zone, and then scan the page again at 300

dpi. Once the zone is defined, only that area of the page will actually be scanned. The program does not give any indication, however, of the size of your clip.

The Canon IX-12 is a true monochrome scanner, which means that all of the pictures it produces use only one color bitplane (two colors). In order to let you capture im-

Handy Scanner
(GeniScan)



ProScan-IX12
(Canon IX-12)



Scannery
(HP ScanJet)



ScanLab 100
(Sharp JX-100)



AMIGA[®] AMIGA[®] AMIGA[®] AMIGA[®]

Black-and-White



Gray Scales

Does not
support gray
scales

Does not
support gray
scales



All images were printed on a PostScript laser printer using *Professional Page* from Gold Disk. When viewed on the Amiga's screen, scanned photographs tend to look brighter, especially those generated by ScanLab 100.



InterComputing, Inc.

2100 N. Hwy 360, Suite 2101
Grand Prairie, TX 75050-1015

*In business since 1984
Amiga support since 1985*

We are a service oriented business offering discount prices

FAX: 1-214-660-3695

Customer Service & Order Status: 1-214-988-3500

COMPLETE PRODUCT LISTING AVAILABLE

Order line: 1-800-622-9177

In Germany call; In Deutschland erreichen Sie uns unter **0202/755239**

Create your own Amiga 2000 Custom Package

Purchase an Amiga 2000 with

- Kickstart 1.3
- 1MB RAM
- Fat Agnus Chip
- 6 Month Warranty

1399.00

Add the peripherals of your choice at these *special low prices*
and we will include

Free Installation

2nd Disk Drive	99.00
2MB Memory	324.00
4MB Memory	524.00
6MB Memory	674.00
8MB Memory	774.00
Multisync Monitor	540.00
Amiga 1084D Monitor	329.00
40MB Hardcard	675.00
80MB Hardcard	929.00
Internal Modem	110.00
Flicker Fixer	459.00



*Peripheral prices pertain to purchase of Amiga 2000 computer and peripheral both.
Amiga is a registered trademark of Commodore-Amiga, Inc.*

MEMORY

• M501 A500	99.95
• Starboard 1MB	329.95
• Starboard 2MB	449.95
• 2MB A2000	349.95
• 4MB A2000	549.95
• 6MB A2000	699.95
• 8MB A2000	799.95

DISK DRIVES

• Master 3A	139.95
• Air Drive	139.95
• Cal. Access	139.95
• FDATA-10	129.95
• FDATA-20	249.95
• Unidrive	139.95
• Twindrive	249.95

SUPRA HARD DRIVES

EXTERNAL

	A500	A1000
20 MB	499.95	549.95
30 MB	579.95	629.95
40 MB	679.95	749.95
80 MB	949.95	949.95

INTERNAL

Hard Card 20 MB	549.95
Hard Card 32 MB	599.95
Hard Card 40MB	699.95
Hard Card 80MB	999.95
Hard Card 105MB	1099.95

2 MB MEMORY CARD
(For use with A500 & Hard Drive)
299.95

GVP 3001 Package ^{NOW} 28 MHz!

28 MHz 68030
28 MHz 68882
1149.95
with 4 MB of
32-bit memory
2499.95
with 40 MB hard drive
2895.95
with 80 MB hard drive
3399.95

VoRecOne 129.95

SUPERGEN 2000 1499.95

Flicker Fixer *plus*
Mitsubishi
Multisync Monitor
999.95

Flicker Fixer
499.95

AMAX Package
AMAX, 128 ROM Set &
3.5" Mac-compatible drive
439.95

GVP A2000-8

SCSI Controller with space
for 8 MB of memory
329.95
Add-On Memory
99.95 per MB

FDATA-10

now with On/Off switch &
many additional features
129.95

XT Bridgecard

Includes 5 drive
while supply lasts!
399.95

As always we have the most 'customer friendly' terms: S/H \$4.95 in cont. USA;
\$30.00 min. order; MASTERCARD & VISA with NO credit card fee; in Texas
add 7% Sales Tax. \$12.00 shipping to APO addresses. RMA# required on all
returns. 18% restocking charge. All prices subject to change.

Circle Reader Service Number 106



SCANNERS

ages such as photographs, it provides a scanning mode called *halftone*. This mode simulates shades of gray using a pattern of black and white dots, a process known as *dithering*. This is the same process used to print shades of gray on noncolor printers. ProScan only provides one dither pattern for halftone mode. While dithered images look OK on a printed page, they aren't suitable for use as video images on the computer display. Dithered images can also cause problems when their size is changed by a publishing program. The instructions included with the ProScan package contain a lot of useful information on successfully incorporating your scanned images into *Professional Page*. The picture files that ProScan saves also contain some extra information which allows *Professional Page* to scale them more intelligently.

The ProScan-IX12 package provides good basic scanning capabilities. Its black-and-white scans are faster and use less memory than other scanners' gray-scale or color scans but are less versatile (they cannot, for example, be used for video work). Its choice of black-and-white or one dither pattern is more limited than any other scanner tested. Although its sheet-feed method of operation reduces the size of the scanner and allows it to scan a larger area than most, it makes it impossible to scan an image from a book without tearing out the desired page, a significant disadvantage. The sheet feeder also makes it harder to scan from small or irregularly shaped pages. All-in-all, the functionality of this package is a lot more basic than its retail price of \$1,095 would suggest.

Inset Systems Scannery. Another full-page option is Inset Systems' Scannery interface and software for HP ScanJet and ScanJet Plus scanners. Although not a household name in Amiga circles, Inset publishes the very popular *Hijaak* program for the IBM PC, which converts graphics images among the many formats used on that machine. Like ProScan, the Scannery interface attaches to the Amiga's parallel port, but it offers no pass-through for your printer. You'll need to supply your own switch box to connect both at the same time. The HP ScanJet and ScanJet Plus, with which the Scannery interface cable and software work, are of the flatbed variety. They resemble a photocopier, with its hinged lid and glass scanning bed.

There are rulers along the top and right side of the scanning bed, making it easy to precisely align pages up to $8\frac{1}{2} \times 11$ inches in size.

Unlike the software supplied with the other scanners tested, the Scannery writes the image data it scans directly to disk, without displaying it on the screen. This is the same system used by most IBM scanners, since MS-DOS computers typically have a hard drive but are limited to 640K of usable RAM. The only image you see is of a low-resolution preview scan, which gives you enough of an idea of the placement of the graphics to enable you to select an area for higher-resolution scanning. Selection of your final scan is accomplished in the same way you define a zone with ProScan: You drag a box around the area of interest. The Scannery software, however, displays the size and position of your clip rectangle in both inches and pixels and allows you to alter this rectangle by changing the numbers.

Once you've set the rectangle, you click on the Final Scan button. This brings up a file requester in which you must enter the name of the file used for the scan. Once the scan is completed, you must use a paint program or display program to view the results. Unless you have a fair amount of extra memory, you may have to exit the Scannery program each time you wish to view a scan, an irritating nuisance at best.

If the program's display options are not flexible, its scanning options are. As with ProScan, there are three brightness settings to help capture all of the detail of the scanned image. Scan modes include straight black-and-white and dithered images that are similar to ProScan's halftone. The Scannery allows the user to choose from four different dither patterns, however. In addition, it provides a gray-scale mode in which it can capture true four-bitplane images (16 shades of gray). Such images retain the full resolution of the scan, since they don't waste dots simulating gray shades as dithered images do. Not only are they the most suitable for desktop publishing, but they are quite useful for desktop video work as well. The Scannery can capture images at continuously variable resolutions of 38-600 dpi (though the maximum optical resolution of the equipment is only 300 dpi). The software also allows you to scale the images that you scan, which can create pictures that look more natural

when displayed on a monitor.

The program offers a number of different file formats for scanned images. In addition to the Amiga standard IFF file, you can save your image in Encapsulated PostScript (a publishing standard) and Hewlett-Packard's Printer Control Language (the internal command language of the HP LaserJet-series printers). There is even a fax file format, which may come in handy once fax modems become available for the Amiga.

The Scannery does have some minor drawbacks. The software doesn't yet work with accelerator boards like the Commodore 2620 or GVP 68030. The interface cable only works with the 2000/500. I'd also like the option to display scans on the screens, as well as have some *ARexx* support. Still, the Scannery is the most convenient and versatile black-and-white scanning system we tested on the Amiga. At a list price of \$1,595 for the ScanJet Plus and \$250 for the Scanner interface and software, it's not exactly cheap, but it's well worth the cost. And you may still be able to find the discontinued ScanJet (predecessor to the ScanJet Plus) at a considerable discount. Since the Scannery software doesn't yet support the extra features added to the Plus, you're just as well off buying the older model.

Hand Scanners

Very few people use a scanner to import an entire page of graphics at a time and print it out—that's a job for a copy machine. For most desktop publishing (and video) jobs, it's sufficient to scan in a fairly small image. That's where hand-held scanners come in. These are devices the size of a double-wide mouse and the shape of a hand-held vacuum cleaner that you manually drag over the image that you want to capture. They can scan images up to four inches wide and eight or more inches high.

Datel Handy Scanner. One such black-and-white hand-held scanner is Datel's Amiga Handy Scanner, which is really the GeniScan hand scanner for the PC with an Amiga interface. This interface is a 3×4 inch box with a 6-inch cable that plugs into the printer port and jacks for the hand scanner and wall-mounted power supply.

Unlike the other scanners reviewed, most of the Handy Scanner's options are controlled by switches on the scanner itself, not by the soft-

At last, a scanner with an artist's touch.

NOW SHIPPING



With the Migraph Hand Scanner and Touch-Up™ you can now produce professional-quality high-resolution scanned graphics from start to finish—without changing programs.

This unbeatable hardware-software team lets you scan, edit, and enhance images until they're exactly right for all your desktop publishing projects.

Start with quality hardware.

The Hand Scanner has all the features you need: A scanning window over 4" wide. Four scanning resolutions—100, 200, true 300, and true 400 dots per inch. Adjustable contrast. Three dither settings for scanning photographs. Plus a special setting for line art.



You can build your own library of images from logos, photographs, books, and illustrations. And that's just for starters.

Finish with software that won't quit.

With Touch-Up, Migraph's complete design tool for high-resolution monochrome images, you can put the finishing touches on every image you scan. Touch-Up's powerful editing functions include

standard commands plus extras like rotate by degree, slant, stretch, outline, and bolding. And Touch-

Up is also outfitted with a complete paint program—not to mention special effects.

When your images are pixel-perfect, you can import them into your

favorite Amiga publishing programs like Professional Page™ and Page Stream™. A variety of load/save formats also lets you use images on the PC, Mac, and ST.

Last but not least: The Migraph Hand Scanner and Touch-Up are easy to learn and easy to use.

See your dealer today for more details or call Migraph toll-free.

The Migraph Hand Scanner and Touch-Up. Powerful tools for professional publishing.

For Amiga 500, 1000 and 2000 systems with 1MB memory. A hard disk is recommended.



Migraph, Inc. 200 S. 333rd, Suite 220 Federal Way, WA 98003 (800) 223-3729 (10 to 5 PST) (206) 838-4677

© Copyright 1989 Migraph, Inc. The Migraph logo and Touch-Up are trademarks of Migraph, Inc. All other products named are trademarks of their respective companies.

SCANNERS

ware. One slide switch lets you select from four scanning modes: black-and-white and three dither options. A thumb-wheel switch lets you vary the brightness in much the same way as you'd change the volume on a transistor radio. Another slide switch allows you to choose scan densities of 100, 200, 300, or 400 dpi. In the version of the software that I received (version 1.1), only the two lower densities are supported. Interestingly enough, the manual that came with the software referred to version 2.0 of the software, which will support all four densities. That version was not available at the time of this writing.

To use the Handy Scanner, you select either the 1-Page or the 2-Page option from the menu, which indicates whether you want to scan, respectively, an area 256 or 512 pixels in height (the maximum width for a scan is 800 pixels). When the scan option is selected, the lamp on the scanner lights up, and you hold down the button on the side of the scanner as you slide it down the page. The image is displayed on the screen as you scan, and when you get to the bottom of the screen, the scan ends. Once you've scanned an image, you have the option of saving it either as raw pixel data or as an IFF image. There are also a few editing functions that you can perform, such as shrinking the image or reversing it.

Although the Datel Handy Scanner can produce acceptable results, it's hardly what you would call polished. The software doesn't run from an icon—you have to boot from Datel's floppy disk—and the manual gives you no instructions on how to install the program onto a hard

drive. The software doesn't yet support the full resolution of the hardware. Worst of all, the only usable format in which the program saves your data is medium-res 640×256 . This means that you can't even take full advantage of the meager 800×512 buffer that the program uses internally. The use of medium res changes the aspect ratio of the scan by converting the picture to tall, skinny dots, not the square dots needed for desktop publishing. Unless Datel remedies these flaws, those interested in an inexpensive handheld scanner would do well to wait until the release of the Migraph hand scanner for the Amiga or until the Hand-D-Scan scanner, which was formerly distributed by C Ltd., finds a new manufacturer.

ASDG ScanLab 100 and the Sharp JX-100. In a number of ways, the Sharp JX-100 scanner and ASDG's ScanLab 100 software are in a class all by themselves. Not only is the JX-100 the only color scanner reviewed here, but it's the first color scanner to sell for under \$1,000. Its unique hardware design combines the best features of hand-held and flatbed scanners. While the scan element is only four inches wide, as with hand scanners, it's fixed within a stationary scan bed about the size of a large book. It has glass windows at the top and bottom, making it easy to see the material being scanned and to precisely position the scanner. A small motor within the scan head replaces hand power in this sophisticated portable. The scanner's connection to the Amiga serial port allows it to transfer up to 115,200 bits per second. ASDG's software is just as outstanding as

Sharp's hardware. It uses the image-processing power of the Amiga not just to harness the capabilities of the scanner, but to enhance them as well.

Scanning an image with the JX-100 is basically a two-step process that is carried out on the program's two main screens. The preview screen is used to capture a quick image from which you select a rectangle to be used for the final scan. This area may be selected either by dragging a rectangle with the mouse or by entering its dimensions in a text box. Since the maximum scan area is only 4×6 inches, it might seem unnecessary to narrow it further, but there are times when you may need to. A full 262,144-color scan of that area at 200 dpi requires almost four megabytes of contiguous RAM. To help you choose the size of the final scan area, there is a display which shows how much memory is needed at the current resolution in each scan mode (ranging from monochrome to full color) and the size of the resulting scan in pixels. The preview screen also has controls that let you select the brightness and the resolution (50, 100, or 200 dpi) of the scan.

Once you've designated the scan area, you move to the fine-scan screen. There, you select the scan mode and perform the fine scan. There are four modes available: monochrome, 3-bit color, 6-bit gray scale, or 18-bit color. Since the image-processing software can create a lower-resolution image from high-resolution scan data, however, the manual suggests that you scan in either 64-color gray-scale mode or 18-bit color mode. Once you've captured the raw image data, the fun begins. The ScanLab software allows you to display that data in any size screen, in virtually any graphics mode available on the Amiga. Screen sizes include hi-res, lo-res, interlaced or noninterlaced, overscan or non-overscan, and PAL or NTSC formats. Graphics modes include 2-, 4-, 8-, 16-, and 32-color modes; the 64-color Extra Half-Brite mode; Hold-and-Modify (HAM); AHam (ASDG's variation of Sliced Ham); and ARes (ASDG's variation of NewTek's Dynamic hi-res mode that enables you to use up to 4096 colors in hi-res mode). No matter which mode you choose for the display, the software retains the original scan data in memory. That means you can always change your mind and redisplay the picture using another size or mode.



Sharp's JX-100 color scanner and ASDG's ScanLab 100 software produced this 16-color image (left) and the HAM image (right).

If you're not satisfied with the picture that's displayed, there are a number of adjustments you can make. A color-balance control panel lets you adjust red, green, blue, brightness, and contrast. There's also a gamma control that allows you to enhance the middle colors without losing detail from the brightest or darkest parts of the image. The program also allows you to select from five different types of dithering. In ScanLab, dithering isn't just for simulating gray scales in black-and-white images. It can also be used to create strikingly realistic color images in 16-color hi-res mode. These images are the best I've seen using a limited number of colors. In addition to changing the content of the image, you can also change its size and orientation. A portrait/landscape switch allows you to display the image either standing up or lying on its side. And a reduction control allows you to reduce the picture horizontally, vertically, or both. This lets you shrink the picture to fit the screen or change the aspect ratio slightly to compensate for the monitor's non-square pixels. Once you're satisfied

with the image, you can save it in an IFF file. You can save either the whole image or just the portion that fits in the display. You can also save the raw bitplane scan data. This allows you to reload the data later, so you can perform all of the image-processing functions without rescanning.

The Sharp JX-100 for the Amiga is one of the most exciting new peripherals I've seen in a long time. Its small size and convenience let it go where no other video digitizer could, yet its resolution is far superior to that of its competitors. The 6 X 4 inch scan area is perfect for creating 640 X 400 video screens at 100 dpi, while the 200-dpi maximum resolution is still adequate for many black-and-white publishing jobs. Although there is no support yet for using the 18-bit color files in desktop publishing, it seems likely that ASDG will provide it in the future, along with other software enhancements. Even without these enhancements, however, the JX-100/ScanLab combination is a professional package that is bound to enhance the Amiga's reputation. ▲

Sources

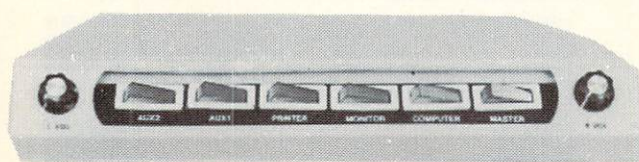
ASDG/Sharp ScanLab 100
Scanner and Software—\$995.00
ASDG
925 Stewart St.
Madison, WI 53713
(608) 273-6585

GeniScan/Datel Handy Scanner
Scanner and software—\$299.95
RIO/Datel
3430 E. Tropicana Ave. #67
Las Vegas, NV 89121
(702) 454-7700

Gold Disk ProScan Package
Scanner and software—\$1,095.00
Gold Disk
P.O. Box 789
Streetsville, Ont.
Canada L5M 2C2
(416) 828-0913

Inset Systems Scannery Package
Scanner—\$1,595.00
Software—\$250.00
Inset Systems
71 Commerce Dr.
Brookfield, CT 06804
(203) 775-5866

AmiTech Computery presents...



Amibound

The 3-in-1 Amiga Peripheral! Check the specifications!

- 1 Monitor Stand
- raises the monitor closer to eye level for comfortable viewing
- zero footprint design, takes up no more space than the monitor itself
- 2 Power Controller
- Controls computer, monitor, plus three devices, surge suppressed!
- Handy, front-mounted lighted rocker switches
- 3 Stereo Amplifier
- 6 watts/channel (max, into 4 ohms .3% THD)
- dual, front-mounted volume controls, NO modifications needed

\$99.95

Plus shipping/handling
NE. residents add 5.5%
Dealer inquiries welcome



Order or Info:
1-402-493-7852



Circle Reader Service Number 197

NEW- F-BASIC 2.0 -NEW

The reviewers have labeled **F-BASIC**:

The **FASTEST** Growing
FASTEST Performing
AMIGA Language

Beats C And Other
Basics!

Available Soon... **VERSION 3.0 F-BASIC** NEW-Integrated Editor
NEW-020/881 Support
NEW-Even Faster
SAVE! Buy 2.0 Now And Upgrade To 3.0 Upon Availability For Less Money!

*A Beginner
Can Immediately Use
F-BASIC

*An Expert Can **NEVER** Outgrow **F-BASIC**

F-BASIC 2.0 With User's Manual & Sample Programs Disk—Only \$89.95
F-BASIC 2.0 With Complete Source Level Debugger—Only \$149.95

F-BASIC Is Available Only From:
DELPHI NOETIC SYSTEMS, INC.

Post Office Box 7722
Rapid City, SD 57709-7722

Send Check or Money Order, or Write For Info
Credit Card or C.O.D., Call (605) 348-0791

F-BASIC is a registered trademark of DNS, Inc.
AMIGA is a registered trademark of Commodore/AMIGA, Inc.

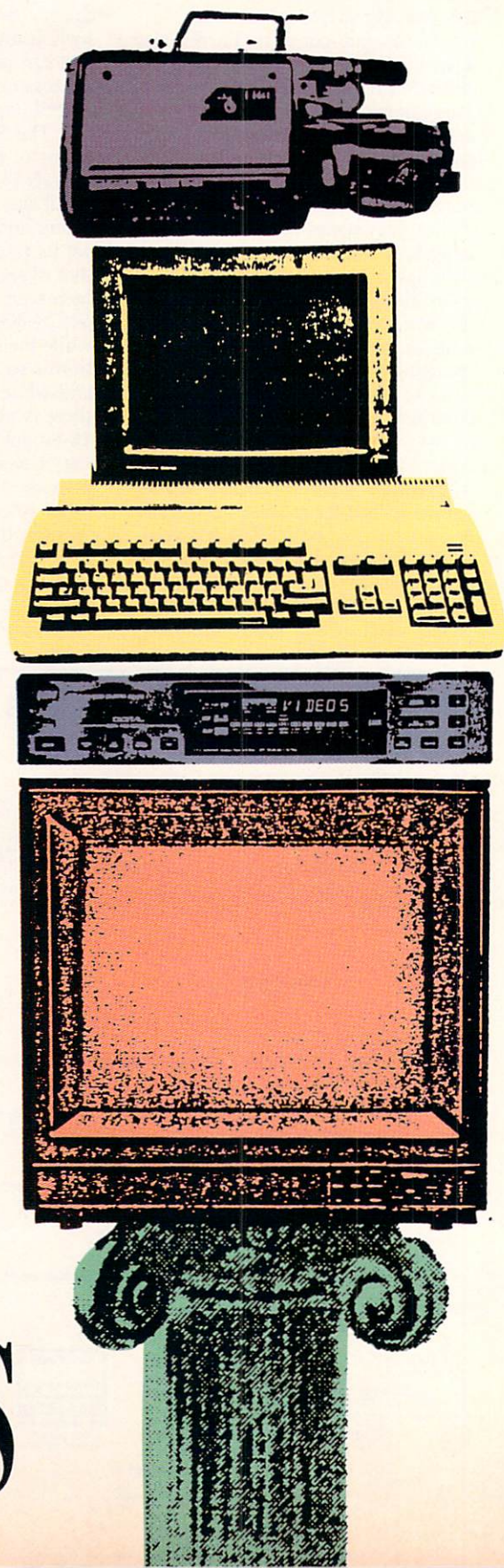
Circle Reader Service Number 158

Part II

Fred Hurteau

Interested in desktop video but don't know where to begin? This second installment in our two-part series explains what desktop video can do for you and provides some hints on what type of software you need to get started.

DESKTOP VIDEO FOR BEGINNERS



Last issue we learned about the technical aspects of RGB and NTSC composite video signals and why encoders and genlocks are so important in desktop video. Now we'll discuss some of the wonderful Amiga graphics software packages and how you can take advantage of them in your own desktop video productions.

If you missed part 1 of this series, look to our glossary for a brief rundown of the important video terms defined in last issue's feature article; understanding the mysteries of desktop video is easy once you know all the buzzwords.

Video Titling

The most basic desktop video application is titling. **Titling** places text on the screen for titles, information, and keying (superimposing) names, labels, or logos over video images. For example, you could use titling to place the words *Happy Birthday* over a video of your daughter's last birthday party. At the end of the recording, you might use titling to create some scrolling credits that list all of the party's attendees.

To use your Amiga for titling, you need the right software. Titling software ranges from paint programs to professional-quality character-generator programs.

Excellent results can be obtained using standard paint programs such as *DeluxePaint II* or *III*, from Electronic Arts, or HAM paint programs such as *Digi-Paint 3*, from NewTek, and *Deluxe PhotoLab*, from Electronic Arts. *DeluxePaint III* can animate text with its powerful page-flipping and anim-brush features. Both of the HAM paint programs offer tint and shading functions so your text can cast superrealistic shadows over complex HAM picture backgrounds. *DeluxePaint III* and *Digi-Paint 3* provide other features like perspective, bending, warping, and brush/texture

mapping of text for special effects.

Overscan can be an important feature to look for in a paint program. Most simple titling does not require the use of overscan, but if you want to place a computer graphic in the background, or if you want to move the text onto or off of the screen, you'll wish you had overscan. Background images are usually fully overscanned, and animated text may need to scroll past the screen's edge.

Character generators are stand-alone hardware devices used for video titling. With the right software, your Amiga can perform most, if not all, of the functions offered by these expensive machines. Some of the Amiga programs designed especially for video titling are *TV*Text* and the brand-new *TV*Text Professional*, from Zuma Group; *VideoTitler*, from Oxxi/Aegis; *Pro Video Gold*, from JDK Images/Shereff Systems; and *Broadcast Titler*, from InnoVision Technology.

All of the aforementioned titling packages come with at least one set of fonts—a group of letters and other characters drawn in a single type style and size—designed specifically for video titling. Fonts are usually measured in points. There are approximately 72 points in an inch. Fonts can also be printed in a variety of styles, such as **bold**, *italic*, and underline.

Why use specialized fonts for titling? Standard Amiga Workbench fonts like Ruby, Emerald, and Topaz are unsuitable for video titling because they're too small. Text under 25 points may look great on your RGB monitor, but remember, you're ultimately going to videotape this image. You *must* check how it looks on your composite monitor. If it's not readable there, your message will be lost, and your audience will be lost as well.

Titling Software

*TV*Text* is a good basic text generator with a variety of special effects, including text

outlining, text shadowing, and font extrusions for giving letters a three-dimensional look. It also has some basic drawing functions, such as line, box, and circle. Most importantly, *TV*Text* gives you the ability to squeeze and spread the space between letters with the click of a mouse button, allowing you to custom-fit text. This feature can be very useful and is something that paint programs don't offer.

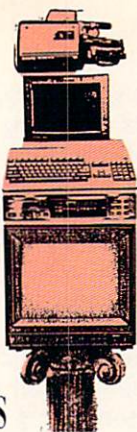
*TV*Text* comes with a selection of Zuma fonts, another product available from Zuma Group. *Zuma Fonts* consists of several disks full of quality fonts in display sizes ranging well over 100 points. These are excellent for video work.

Paint programs allow you to manipulate text in other ways. You can bend and warp text, tilt and turn it in perspective, fill it with colors or patterns, and even animate it. You can type in text using *TV*Text* and save it to disk as an IFF file. You can then load that text into *DeluxePaint III* for additional alterations or animation. The combination of *TV*Text* and *DeluxePaint III* is an excellent choice for beginners.

The new *TV*Text Professional*, from Zuma Group, offers many additional features that are familiar to paint program users, including stencil, background lock, color cycling, and dithered gradient fills. Normally, when you fill a shape, you fill it with a single color or pattern. But when you use a **dithered gradient fill**, you fill the area with a smooth range of hues starting with one selected color and ending with another.

*TV*Text Professional's* dithered gradients are user-controlled (you can vary the dithering, which affects the graininess of the area and the visibility of the color transition), and they work on text or backgrounds. The program will even allow diagonal gradients, a unique feature. *TV*Text Professional* offers customizable style options that give your text outlines, borders, shadows, gradient fills, shading, color-cycling

DESKTOP VIDEO FOR BEGINNERS



glints, and more. It's like creating your own font styles.

Professional-quality software like *Pro Video Gold* and *Broadcast Titler* turn your Amiga into a titling generator. They offer automatic **anti-aliasing** (the process of smoothing the edges of a graphic to reduce jagged lines) for text and built-in **wipes** (transitions from one picture to

another), very much like the dedicated titling equipment used by video production studios. With virtually no **jaggies** (blocky-looking edges), these are the choice titlers for professional users. Both programs are pricey for the nonprofessional user, and *Pro Video Gold* requires its own special fonts. But both provide excellent text quality that can truly rival what you see on broadcast television.

Zuma Group sells a collection of video titling fonts called *Zuma Fonts*. *TV*Text Professional* comes with the complete *Zuma Fonts* volumes 1, 2, and 3, making it a great value. These fonts can be used with other titling programs and paint software, as well.

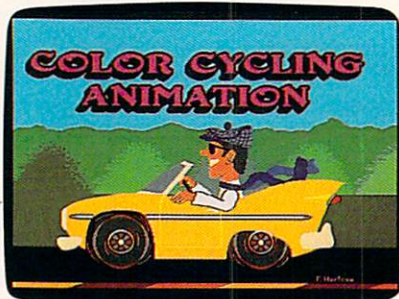
Kara Fonts, from Kara Computer Graphics, offers large multicolored fonts in the Colorfont standard developed by Interactive Softworks. *Kara Fonts* have built-in patterns that look like wood, brick, marble, granite, chrome, brass, and stainless steel, as well as 3-D styles like Bevel and Chisel. *DeluxePaint III*, *TV*Text Professional*, and *VideoTitler* can all use these color fonts.

When purchasing fonts for titling, be careful not to buy small fonts that are designed for desktop publishing. You need 25-point and larger for video titling.

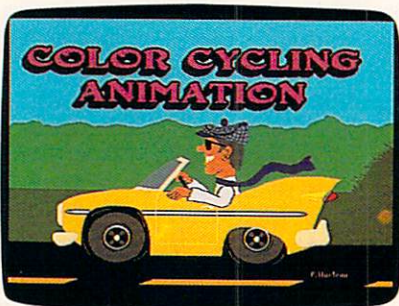
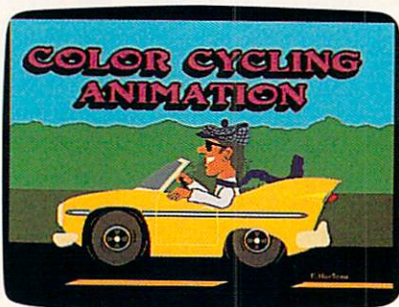
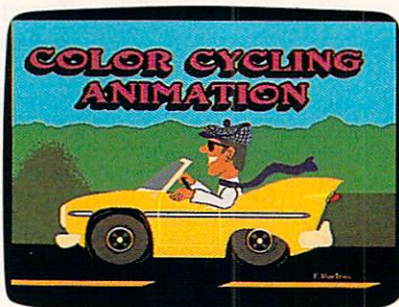
Animation

Animation is the illusion of movement, and animated graphics are a perfect complement to video. After all, it is the nature of video to be animated.

There are many ways to achieve animation on the Amiga. **Color cycling** is an animation function that's found in almost all Amiga paint programs. In color cycling, you choose a group of adjacent colors from the program's palette. This group is often called the **cycling range**. When color cycling is activated, each color in the cycling range continually exchanges position in the color palette with its neighbor in a cyclic fashion. With skilled placement and choice of these colors in your artwork, you can achieve the illusion of movement. This works for flashing text, moving text, sparkles and gleams for shiny text, marquees and animated borders, cartoon characters, flow diagrams, graphs, and many other applications.



This picture reveals all of the color-cycled objects used in TeleGraphics International's "Joy Rider" animation.



As the picture's color palette is changed, the shrubbery, the man's scarf, the car's tires, and the stripes on the road appear to move.

Another means of animation is called **morphing**. Morphing takes an image shape and transforms it through metamorphosis into another shape. The object seems to flow from one shape to the next as if it were soft clay being stretched and molded. Software utilizing this technique includes *Aegis Animator*, from Oxix/Aegis (the first animation package available for the Amiga), and *Fantavision*, from Brøderbund. Unfortunately, *Aegis Animator* (which now comes as part of the *Aegis Amiga Graphics Starter Kit*) is limited to low-resolution nonoverscan images, making it unsuitable for video use.

Page flipping (also called **cel animation**) works similar to the way film and video does in that it uses a sequence of individual frames. Each frame contains a slightly modified version of the last frame's image. When these frames are flipped through rapidly, the picture they create appears animated. Two-dimensional animation programs that support this technique include Hash Enterprises' *Animation: Flipper* and Mindware's *PageFlipper Plus F/X*. For ease of use, Electronic Arts' *DeluxePaint III* is unbeatable for page flipping, and its Anim Brush feature, which allows you to easily pick up and duplicate a specific portion of the animated screen, is unique.

Creating Graphics

Paint programs are very useful in desktop video, and not just for titling; backgrounds, logos, cartoons, and all kinds of images can be created. The options are practically endless, so many that it would be impossible to cover them all in one article. Let's take a quick run-through of some of the fascinating options that can help make your desktop video productions real eye-popping masterpieces.

A good artist can create wonderful things with a paint program and a mouse. For persons with more creativity than drawing talent, electronic drawing pads make drawing as easy as tracing. Many excellent artists prefer these tablets, too.

Easyl, by Anakin Research, and AProDraw, by R & DL Productions, are two such graphics tablets that let you draw with a stylus much as you draw with a pencil. You can draw or trace artwork placed on the pressure-sensitive pad. The image will be transferred to your screen just as if you were drawing with the mouse.

Digitizing is another way to get images into the computer. In digitizing, a video image is fed into the computer through a hardware interface (a digitizer) that converts the analog video signals from a video camera or VCR into digital information. This digital information is used by the computer to produce a screen image. This screen image can be treated like any other computer art: It can be saved to disk, loaded into a paint program, modified with an image-processing

Desktop Video Glossary

- Aliasing** The occurrence of jagged and blocky-looking edges. (See Jaggies.)
- Antialiasing** The process of smoothing the edges of a graphic image to reduce jagged lines.
- Cel Animation** Animation created by rapidly flipping through a sequence of predrawn images. Also called *page flipping*.
- Character Generator** A stand-alone hardware device that creates letters for recording onto videotape. Used in video titling.
- Chroma Crawl** The erratic shimmering of video images that contain particularly bright or "hot" colors.
- Chroma Keying** Replacing a particular color found in one video source with the image produced by another video source.
- Chrominance** The color portion in a video signal.
- Color Cycling** Animation created by rapidly changing the color of certain graphic elements that appear on the computer screen.
- Composite Video** A video signal where the red, green, blue, and sync signals are all combined. Used by standard TVs and VCRs.
- Digitizing** The process used to convert an analog video signal into the digital graphics information that the computer understands.
- Dissolve** When one video image is gradually replaced by another.
- Dithered Gradient Fill** Filling an area so that a smooth transition of colors appear.
- Encoder** A device that takes your computer's RGB signals and combines them into composite video.
- Field** Half of a video frame; the scan lines that are drawn every 1/60 second.
- Frame** A complete video image created by two interlaced fields.
- Frame Grabber** A hardware device used to digitize a single frame of video.
- Genlock** A device that synchronizes two separate video sources into one stable signal or picture. Genlocks usually offer some form of keying as well.
- HAM** (Hold And Modify) A special Amiga video mode that allows you to display 4096 colors on the screen simultaneously.
- IFF** (Interchange File Format) A standard format in which graphics (as well as text and music) are saved. Practically all Amiga graphics programs support IFF.
- Interlace** To combine two separate fields into one frame or picture. The Amiga uses interlacing to generate screens that are 400 or more lines tall.
- Jaggies** The jagged and blocky-looking edges that appear in computer graphics.
- Keying** Superimposing two video images by replacing part of one image with the other image.
- Luminance** The brightness level in video.
- Luminance Keying** Taking a video image and replacing the colors that are below a particular brightness level with the image produced by another video source.
- Morphing** Animation created by changing the shape of an object through gradual metamorphosis.
- NTSC** (National Television System Committee) A group set up by the Federal Communications Commission to set standards for video broadcasting.
- NTSC Composite** The standard video signal used by the U.S., Canada, Japan, and several other countries.
- Overscan** Extending the video image out past the screen's edge.
- Page Flipping** Animation created by rapidly flipping through a sequence of predrawn images. Also called *cel animation*.
- Pixel** (Picture Element) The smallest dot that a computer can display.
- Resolution** The size of the computer screen as measured in pixels. Higher resolutions generate more detailed pictures.
- RGB** (Red, Green, Blue) The video signal used by the Amiga, where each color signal (red, green, and blue) is transferred on a separate line.
- Scan Lines** The horizontal lines that make up a picture on a TV or monitor, drawn by an electron gun scanning across the picture tube.
- Script-Driven** A program that follows a set of written instructions that you provide.
- Sync** (Synchronization) The signal that controls the timing in a video picture. Sync pulses control the horizontal and vertical movement of a TV's or monitor's electron gun.
- Titling** Recording text onto videotape for use as titles or to present information.
- Underscan** Images that do not extend to the edge of the screen, thus leaving a border. By default, the Amiga's screen is underscanned.

DESKTOP VIDEO FOR BEGINNERS



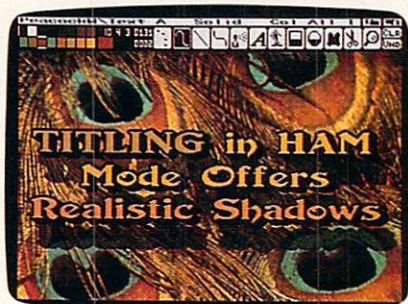
program, and printed.

There are fast and slow digitizers. Digi-View Gold 4.0 from NewTek will digitize color or black-and-white images, converting them into any one of the Amiga's many video modes. It scans images slowly, so your subject must be completely still.

As a result, photographs and inanimate objects are the easiest items to scan. When Digi-View is used with a black-and-white camera, you must use the provided red, green, and blue color filters to scan the image three times. These three scans are assembled into a full-color image by the computer. Digi-View provides the best-quality images available with low-cost equipment.



Programs such as TV*Text Professional allow you to create impressive-looking letters for video titling.



The HAM paint program *Deluxe PhotoLab* was used to place titles over these digitized peacock feathers.

Fast digitizers, often called **frame grabbers**, can grab an image in 1/60 to 1/15 second, making them useful for digitizing frames from videotape or from a camera taking live-action shots. Their quality is currently not as good as that achieved by slow digitizers, but it's still quite respectable. Black-and-white images come out sharper than color ones do.

Some of the fast digitizers available for the Amiga are Live!, by A-Squared Distributions;

FrameGrabber, by Progressive Peripherals & Software; FrameBuffer, by Mimetics; and Perfect Vision, by SunRize Industries. SunRize Industries also makes the Color Splitter, which electronically separates colors when digitizing, eliminating the need for color filters.

When shopping for a digitizer, be sure

FYI

Interested in more information about Amiga desktop video? Here are some books and videotapes that you may find helpful.

Books

Amiga Desktop Video

\$19.95

COMPUTE! Books
Chilton Book Company
One Chilton Way
Radnor, PA 19089
(800) 345-1214

Amiga Desktop Video Guide

\$19.95

Abacus
Dept. L11
5370 52nd St. SE
Grand Rapids, MI 49512
(616) 698-0330

Desktop Video: A Guide to Personal and Small Business Video Production

\$14.95

Harcourt Brace Janovich
Orlando, FL 32887
(407) 345-2000

Videotapes

DTV #4: Desktop Video & the Amiga

DTV #5: Desktop Video for Profit

\$30.00 each; both for \$50.00

Group M Productions
100 Bridge St., #27
Hot Springs, AR 71901
(501) 321-1845

How to Make Presentations & Sales Tapes with the Amiga

\$199.95

How to Make TV Commercials

\$199.95

How to Use the Amiga for Video

\$39.95

TV One Productions

#7 Delsea Plaza

Delsea Dr.

Westville, NJ 08093

(609) 848-3770

(609) 848-5698

Micro Digital Graphics Tape 1: Video Graphics Techniques

Micro Digital Graphics Tape 2: Color Cycling Animation

Micro Digital Graphics Tape 3: Digitizing for Effect

\$41.50 each; any two for \$75.00; all three for \$99.50

Cape Fear Teleproductions

Dept. AC

605 Dock St.

Wilmington, NC 28401

(919) 762-8028

COMPUTER USER MUTATED BY VDT RADIATION

Too many hours in front of screen, say top scientists!

Fortunately for you, California Freeware has the solution. Using advanced shareware* and public domain software and graphics on your Amiga, you can drastically reduce the number of hours you spend sitting in front of your monitor. With simple mouse-driven commands, our collection of business, utilities, graphics, programming, and entertainment software will suit your every need. Just take a look at these disks:

All Amiga® Programs require a minimum of 512K RAM, unless otherwise specified.

□ (9032) ANIMATION /3 - 3 amazing animations! Ghostpool and Spigot by Dr. Gandalf, and Nemesis by Mark Riley. Req: 1 MB RAM and MOVIE 1.2 or greater. PD.

□ (9091) BUSINESS /1 - Contains Clerk, a full-featured accounting program and Bankn for checking and savings accounts. SW.

□ (9066) BUSINESS LETTERS - Over 550 pre-formatted boilerplates for you to edit. PD.

□ (9069) TELECOMM - A collection of the best communication programs available. PD.

□ (9071) FONTS /1 - 46 fonts to be used in paint programs, desktop publishing, or word processing. PD.

□ (9028) GAMES /2 - A nice games sampler; contains 8 programs from arcade to strategy. PD.

□ (9030) MORIA - Great RPG, enter the dungeon and defeat the Balrog. Req: 1 MB RAM, PD.

□ (9013 - 9015) STAR TREK (3 disk set) - A tour-de-force in

programming. Contains on-line instructions. Req: 1 MB RAM and 2 disk drives. PD.

□ (9001 & 9002) GRAPHICS UTILITIES (2 disk set) - Much needed tools; Showanim 4.3, Movie 1.3, Projector, Fantaplayer, View and more. SW.

□ (9068) MANDELVROOM - Mandelbrot and Julia mathematical sets. PD.

□ (9006) SPACE - A visually stunning slideshow of digitized pictures of space objects set to soothing music. PD.

□ (9065) SONIX PROGRESSIVE - Music that plays continually for 82 - 92 minutes of contemporary music. PD.

□ (9086 & 9087) CLIP ART /10 (2 disk set) - Contains 32 old style graphics with people holding signs. PD.

□ (9094) CUCUG ICONS - This collection contains an icon for just about any occasion. PD.

□ (9095) VIRUS INNOCLATION - Contains the best virus checkers and eradicators currently available. SW.

□ (9096) PUZZLES GALLORE - Brain teasers, includes; Maze, Wordsearch, IFF2Pcs, and Shanghai. SW.

□ (9107) ANALYTICALC -

Comprehensive spreadsheet program. Req: Zoo utility (#9031), PD.

□ (9111 & 9112) STATION AT KHERN (2 disk set) - Animation depicting day-to-day life on a space station. Req: 2 MB RAM and Showanim 4.3 (#9001 & 9002), SW.

□ (9130) TAG BBS - An on-line message and file handling system. SW.

□ (9144 - 9148) CLIP ART PAK (5 disk set) - Our most popular clip art in IFF format. Req: Any program capable of handling IFF graphics. PD.

□ (9155) KLIDE - Screen Spirograph-type program. PD.

□ (9158) LADY LUCK - Contains several Las Vegas games, Backgammon and Lotto 6/49. SW.

□ (9106) UTILITY SAMPLER - Contains VIRUSX 4.0, Zoo, Arc, Showprint and much more. A necessity for any user. SW.

□ (9105) BUSINESS SAMPLER - Contains a text editor, UEDIT, 100 fill-in-the-blank letters, and some screen hacks. SW.

Amiga Shareware
Only \$4.99 ea.
Buy 10 get 2 free!



□ (9154) DYNAMIC HI-RES DEMO - Contains a slide-show of digitizations in 4,096 colors. Req: 1 MB RAM, PD.

□ (9152 & 9153) DEMO REEL 3 (2 disk set) - This disk takes you on a journey of graphics and sound. Req: 1 MB RAM, PD.

□ (9134) FONTS /2 - Numerous fonts including Berlin, Circus, Hombre, and more. PD.

□ (9135) FONTS /3 - Numerous fonts including Andover, GenMath, Hunt, and more. PD.

□ (9136) FONTS /4 - Numerous fonts including Elvish, Chicago, Gibson, and more. PD.

□ (9137) FONTS /5 - Numerous fonts including Aldous, Larr, Patti, and more. PD.

MACINTOSH® Value Paks

Sets of 5-800K Disks for Only \$19.96 ea.

Graphics Pak (8998) - (5 disk set) Watch your documents come to life with this terrific graphics collection for desk top publishing in MacPaint format. Order #8998 for postscript (EPS) graphics.

Utilities Pak (8993) - (5 disk set) Every kind of utility you can imagine are on these disks. If it's not here, it's not anywhere!

Game Pak (8994) - (5 disk set) The greatest games around.

Business Pak (8990) - (5 disk set) A selection of the best business programs we could find.

Educational Pak (8992) - (5 disk set) Learning can be fun for the whole family! Enjoy watching your children discover their abilities.

5 1/4" IBM®/Compatible

5 Disk Sets Only \$14.95

Add \$5.00 for 3.5" disks!

CGA and 256K required for some.

Business Pak (1999) - (5 disk set) The best business programs we could find.

Educational Pak (1998) - (5 disk set) Learning can be fun discover your child's abilities.

Graphics Pak (1996) - (5 disk set) Watch your documents come to life with these .PCX graphics. Requires graphics program to use.

Utilities Pak (1995) - (5 disk set) Most useful utilities available.

Game Pak (1994) - (5 disk set) The greatest games around. Order (1993) (5 disk set) for monochrome games.

We Accept

VISA / MasterCard / American Express



Call Now! 1-800-992-6621

ORDER DESK HOURS M - F 7am - 5pm, PST

24hr. Electronic Ordering (805) 273-1748

Ask for a FREE catalog!

Send orders to:

California FREWARE

1747 E. Ave. Q., #C-1 (805) 273-0672 Fax

Palmdale, CA 93550 (805) 273-0300 Int'l

Please circle choices of IBM disks, Mac paks & Samplers above. Multiple disk sets require payment for each disk in set (except paks).

5.25" IBM Disk Sets @ \$14.95 ea =

3.5" IBM Disk Sets @ \$19.95 ea =

Mac Value Paks @ \$19.96 ea =

Amiga Disks @ \$4.99 ea =

Free Amiga Disks @ \$0.00 ea =

2 free disks for every 10 paid for!

CA Residents Sales Tax (7.%) =

Shipping/Handling USA-\$4.00. HI, AK, Canada-

\$6.00. Int'l Orders-\$11.00. S/H =

Total Enclosed/ Charged =

*Shareware requires separate payment to author if found useful

All Domestic Orders sent via UPS. U.S. Funds Only

or International Money Order. Payment by: ☐ Check

☐ Visa ☐ MasterCard ☐ Amex

Card# _____ Exp. _____

Signature _____

Name _____

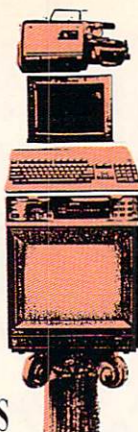
Address _____

City _____

State _____ Zip _____

Phone (____) _____

DESKTOP VIDEO FOR BEGINNERS



you get one that works with your model Amiga. You'll also find that resolution (the number of dots used to recreate an image), overscan, and color support vary greatly with each brand of digitizer, as does price. Do not confuse these digitizers with optical scanners, which are primarily designed for desktop publishing applications.

3-D Art

Three-dimensional ray-tracing and animation software abounds. These are memory-intensive programs, so extra RAM—at least three megabytes—is an absolute must. Titles include *Sculpt 3-D* and *Sculpt Animate 4-D*, from Byte-by-Byte; *VideoScape 3D*, from Aegis Develop-

ment; *Turbo Silver 3.0*, from Impulse; *Forms in Flight II*, from Micro Magic; and *PageRender 3-D*, from Mindware.

Using 3-D ray-tracing, modeling, and animation software is not easy, despite the excellent user-interfaces utilized by these programs. But the satisfaction of a well-executed 3-D animation can be worth the effort and learning time. Also note that these 3-D animation programs do not give instant results. Once all of your shapes and scenes are defined, you must sit back and wait for the computer to generate the final images. This can take minutes, hours, or days, depending on the complexity of your work, so be prepared.

Presenting Your Work

There are a number of Amiga programs that specialize in displaying art and animations. *The Director*, from The Right Answers Group, is a script-driven presentation program that shows

Products Mentioned

If something mentioned in the article caught your eye, the following product list will help you find what you're looking for.

Amiga Graphics Starter Kit
\$99.95 (includes Aegis Animator)

VideoScape 3D

\$199.95

VideoTitrer

\$159.95

Oxxi/Aegis

P.O. Box 90309

Long Beach, CA 90809

(213) 427-1227

Animation: Flipper

\$15.95

Hash Enterprises

2800 E. Evergreen

Vancouver, WA 98661

(206) 693-7443

AProDraw 9 × 6 inch

\$449.00

AProDraw 12 × 12 inch

\$549.00

R & DL Productions

11-24 46th Ave. 2A

Long Island City, NY 11101

(718) 392-4090

Broadcast Titrer

\$299.95

InnoVision Technology

1933 Davis St.

Suite 238

San Leandro, CA 94577

(415) 638-8432

Color Splitter

\$119.95

Perfect Vision

\$249.95

SunRize Industries

P.O. Box 1453

College Station, TX 77841

(409) 846-1311

DeluxePaint II

\$99.95

DeluxePaint III

\$149.95

Deluxe PhotoLab

\$149.95

Electronic Arts

1820 Gateway Dr.

San Mateo, CA 94404

(800) 245-4525

(415) 571-7171

Digi-Paint 3

\$99.95

Digi-View Gold 4.0

\$199.95

NewTek

115 W. Crane St.

Topeka, KS 66603

(800) 843-8934

The Director

\$69.95

The Right Answers Group

P.O. Box 3699

Torrance, CA 90510

(213) 325-1311

Easy!

\$399.00

Anakin Research

100 Westmore Dr.

Unit 11c

Rexdale, Ont.

Canada M9V 5C3

(416) 744-4246

Elan Performer

\$59.99

Elan Design

P.O. Box 31725

San Francisco, CA 94131

(415) 621-8673

Forms in Flight II

\$119.00

Micro Magic

261 Hamilton Ave. #320C

Palo Alto, CA 94301

(415) 327-9107

FrameBuffer

\$549.95

Mimetics

P.O. Box 1560

Cupertino, CA 95015

(408) 741-0117

FrameGrabber

\$699.95

Progressive Peripherals & Software

464 Kalamath St.

Denver, CO 80204

(303) 825-4144

Kara Fonts, AnimFonts1

\$49.95

Kara Fonts, AnimFonts2

\$49.95

Kara Fonts, Headlines

\$79.95

Kara Fonts, Headlines2

\$69.95

Kara Fonts, Subheads

\$69.95

Kara Computer Graphics

2554 Lincoln Blvd.

Suite 1010

Marina Del Rey, CA 90291

(213) 578-9177

Live!

A500 version \$399.00; A1000 ver-

sion \$295.00; A2000 version \$450.00

A-Squared Distributions

6114 LaSalle Ave.

Oakland, CA 94611

(415) 339-0339

PageFlipper Plus F/X

\$159.95

PageRender 3-D

\$159.95

Mindware International

110 Dunlop St. W

Box 22158

Barrie, Ont.

Canada L4M 5R3

(705) 737-5998

Pro Video Gold

\$299.95

JDK Images/Shereff Systems

15075 SW Koll Pkwy.

Suite G

Beaverton, OR 97006

(503) 626-2022

Sculpt 3-D

\$99.95

Sculpt Animate 4-D

\$499.95

Byte-by-Byte

Arboretum Plaza II

Suite 150

Austin, TX 78759

(512) 343-4357

Turbo Silver 3.0

\$199.00

Impulse

6860 Shingle Creek Pkwy. #110

Minneapolis, MN 55430

(612) 556-0221

*TV*Show*

\$99.95

*TV*Text*

\$79.95

*TV*Text Professional*

\$149.95

Zuma Fonts, Volumes 1-5

\$34.95 per volume

Zuma Group

6733 N. Black Canyon Hwy.

Phoenix, AZ 85015

(602) 246-4238

images, plays sounds and animations, and provides wipes and transitions. **Script-driven** means that the program follows a set of written instructions that you provide.

Elan Performer, from Elan Design, is an easy-to-use keyboard or mouse-driven presentation program that plays animations and shows pictures. *TV*Show*, by Zuma Group, is a script-driven slide-show program. It provides a good selection of transitional wipes. Though simple, when it is combined with a genlock, impressive effects can easily be achieved.

The applications for desktop video are not limited to titling, animation, and graphics. Digitized sounds and music are integral parts of the Amiga's contribution to desktop video. You can create your own sound-effects library and write your own music scores. There are realtime interactive programs that affect your graphics image according to video, keyboard, and audio input. Then there is image-processing software that gives you the power to produce some fantastic image distortions and special visual effects from drawings and digitized images. Finally you have fractal landscape generators, and calligraphy programs, and font editors, and . . . well, you get the picture.

Quick Tips

A couple quick tips for all desktop video applications: Never forget that your creations are destined for videotape, and that means composite output. *Always* check your work on a composite monitor to avoid excessive flicker, chroma crawl (the erratic shimmering of bright colors), incorrect colors, and unreadable text. And to be compatible with most video equipment, you should always work in interlace mode (Amiga screen resolutions of 400 vertical lines or more).

A Growing Field

There's more to learn about desktop video every day. To help you keep informed, we've compiled a brief list of books and videotapes that cover almost all aspects of desktop video. (See the "FYI" sidebar that accompanies this article.)

Software and hardware is available to do just about anything you can imagine, and more is coming every day. The future is not just bright, it's blinding. Things not even dreamed possible five years ago will be in common use in the next year. But don't wait, desktop video is already here. It's exciting and fun, so get a start on the future with the basics—a genlock, a VCR, a good IFF paint program, a titling program, and a good font collection—and you'll be on your way. ▲

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

"KARA FONTS" TAKE A QUANTUM LEAP... FONTS THAT MOVE!

NEW

For DPAINT III, DVIDEO III & other programs that use the Anim Brush format.



ANIMFONTS1

ChromeSCRIPT is an 8 color, formal, sophisticated roman style script in caps and lower case and comes both as a keyboarded and AnimFont. Each letter of the AnimFont appears to be hand written across the screen. A variety of looks can be achieved with the included optional palettes such as Chrome, reflective Gold, copper, bronze and other gold effects. One Disk - Suggested Retail \$ 49.95.

NEW

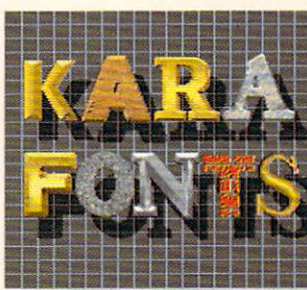
For DPAINT III, DVIDEO III & other programs that use the Anim Brush format.



ANIMFONTS2

BULLION is a dimensional, beveled, highlighted, uppercase gothic font and comes in a keyboarded and AnimFont. The AnimFont rotates onto the screen 90 degrees on the "Y" axis to the left while a glint of light travels across the face from left to right. When used as instructed, the glint will travel continuously across the whole word(s). Comes standard in Gold with additional palettes such as Metallic and Silver. One Disk - Suggested Retail \$ 49.95.

THE
ULTIMATE
FONTS:
3 Exciting
Professional
Titling
Packages.



HEADLINES: 10 Hi-Res, up to 8 color, uppercase fonts in two sizes each (approx. 104 & 84 pts. high). Font styles in CHROME, MARBLE, BRICK and GRANITE are dragable for added 3-dimensional effects. Other styles are CHISEL, WOOD, BEVEL, CAST, CHISELserif and COLUMN. 3 Disk Set - Suggested Retail \$ 79.95.

SUBHEADS: The Same popular 10 fonts as in "HEADLINES", but in two smaller sizes each (approx. 72 & 55 pts. high). Now possible to use in lower resolutions at a workable size. 2 Disk Set - Suggested Retail \$ 69.95.

HEADLINES2: 4 NEW 8 color fonts in 2 - 3 sizes each. CHISELSCRIPT: Italic script in upper and lower case. GLASS: Transparent uppercase gothic face. ENGRAVED: Dragable, uppercase two-plane shiny font. EMBOSSED: Raised or sunken letters on a surface. 2 Disk Set - Suggested Retail \$ 69.95.

1 MEG (Keyboard), 1.5 MEG (AnimFonts) Required / 2 Disk Drives Advised.

KARA COMPUTER GRAPHICS

2554 Lincoln Blvd., Suite 1010, Marina Del Rey, CA 90291 (213) 578-9177

Circle Reader Service Number 126



Profile of Bradley W. Schenck

Ben and Jean Means

The BADGE killer demo contest is the ultimate Amiga competition. Every year programmers and graphics wizards from around the globe spend sleepless nights crafting amazing animations to vie for the coveted crown. Many enter, few win.

The prizes are dear: second prize, an A2620 accelerator card; first prize, an Amiga 2000, and, even more importantly, the title of King of Amiga Graphics. In 1987, Year Zero, Bradley Schenck didn't win; he didn't enter; he didn't own an Amiga.

But then came 1988, Year One. Bradley Schenck entered the mythical *Charon*, a five-minute animation in two dimensions.

A heraldic title opens majestically into a flowing manuscript of illuminated text engraved over a long-forgotten tune of medieval music. Charon, the eternal boatman, ferries the dead on their journey across the River Styx.

Back and forth he has plied his trade of death for centuries, and bands of golden filigree intertwine to mark the passage of advancing time. At last only one lone shivering ghost remains; Charon has ferried the last soul into the kingdom of the dead.

Schenck used a one-meg Amiga 500, *DeluxePaint II* and *The Director* to win the grand prize of an Amiga 2000 and also first place for best use of sound.

Then followed 1989, Year Two. Bradley Schenck entered the *Sentinel*, a three-minute animation in three dimensions.

A mysterious arched door beckons, then opens with an ominous creak. You enter a shadowed hall as a golden helmet rises majestically before you. An ornate sword of polished blue steel shimmers into existence. Thunder and lightning strike and the sword turns menacingly toward you. You beat a

hasty retreat through the darkness; the giant oaken door slams shut as its heavy knocker clangs slowly behind you.

Schenck used a five-meg Amiga 2000, *Turbo Silver*, *The Director*, and a host of supporting programs. He again won first place in Year Two, along with the award for best graphics.

BADGE Killer Demo King

Two years in a row, Schenck won the title of Animator King; says twice-crowned Schenck, "The BADGE demo contest is kind of breeding into me. I swore up and down I wasn't going to enter last year, but then I did anyway. I couldn't really afford to win another free computer at the time because once you've got a 2000, you need a hard drive and more memory, not another CPU. I was really hoping to win the second-place prize, which was a 2620 board. As it turned out, the fellow who won the second prize

was a friend of mine who had an Amiga 1000 and couldn't use the 2620 board. So about five seconds later, he had two big boxes, and I had one little box, and we were both grinning like idiots.

"I really do need to sit the next BADGE demo contest out. But then, of course, if they upgraded the first prize to an Amiga 2500 with an 030 board. . . . I don't know; every man's got his price."

Swordplay is more than just an animator's passing fancy. It runs in the blood of the Schenck clan who trace their lineage back to the ninth century and had their own castle until it was bombed in World War II. A leather-bound volume leans against the side of his Amiga 2000; its title is *The History of the Family of Schenck von Littegan*. Schenck explains, "The book is mostly about this really horrible person called Martin Schenck, who was the brother of my ancestor. He was a mercenary general, just a terrible person, and he'd fail to pay his troops; actually, he was a lot like a software publisher. He would beat them into battle from behind, keeping them going by promising them large amounts of money. So today he would probably be in games."

Schenck is a self-taught artist and professes, "They haven't built the art school that can hold me." But his work has spanned the field of art, from business graphics to book illustration, advertising to easel painting. He's done album covers, etchings in glass, metal work, woodwork, and even a 34 × 15 foot mural.

Unique Style

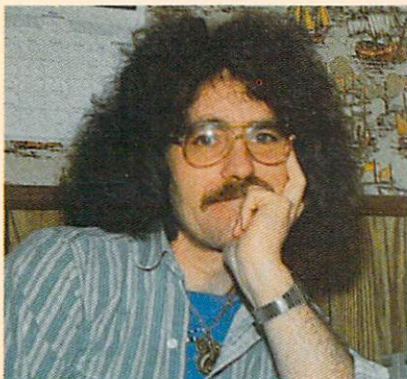
Schenck voices strong feelings about the approach to different media. "Creating any work is almost a conversation between you and the medium you're working in. Some artists create art based on the characteristics of the medium. I've never given in to the limitations of the media because my idea is a lot more important. I like to work with higher screen resolutions, where I do a lot of antialiasing so that you don't see jaggies and chunky pixels. Some artists rely very strongly on vertical and horizontal lines and try to eliminate diagonal and curved lines altogether. Those are the places where you see pixelations of course, and Jim Sachs has taken that one approach and just gone off in the clouds—he's fantastic. I try to do as well with my approach as he does with his; it's really just a different way of thinking."

Schenck developed an antialiased

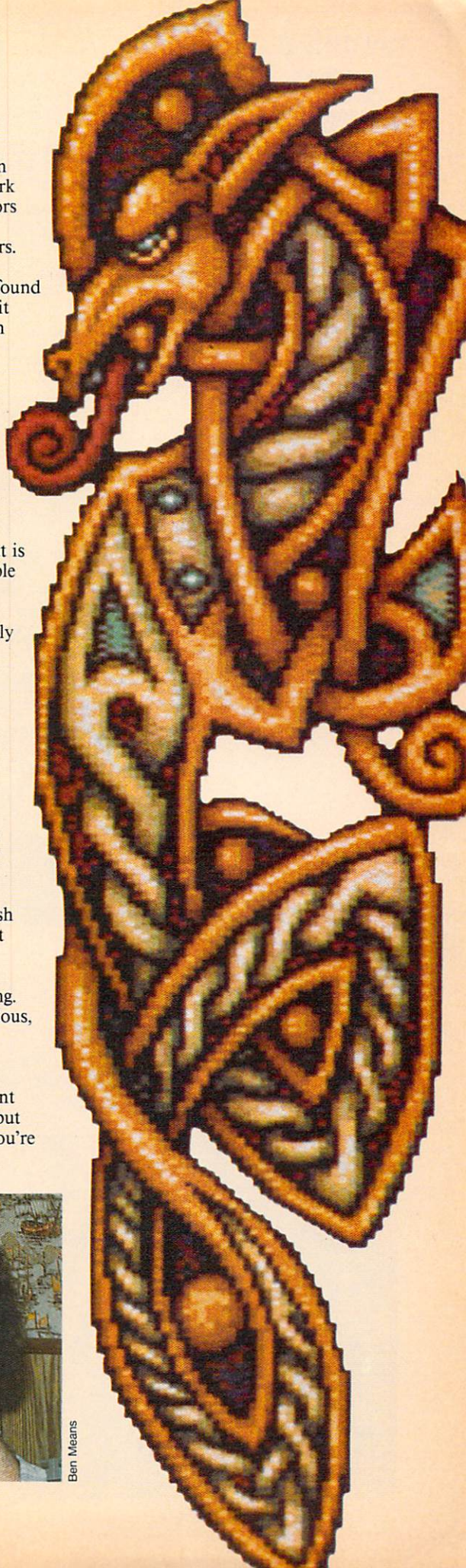
high-resolution technique when he set out to find a way to work in high resolution with 16 colors and still get realistic shading with the illusion of many colors. He says, "I set out to prove it couldn't be done and instead found the only way to do it. In fact, it worked out extremely well! I'm very fond of this technique, which is similar to what you see in color separation.

I devote part of my palette to gray scale and another part to colors. The colors often are more highly saturated than the colors I normally work with because they're dithered with the gray scale; by changing the gray that is dithered with the color, I'm able to get different shades of the same colors and achieve this monolithic shading that actually works out very well. And it only works because the pixels are so finely grained in this resolution. I was pleasantly surprised that I proved myself wrong, but it's still a very tedious technique. You get to know all the pixels by their first names."

Schenck reveals the secret of his philosophy: "What I try to concentrate on is finding the things that the computer does better than I do, like brush painting and fills. I'm lazy, but I'm committed because I'll spend days figuring out the simple way to do something. I'm perfectly willing to do tedious, ridiculous things if the effect is worth it because the picture is more important than my tedium. People always comment about how patient I must be, but it's not really patience when you're screaming inside."▷



Bradley W. Schenck



Ben Means

Breaking with Tradition

Bradley Schenck fell in love with his Amiga and left the once-familiar world of traditional media; he says, "The traditional visual arts bother me because they don't compete really well with video, popular music, and movies—the media that we get bombarded with every day. The popular media in our culture are very loud and hard to ignore, while a simple painting is a pas-

sive medium that tends to fade into the woodwork by comparison. That's very frustrating because I want my work to be part of an experience that the viewer will have.

"In computer games, the viewer has to interact with my art. I like the idea of being able to tell stories and create an experience that's a partnership between the artist, the writer, the programmer, and the viewer. There's a

tremendous amount of possibilities in computer games that we really haven't seen realized yet."

From the dim recesses of a cluttered computer lair, Bradley W. Schenck weaves multicolored myths with his mouse and muses, "What I like best about painting on a computer is that it's like a poem rather than a painting because you never really know when it's finished." ▲

Brad Schenck's Ziggurat.



DeluxePaint's magnify mode reveals the detailed dithering technique used on the face of Brad Schenck's Viking.

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

Bars & Pipes

Blue Ribbon Bakery
1248 Clairmont Rd.
Suite 3D

Decatur, GA 30030

(404) 377-2277

Requires 512K

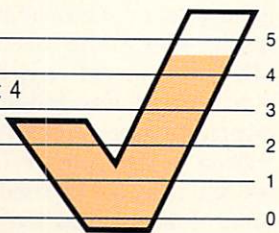
\$299.00; optional accessories \$59.95 each

Functionality: 5

Documentation: 4

Usability: 4

Features: 5



I'm finally doing what I've wanted to since I marveled at the original mockup of the Amiga in a back room at the Consumer Electronics Show way back when. Thanks to my Amiga 2000 and a couple of innovative developers, I can play MIDI-generated music while I transfer files online—even while I work on this review—without quitting, switching, or unplugging a thing.

The melodies come to you via a new music-sequencing program from Blue Ribbon Bakery, *Bars & Pipes*, which offers a number of features previously unavailable on the Amiga. The flexibility is due to the Amiga's ability to multitask and a multiserial card I got from Checkpoint Technologies called the Serial Solution.

Sure, I could turn on my stereo and hear standard background music, but I've been waiting for music soft-

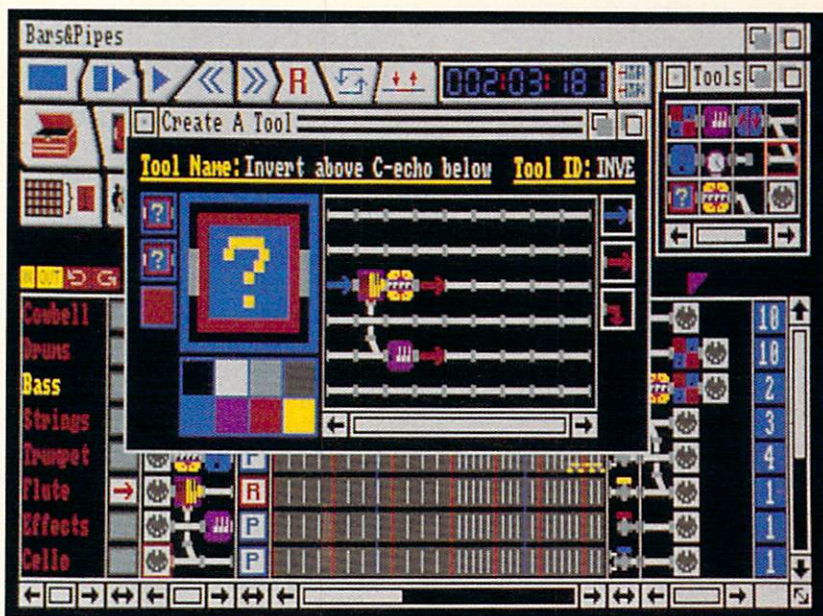
ware that screams Amiga whether it's rocking, jiving, singing, or swinging, and *Bars & Pipes* plays right on tempo. It supports MIDI, IFF samples, and SMPTE; has an accurate clock and a friendly edit window; and displays scrolling simplified music notation as it performs. Although I like it just fine, I'm not stuck with it either; *Bars & Pipes* is an open-ended system that can grow as I extend my chops and collection of electronic music makers. Blue Ribbon Bakery has already released accessories for it. But best of all, it *looks* and *feels* like an Amiga program should, right down to the fancy exploding windows. The graphics-based interface is superbly organized onto a single main screen that's loaded with mouse-sensitive gadgets and pull-down menus. Just about everything you can think of is there, even tools for making the snazzy internal icons it uses.

Plumbers Do It Better. Musical pipelines (known as *tracks* in MIDI jive) are the central premise of *Bars & Pipes*. Although you can have as many as your machine's memory permits, eight pipelines occupy the lower central portion of the main screen. Each pipeline controls an instrument and

displays tiny colored dashes that represent the music; the dashes scroll from left to right as the music plays.

You enter music by playing it live on a MIDI-connected synth or, if you prefer, in step time, one note at a time. If you have Blue Ribbon's Internal Sounds Kit accessory, you can also enter notes using the bottom two rows of your Amiga's ASCII keyboard. With the Sounds Kit, *Bars & Pipes* will play MIDI sounds, Amiga samples, or both simultaneously. You control the playback of songs by clicking on sophisticated "tape deck" controls, although you can easily transfer control to seldom-used keys on your master synthesizer.

Notice the colorful icons that appear at the end of some of the pipelines in the accompanying screenshot. They correspond to the Tools found in the window at the upper right corner of the screen. Tools are unique to *Bars & Pipes* and are one of its most powerful and easiest-to-use features. You drag a Tool to a pipeline with the mouse, placing it to the left to alter music data before it is stored as a sequence or to the right to change it on its way out to be played. That means you can try out different effects with-



out committing yourself, and this kind of flexibility is unheard of in MIDI software.

Bars & Pipes comes with 28 Tools that accomplish tasks such as splitting your keyboard, quantizing notes, adding echo and modulation, defining articulation, merging pipelines, creating rhythmic accompaniments, and even adding first-species counterpoint. There's no limit to the number of tools you can have on a pipeline, although you can gang them together as a MacroTool on a single icon if you wish.

Tools are external to *Bars & Pipes*, so it's easy to add more, and Blue Ribbon Bakery has released a separate collection called MusicBox A. It contains 17 Tools, including one that shows MIDI events numerically; another for editing them; others for doing trills, glissandi, grace notes, and repeats; and yet another for *ARexx* compatibility.

Editors Aren't Schnooks. Clicking the mouse pointer on a pipeline opens its editing window at the measure where you clicked. Although this is where you get at much of the compositional power of *Bars & Pipes*, the first thing you notice is a simplified music-notation display, two octaves on a grand staff with notes shown as colored dashes with accidentals. A piano-roll display is available here, too. Like pipelines, this window scrolls as the music plays, and although it's not traditional notation, you can certainly follow a score on it. Blue Ribbon Bakery promises to release a means of displaying and editing standard music notation for *Bars & Pipes* this summer.

A pipeline's Edit Window not only lets you enter and alter music graphically with the mouse, it offers some algorithmic composition techniques as well. You can select predefined rhythms (or define your own), and the Accompany B tool will combine them with chord parameters to produce a chord pattern that you can quickly tap out on your synth. Here you can also enter lyrics, alter velocity and time signatures, and examine your chords and tonal centers. If you need a starting point, use your modem to download any MIDI File Format 0 file and load it into *Bars & Pipes* through the program's MuFFy Accessory. Most MIDI programs (even non-Amiga

ones) save in this format; unfortunately, *Deluxe Music Construction Set* does not. Another accessory, called Follow the Leader, permits printing lyrics to paper.

Speaking of which, *Bars & Pipes* comes on beautiful paper, too. It arrives with a quality three-ring loose-leaf binder with a clever stand, and it offers 150-plus pages of basics with an index and some music-theory discussions here and there. It could, however, profit from a quick-start section and an annotated illustration of what's where on the screen.

• • •

Bars & Pipes has the
flash and dazzle of
Amiga sounds, graphics,
and multitasking
anchored on the serious
underpinnings of
professional
musicianship.

• • •

48 MIDI Channels! The Amiga's single serial port is the reason I couldn't play synthesized music and go online at the same time; most modems and MIDI devices require exclusive use of the computer's serial port. What I needed (and got) was Checkpoint Technologies' dual-port Serial Solution card for my Amiga 2000 (Checkpoint Technologies, P.O. Box 2305, Manassas, Virginia 22110; 703-330-5353).

The Serial Solution gives your Amiga two additional serial ports, one with an Amiga 25-pin connector, the other with a standard IBM AT-style 9-pin adapter. Your software must be made to address the drivers for these serial ports, however, and Checkpoint provides a couple of ways to do that. After a little fiddling, I successfully operated NES's new MI-001 MIDI interface (which has four MIDI-Outs, a MIDI-In, and Thru connections) and

Supra's 2400-baud external modem simultaneously using *Bars & Pipes* and Progressive Peripheral's *BaudBandit* telecommunications software, respectively. (For more information on the MI-001 MIDI interface, contact NES at 4660 SW Flower Place, Portland, Oregon 97221; 503-246-9311).

With three serial ports and enough electronic music makers, I could have 48 MIDI channels going simultaneously—16 channels on each port! That capability is exactly what Blue Ribbon Bakery and Checkpoint Technologies offer the dedicated musician—that and other sophisticated music abilities which space doesn't permit me to detail here. You can get the serial-port software drivers for *Bars & Pipes* from Blue Ribbon Bakery, and, although you can hook up two more MIDI interfaces to the Serial Solution now, Checkpoint will soon offer a two-port MIDI interface for use with its board.

Musicians Do It Best. *Bars & Pipes* has the flash and dazzle of Amiga sounds, graphics, and multitasking anchored on the serious underpinnings of professional musicianship. It's the most Amiga-tized of all the MIDI sequencers I've seen. Although I didn't like the way lead-in times and program changes worked, once Blue Ribbon released version 1.0d (upon which this review is based) and I got some of the optional Tools going, I didn't have any serious problems with it; I only suffered a bit of initial confusion at so many things on the screen at once, which the documentation straightened out for me soon enough. Although the price is in line with other professionally oriented MIDI packages, I think they're all a bit pricey, especially *Bars & Pipes* if you spring for many of the company's additional packages.

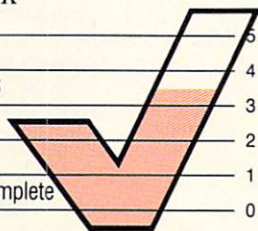
A demonstration version of *Bars & Pipes* is available for downloading from the commercial networks or by mail from Blue Ribbon Bakery for \$10. If you're interested at all, I recommend getting it, as it does everything but save your work to disk. But watch out: If you're a musician or would like to be, once you're acquainted with *Bars & Pipes* through the demo, you may not be satisfied until you own the real thing. It sizzles!

—Peggy Herrington

Meta4

Interactive Video Systems
11612 Knott Ave.
Suite 13
Garden Grove, CA 92641
(714) 890-7040
\$199.95 with 0K

Functionality: 4
Documentation: 3
Usability: 4
Features: 3
Diagnostics: Incomplete



Megabytes! That's what we think of nowadays when computer memory is mentioned. Yet it was just a short time ago that the kilobyte was the basic unit of memory and that 64K of RAM was a whole lot. Now that memory-chip prices are starting to come down, more Amiga users are expressing an interest in expanding the amount of RAM in their systems.

Meta4 is a half-length, Amiga 2000-style, plug-in card which can be fitted with either 512K, 1MB, 2MB, or 4MB of RAM. Memory is added in the form of prefabricated circuit boards known as single in-line memory modules (SIMMs), each of which contains eight or nine memory chips. The advantages of using SIMMs are that they take up less space and are quicker and easier to install (if you do it yourself) than the same number of conventionally mounted chips. SIMMs are also likely to be more reliable than individually socketed chips, as there are fewer contacts. On the other hand, if any one of the SIMM's eight chips should fail, the entire module has to be replaced. Not unexpectedly, a SIMM is slightly more expensive than the same amount of memory in the form of discrete chips.

Eight-chip SIMMs were originally designed for use with the Macintosh. Nine-chip SIMMs were designed for use in MS-DOS machines. Since there are only eight bits in a byte, MS-DOS uses the extra bit for parity checking. Meta4 will accept either SIMM version, as it simply ignores the extra bit.

SIMMs are specified by their size and their speed. Speed selection is straightforward; Meta4 requires SIMMs rated at 100 nanoseconds (ns)

or faster. Note that the lower the nanosecond rating is, the faster the chip is. Thus, an 80-ns chip is faster, and more expensive, than a 100-ns chip. SIMMs are presently manufactured in 256K and 1MB configurations. Meta4 will accept either size; however, all of the SIMMs must have the same capacity. Since the Amiga's data bus is 16 bits wide, SIMMs have to be added to Meta4 in pairs.

Two 256K SIMMs are required to configure Meta4 with 512K of RAM, while four of these SIMMs make up 1MB. To obtain two and four megabytes of expansion RAM, simply use the corresponding number of 1MB SIMMs. You must set some jumper clips on the Meta4 circuit board to specify the amount of memory that you have installed. You can also set a jumper clip so that the Amiga won't install the extra memory until you tell it to. Normally, the Meta4 RAM automatically installs itself when you boot your computer.

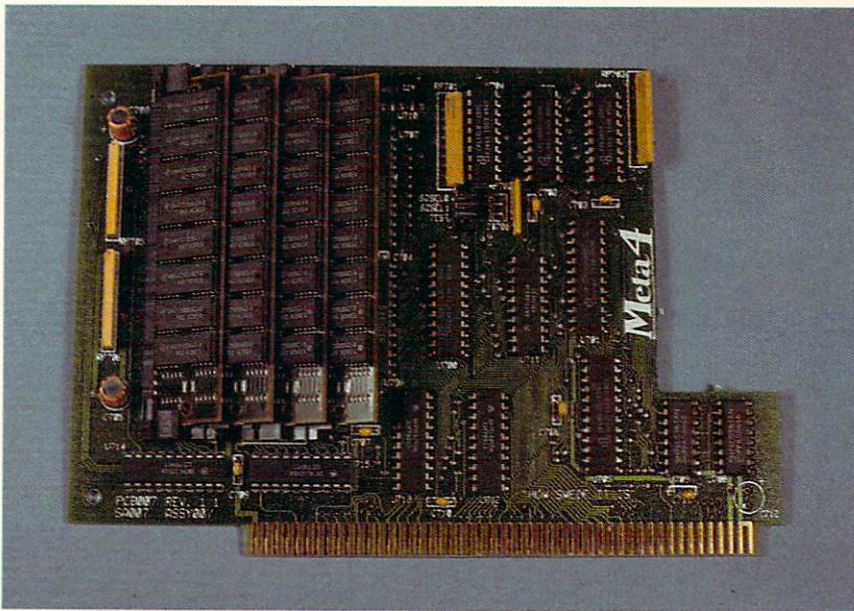
Meta4 uses a zero-wait-state design, which simply means that it won't give the Amiga's 68000 microprocessor any reason to pause. Since Meta4 was originally intended for use with the Amiga 500, it was also designed to consume a minimum amount of power. A fully configured four-megabyte Meta4 uses less than one ampere at five volts dc.

So why a half-card? As of this writing, Meta4 is the only half-length Amiga 2000 memory-expansion card

on the market. It was specifically designed to fit in the second slot of the Trumpcard 500, Interactive Video Systems' hard drive expansion module for the Amiga 500. The Trumpcard 500 has just enough space for a pair of half-length Amiga 2000-style expansion cards and one 3½-inch hard drive.

Amiga 2000 users who have installed a hard card (a hard disk that mounts onto its own controller card) may benefit from Meta4's half-card size. To avoid taking up two slots, these hard cards are invariably installed in the 2000's first expansion slot, which is adjacent to the coprocessor slot. If an accelerator card is installed in the coprocessor slot, it may compete for space with the hard card. This would force the hard drive into the second slot, making the first slot unusable for a full-length card. A half-length card such as the Meta4 would fit right into the hard card's embrace.

Probably the best way to buy Meta4 is without any installed RAM. In the current memory market, chip prices are dropping continuously. As of this writing, careful shopping can turn up a one-megabyte SIMM for less than \$80. Chances are the price will be even lower by the time you read this. Since card manufacturers have to stock up on a large amount of RAM at one time, they can rarely offer prices which are competitive with the spot market. Of course, the advantage of buying the card with factory-



Amiga Memory Management

There's more to adding memory to the Amiga than simply purchasing a card and plugging it in. Careful planning is required to obtain an optimum configuration, especially if you're expanding your computer's memory for the second or third time.

The Amiga's 68000 microprocessor provides the Amiga with a linear address space of 16,777,216 bytes, or 16 megabytes (MB). The following table shows how this space is allocated.

\$000000-\$0FFFFF	1MB chip RAM
\$100000-\$1FFFFF	1MB reserved
\$200000-\$9FFFFF	8MB expansion (fast) RAM
\$A00000-\$BEFFFF	960K reserved
\$BF0000-\$BFFFFF	64K that includes CIA chip registers
\$C00000-\$DFFFFF	2MB that includes 1.5MB of internal expansion RAM, the realtime clock, and custom-chip registers
\$E00000-\$E7FFFF	512K reserved
\$E80000-\$EFFFFF	1MB autoconfig space
\$F00000-\$FBFFFF	768K reserved
\$FC0000-\$FFFFFF	256K system ROM

Note: This table is based on information found in the latest edition of the *Amiga Hardware Reference Manual*, published by Addison-Wesley.

The Amiga system utilizes RAM in one of two ways: as chip RAM or as fast RAM. The Amiga's chip RAM is located at \$000000-\$0FFFFF. Chip RAM is called this because it's the only memory that can be directly accessed by the Amiga's custom graphics and sound chips. As such, this memory is particularly important to software that works with graphics and sampled sounds.

Fast RAM is physically identical to chip RAM, however, and it can be accessed only by the 68000 microprocessor. Since the custom chips can force the 68000 to wait until they've finished using chip RAM, it often takes the 68000 a longer time to access chip RAM. Hence the term *fast RAM* is applied to that memory which can never be accessed by the custom chips. Most fast RAM is located in the memory space found at \$200000-\$9FFFFF.

The Amiga's RAM address space has been configured in a variety of ways by the various Amiga models. The Amiga 1000 came with only 256K of chip RAM located at \$000000-\$03FFFF. An additional 256K of chip RAM could be added by plugging it into the expansion slot located at the front of the computer. The Amiga 500 and the original Amiga 2000 have 512K of chip RAM in this space. The 512K expansion cartridge for the 500 and the second 512K of RAM on the early 2000s appear in the first half-megabyte of the two-megabyte block starting at \$C00000.

The latest versions of the Amiga 500 and 2000 are equipped with the Super Agnus chip, which is able to access up to one megabyte of chip RAM. In the current Amiga 2000s, and in those machines which have been upgraded with the new Super Agnus chip, the entire one megabyte of built-in RAM appears at \$000000-\$0FFFFF. I strongly recommend that you upgrade your Amiga to a full megabyte of chip RAM as soon as you are able to.

The second megabyte of address space found at \$100000-\$1FFFFF has been reserved by Commodore for future applications. As of this writing, it appears that this space will be used to expand chip RAM to a full two megabytes for use by System 2.0 and an enhanced chip set. When this system is complete, the Amiga will be able to handle much higher resolution displays than the present system.

The next eight megabytes of address space (\$200000-\$9FFFFF) are where the Amiga's expansion memory ultimately appears. The Amiga operating system was designed to add expansion memory in sizes of 64K or multiples of 2 thereof. Thus, the legal sizes for expansion blocks are 64K, 128K, 512K, 1MB, 2MB, 4MB, and 8MB. An expansion card, which requires an address range that is not exactly equal to the size of one of these blocks, will always use the next largest legal-size block. With the exception of the 4MB and 8MB expansion cards, all expansion blocks will be configured at their *natural* address boundaries, which can be derived by adding up various combinations of the legal blocks.

The natural boundaries for the four-megabyte block would be \$000000, \$400000, and \$800000, of which the first and third blocks conflict with the existing system configuration. As a result, the actual four-megabyte boundaries have been changed to \$200000 and \$600000.

A similar conflict exists for the natural eight-megabyte boundaries, which are \$000000 and \$800000. Thus, the actual eight-megabyte expansion boundary has been changed to \$200000.

The actual address range at which a RAM expansion card is finally placed depends on several factors, one of which is the position of the card in the Amiga 2000's expansion slots. The operating system examines the slots, starting with the one on the right (the one closest to the 86-pin coprocessor slot), and assigns an address range to whatever it finds. In a typical system, the first expansion slot might come with a hard drive controller card. Since this is not a memory card, the operating system will place it somewhere in the one-megabyte autoconfig space starting at \$E80000.

Someone who has owned an Amiga 2000 for quite a while may have placed a 2MB board in the second slot. Since this is the first memory-expansion board the system encounters, it's assigned to the two-megabyte memory block starting at \$200000. Now let's assume that the third expansion slot contains an additional 4MB card recently purchased by our affluent user upon perceiving the attractive prices of RAM chips. The operating system examines this card and obligingly assigns it the first four-megabyte block starting at \$600000.

Although this memory configuration is technically correct, it isn't the optimum arrangement. Careful examination reveals a two-megabyte gap, starting at \$400000, between the two memory cards. Although the system will recognize the two blocks of RAM, it's unable to merge them into a single six-megabyte block. The advantage of a single large memory block is that certain memory-hungry applications, such as animation software and color scanners, require large blocks of memory to be fully operational. Having memory in a single large block is also advantageous in a multitasking system, which tends to fragment the memory space during normal operations.

You could use the program *Merge-Mem* to connect these two noncontiguous memory blocks. But the simplest way is to force the system to align the two memory blocks for you by swapping the position of the boards in the expansion slots. This way, the four-megabyte card will be in the block starting at \$200000 while the two-megabyte card will be in the adjacent block (starting at \$600000).

installed RAM is that it will be fully guaranteed and ready to use right out of the box.

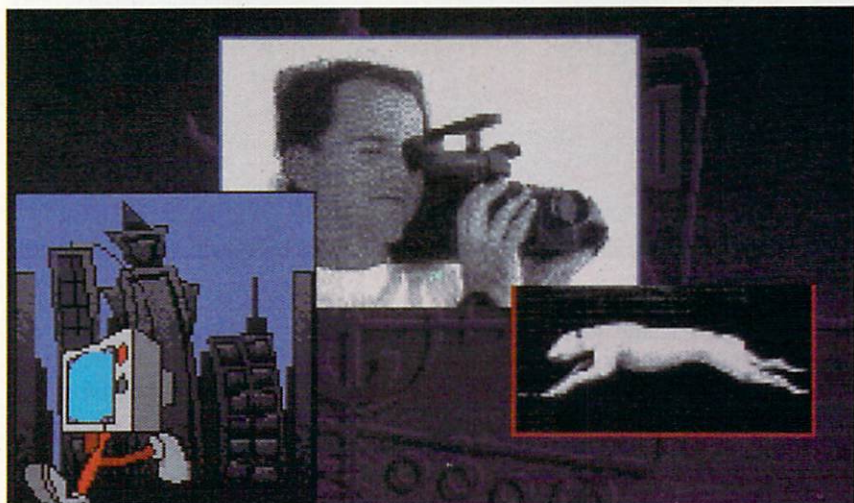
Most manufacturers supply some form of memory-test software with their RAM cards. As of this writing, Interactive Video Systems is still working on its memory-diagnostic software. Therefore, I wasn't able to evaluate its performance. Since this type of software shouldn't be difficult to develop, I expect that it will be complete by the time you read this review.

Current Trumpcard 500 users shouldn't hesitate to install a Meta4 when they feel the need for more RAM. And for those owners who are considering upgrading to the 2000, keep in mind that both the Trumpcard and Meta4 can be installed in an Amiga 2000. But whether you own a 500 with the Trumpcard system or a memory-hungry 2000, Meta4 is a well-designed memory card that's worth looking into.

—Morton A. Kevelson

onscreen colors, there was no full overscan, and it ran like an old dog in a 512K Amiga 1000, which is all most Amigans owned in those days. Too many Amiga videoheads eagerly bought the program only to abandon it in frustration for clunky but powerful (and memory-parsimonious) graphics programming languages like *The Director* from The Right Answers Group.

DeluxeVideo is really four programs. *DVMaker* is the scripting module, where you do the actual assembly of parts and effects. *DVMover* makes it easier to move all the parts of a video from one disk or directory to another. *DVPlayer* is a freely distributable player utility, which can be included with your videos so that they can be played on any Amiga. *Instant-*

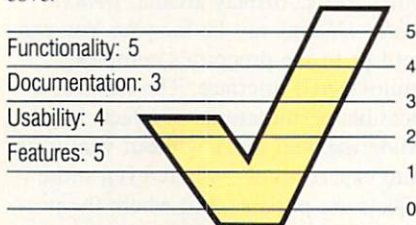


DeluxeVideo III

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

Requires 1MB

\$149.95; upgrade for owners of previous versions—\$49.95 plus manual cover



As the pioneering desktop video program on the Amiga, Electronic Arts' original *DeluxeVideo* was a program ahead of its time. It could do some amazing things no other application could do in 1986, like offer a drag-and-click interface for mixing graphics, animations, and sounds and allow control of dual playfields for animation effects. But the program was fatally flawed.

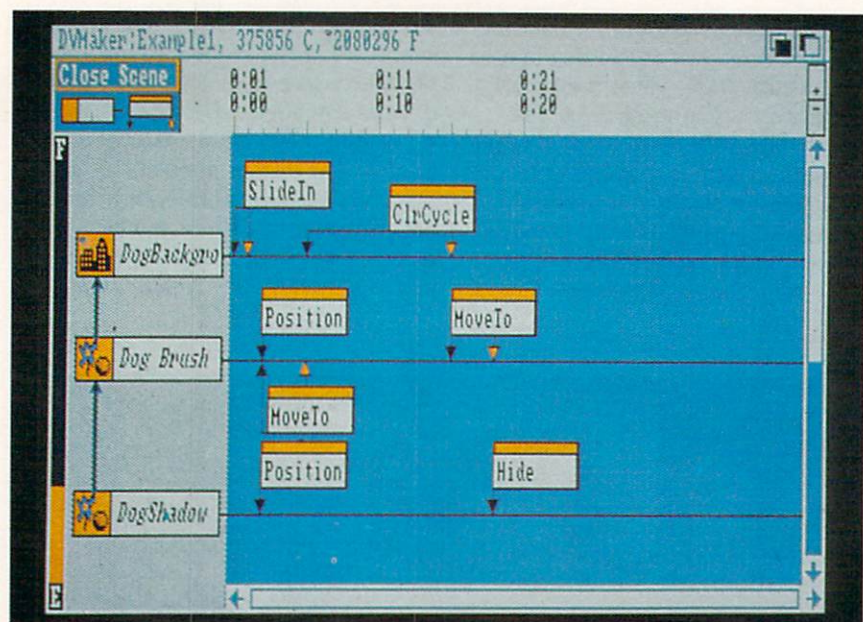
For example, there were only eight

The long-awaited *DeluxeVideo III* now looks like the muscular video/multimedia authoring environment that the old version should have been. Videos can have many more tracks and effects, meaning your creations can be much more complex and professional-looking. The program now handles all Amiga screen modes, including Extra Half-Brite and HAM. It can manipulate superbitmaps for scrolling backgrounds. It loads, plays, links, and compiles anim files and animbrushes from *DeluxePaint III* and other compatible animators. *DeluxeVideo* now accepts and plays 8SVX sound samples and instruments and SMUS files, and it's compatible with MIDI. Enhanced interactive capabilities can be invoked with "buttons," keystrokes, and joystick movements. (Buttons are usually called gadgets on the Amiga.) And for *ARexx* enthusiasts, it even offers an *ARexx* port (for outgoing messages only) that can be used to control compatible external software and devices such as genlocks.

SlideShow is for the quick creation of IFF slide shows.

The heart of *DeluxeVideo III* is *DVMaker*. It uses a hierarchical structure of screens in which you work with icons that represent elements of the video. The icons are positioned (by dragging, cutting, and pasting) along horizontal time lines that determine the beginning, ending, and duration of each element. (Timing is measured in jiffies, or sixtieths of a second.)

For example, at the top of the structural hierarchy is the video script screen. Here you arrange the main tracks of the video—the view track (which lets you select the resolution mode), the video track (which contains all the video scenes, including pictures and animations), a control track for interactive videos, a tune track for sounds, and so on. Enter the next level of the hierarchy by double-clicking on a scene icon on the video track. The scene script window is similar to the video script window, but here you work with smaller elements:



pictures, brushes, animations, transitions, sound effects, and so on.

At the next level, you select effects and adjust settings for elements of the scene from more than a score of requesters. The wipe requester, for example, includes 13 different wipes, with several variations of each. Another set of requesters gives you access to pictures, anims, samples, and other parts you create with other programs. (Video data files—brushes, animations, and sounds—are not bundled with the *DVMaker* script, so you can use the parts in more than one video. Because they're not bundled, however, moving all the parts of a complex video can be a hassle, which is why you need *DVMover*.) To see your video or scene in progress, choose Play Video or Play Scene from the Project menu.

DeluxeVideo III doesn't do everything itself—it's really for putting together pieces that you create with other programs. The most useful sidekick for *DeluxeVideo III* is *DeluxePaint III*, EA's paint-and-animation program. *DeluxePaint III* is where you create the IFF brushes, backgrounds, and animations that are then assembled in *DeluxeVideo III*. For HAM images, you'll want to use a HAM paint program and NewTek's Digi-View video digitizer. (*DeluxeVideo* is not compatible with Digi-View 4.0's Dynamic images, but then, no other Amiga program is, either.) You'll also need a sound digitizer and sample editor for recording and tweaking 8SVX

sound effects and instruments, and a music program for writing SMUS-compatible scores.

Among the more impressive things that *DeluxeVideo* can do is precisely position of *DeluxePaint III* brushes and animbrushes. You can drag brushes around in freehand paths on the screen; *DeluxeVideo III* records each path and can replay it. Paths can be edited with control points, or you

DeluxeVideo III offers the most intuitive, flexible way to create full-length presentations.

can use a requester to specify movements in pixels. (All this is similar to the "blit" commands of *The Director*, but it can be controlled in a much more intuitive way.) Several brushes and animbrushes can be linked together; this lets you attach an animbrush of flames to the back of a brush of a spaceship, for example, and move them around together on the screen. Using the wide variety of MoveTo effects, you can crop, scroll, and zoom in to any section of the screen and even display more than one viewport (section of a picture) at the same time, if you have enough memory. Text is simple to add with a text-line effect; *DeluxeVideo III* is compatible with color Amiga fonts, from any drawer.

Another nice aspect is that you can load and unload parts of your video at any point in the show. This means that parts can be loaded into memory when not much is happening in the video (so disk activity doesn't interfere with the playback speed of an animation, for example), and files can be unloaded to free some memory when they're no longer needed. For faster speeds, the entire video can be compiled as an anim. Animations can be double-buffered for smoother playback.

If interactive multimedia or hypermedia is your thing, *DeluxeVideo III* can accommodate you as well. The program can wait for an event initiated by the viewer, such as a keystroke, mouse click, or joystick move, and then branch to a specified portion of the video. Control track options let you turn any graphic element in the video into a clickable button that will take the viewer to any other scene (or another video altogether). Or the video can wait for a specified duration and then continue playing. In a training video, for example, the show can pause, present the student with a multiple-choice quiz (a selection of buttons to click on or keys to press in response to questions), then branch the lesson to another part of the video based on the student's answers.

As powerful as it is, *DeluxeVideo III* is not for the casual user or the faint of heart. If you're not willing to master the vocabulary and use of rasters, viewports, origins, offsets, and other Amiga-display arcana, *DeluxeVideo III* may not be for you. You can get lost in the program's complex, multilayered interface. The number of possible permutations of effects is bewildering, and that's without venturing into expert mode—where even more effects are possible, but where the program doesn't tell you when two or more effects will interfere with each other.

The well-written but not exhaustive manual very kindly explains the many error messages you're likely to encounter as you learn to use the program. (When you stretch the envelope of the Amiga's capabilities as this program does, you can expect to see it guru every now and then. But the program itself seems to be quite bug-free.) And *DeluxeVideo III* is just not for the typical Amiga 500 owner. I

wouldn't even try to do serious work without three megs of RAM and a fast hard disk. A 68020 or 030 accelerator would help, too.

Right now, *DeluxeVideo III* offers the most intuitive, flexible way to combine Amiga graphics, sounds, and animations into full-length presentations. But the program could be much more. *DeluxeVideo III* has the potential to become a complete, professional graphical interface for desktop video postproduction. The program already has an expert mode device track that supports *ARexx*, and a sample SuperGen driver is included with the package. But if the authors of the program added SMPTE time-code support and ready-made device controllers for popular video equipment like S-VHS VCRs and video switchers, *DeluxeVideo III* would be able to do everything a desktop video producer could ask. Imagine editing together material from the analog and digital realms with just one application—now I'd call that video deluxe.

—Steven Anzovin

MINI-REVIEWS

Mini-review contributors this issue include Steven Anzovin, Ervin Bobo, Russ Ceccola, Jim Foust, Steve King, Scott May, and Troy Tucker.

It Came from the Desert

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

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



Like many small southwestern towns, Lizard Breath, U.S.A., has an ant problem. A big ant problem. But these buggers can't be killed with a can of Raid. No, these are genuine 1950s-vintage, Hollywood-style giant mutant ants, the kind you haven't seen since the classic sci-fi flick *Them*. And

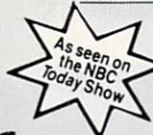
you're the local geologist who has to figure out a way to stop the hungry hexapods before they picnic on the local residents. That's the premise behind *It Came from the Desert*. Cinemaware's best game since *The Three Stooges*.



It seems a strange meteor hit the ground just south of town a few days ago, and since then the desert has become a dangerous place. As you talk with the townspeople, some of whom are none too friendly, you can tell they're frightened. But you need scientific proof before the mayor will mobilize the town and call for the National

WIN BIG MONEY!

The COMPLETE Lottery TRACKER and WHEELER™



Now AMIGA Computer owners can enjoy the same popular software program for pick-6 Lotto Games that has made **BIG MONEY WINNERS** of people from all over the United States. Just look at some of the features included in the **NEW VERSION 3.0 DELUXE UPGRADE of The COMPLETE Lottery TRACKER and WHEELER™**

- ★ Record and track up to 1000 past winning numbers and dates
- ★ Produce expert trend charts for HOT and DUE numbers
- ★ Track as many State and International games as you like
- ★ Produce statistics for all numbers played
- ★ Check your bets for winning combinations
- ★ Print charts, stats, recorded numbers, and wheeling systems

Use Our Years of Experience with Your Computer Advantage!

Choose From The Worlds Most Popular Wheeling Systems!

SEARCHING HIGH and LOW MENU: ★ NEW! SKIP and HIT CHART ★ NEW! Number SEQUENCE Chart ★ NEW! Number OCCURRENCE CHART ★ NEW! REPEATING SETS Chart... PLACE YOUR BETS MENU: ★ NEW! "ROLL YOUR OWN" Tickets Feature ★ NEW! Data Base TICKET SEARCH... WINNING NUMBERS BANK: ★ NEW! Last Winning Entry and Date Display!

When We Say Complete... WE MEAN COMPLETE!

ORDER NOW! Only \$39.95 plus \$2.00 S&H

ENTERTAINMENT-ON-LINE, Inc.
P.O. Box 553, Dept. AM
Westboro, MA 01581

MC/Visa
Call TOLL FREE 1-800-824-7888 Ext. 283
In Canada 1-800-544-2600

Order Direct or See Your Local Software Dealer.
1990 Entertainment-On-Line, Inc.



Circle Reader Service Number 170

OUTSMART BURGLARS



Burglar alarms are fine but usually only operate when your home has been assaulted. With **Ami-X10** in charge, you can eliminate those tell tale signs that no-one is home so a potential burglar won't even consider breaking in.

Ami-X10 allows you to program the X-10 CP 290 controller to control up to 256 lights and electrical appliances with over 100 commands. Once programmed, you can even turn your Amiga off and a battery backup protects the CP 290 against power failures.

- Turn on lights before dark - even if your not home.
- Program different times for each day of the week.
- One step change for Daylight Savings Time.
- Automatic tracking of sunrise/sunset.
- Optional security mode changes time slightly each day.

X-10 compatible controllers and switch modules for lights, appliances etc. available from electronic hobby stores, department stores and hardware stores.

Ami-X10 - BSR based home control software \$59.50
With X-10 computer interface \$124.30

Available through your local dealer or direct (cheque with order or COD. CA residents, please add 6.75% sales tax).

DIGITAL DYNAMICS

739 Navy Street, Santa Monica, CA 90405 Tel: (213) 396-9771

Circle Reader Service Number 149

Guard. In the final underground confrontation, it's just you and a few sticks of dynamite against the mighty Ant Queen and her brood. Move fast, or you're grub food.

Cinemaware games are known for their superb graphics and sound. *It Came from the Desert* keeps up the standard. There are more arcade sequences than in some earlier Cinemaware offerings (in fact, Cinemaware has thrown in everything but the kitchen sink—you get elements of a driving game, a flight simulator, a tank simulator, a war strategy game, a martial-arts combat game, and a dungeons-and-dragons-type maze game, among others), and they're integrated more smoothly into the strategy of the game. Since you simply choose from a menu of options at every juncture, gameplay is easy for any age (I let my kids direct the game—they choose to go right for the ants every time). A scrolling map makes it simple to figure out where you are in the town and where you want to go.

Where an old sci-fi movie buff can have fun is in the game's deadly accurate parody of the genre. The ancient prophecy! The mysterious meteor! The strange tracks in the desert! The terrified townspeople! The corny dialogue! All that's missing is the old scientist's lovely daughter, screaming with her fist in her mouth as the dripping mandibles approach.

—S.A.

Shufflepuck Cafe

Broderbund
17 Paul Dr.
San Rafael, Ca. 94903
(415) 492-3200
Requires 512K
\$39.95

Playability: 4
Documentation: 3
Graphics: 4
Sound: 5

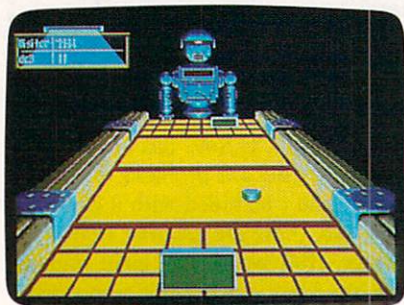


Shufflepuck Cafe is one of those simple but totally addicting arcade games that comes along from time to time. The setting is a rather sleazy bar somewhere on the wrong side of the galaxy.

The cafe is populated by an assortment of odd-looking aliens, reminiscent of the *Star Wars* bar scene.

Drinking is secondary here; everyone's passion is Shufflepuck, a high-tech version of shuffleboard. You have nine different opponents to compete against, and you select one by clicking one.

The game itself positions your opponent at the far end of the table. A pane of glass separates the players from the board, and you use the mouse to move a rectangular paddle around your end of the table. The object is to score 15 goals. You can adjust the characteristics of your paddle for size, force, and spin.



Your opponents range from the incompetent Skip Feeney to the reigning champion, Biff Raunch. This group gives a 5-year-old the ability to play and win and the expert player a chance to lose.

The action is fast-paced, and your paddle is extremely responsive to the movement of the mouse. The sound effects are totally realistic and are in stereo, producing a ping-pong sound as the puck bounces from one side of the table to the other. When you score a goal, the glass even shatters in proportion to the force of the shot.

Each character has its own personality. One of them, Lexan Smythe-Worthington, is a great player in the beginning but gradually gets drunk on champagne and loses control of the game. A practice droid is also provided; you can set its skill level.

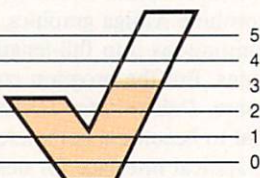
All of these features merge to make the play quite realistic. A blocker option lets you place a horizontally moving rectangle with definable characteristics in the middle of the table to add further difficulty to the game. While the play can become monotonous, I find that I continually return to *Shufflepuck Cafe* as an entertaining diversion.

—S.K.

The Cycles

Accolade
550 S. Winchester Blvd.
San Jose, CA 95128
(408) 985-1700
Requires 512K
\$44.95

Playability: 4
Documentation: 4
Graphics: 3
Sound: 2



I figured I'd boot up Accolade's *The Cycles* and show it who's boss. Yeah, I'd fire up that 500cc superbike and decimate some lap records, do a few wheelies, and make everyone else on the track look sick. After all, I'd been playing another motorcycle game for a couple months and I felt this bike game would be a breeze.

Boy, was I wrong.

Unlike Data East's *Super Hang-On*, a game which requires minimal driving skill (hence the name), *The Cycles* requires a lot of patience and practice to go the right way and to go fast. I spent a couple hours just learning how to handle the bike—how to upshift and downshift, how to go into curves and how to come out. I needed these skills before I could even begin to run with the rest of the drivers.



Once you get the hang of it though, *The Cycles* is a lot of fun. After choosing the type of motorcycle you want, run a single race or—if you're feeling ambitious—run the entire Grand Prix Circuit, with a race on each of 15 different tracks.

If you choose to run the entire circuit, the game will keep track of how you score against other racers, such as A. J. Wong, Otto Bahn, and the ever-popular Scooter Fox. And since running the entire 15-race circuit at one sitting may cause a serious case of joystick wrist, you can also save

your current standings to disk and continue later.

Unfortunately, even though *The Cycles* is a challenging game, the graphics and sound leave something to be desired. The scenery is the same no matter which track you're on, and the sound seems almost like an afterthought. I never once lost myself in the fantasy of actually racing a motorcycle; the uninspiring graphics and sound kept reminding me that I was playing a videogame.

If you're looking for dazzling graphics and sound, I can't recommend this game. But if you want a challenging and realistic racing game that demands skill and patience, you may want to take *The Cycles* out for a spin.

—J.F.

Dragons of Flame

Strategic Simulations
Distributed by Electronic Arts
1820 Gateway Dr.
San Mateo, CA 94404
(415) 571-7171
Requires 512K
\$39.95

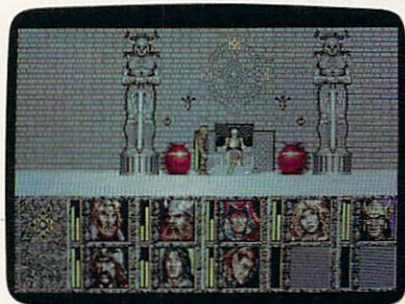
Playability: 4	5
Documentation: 4	4
Graphics: 4	3
Sound: 3	2
	1
	0

Dragons of Flame is the second of the Advanced Dungeons & Dragons action games from Strategic Simulations. The first was *Heroes of the Lance*, but it was too difficult to hold anyone's attention for long.

Dragons of Flame is exactly what *Heroes of the Lance* should have been. It has plenty of combat with many different creatures, a lot of different places to explore, an interesting plot and goal, and beautiful graphics that include side views for fighting and overhead views in the wilderness.

In *Dragons of Flame*, you lead a

group of eight Companions of the Lance on a quest to save slaves held captive by the evil Draconians in the fortress of Pax Tharkas. Along the way, you befriend the elves of Qualinesti, gain a number of other allies, and travel through the wilderness and the caves of Sla-Mori.



The best thing about the game is that you have eight different characters, each with physical characteristics and abilities that you can see in action right on the screen. Often, while playing the AD & D board game, I wondered how a group of characters would



"A godsend for ACLS education"

The American Journal
of Emergency Medicine

Cardiac Arrest! puts you in the role of emergency physician, interpreting EKG's, vital signs, and lab tests, and ordering treatments. Winner of the 1988 Antic "Outstanding Product" Award, Cardiac Arrest goes "beyond ACLS". \$69.95

Code Team! prepares you for ACLS testing with "Megacode" practice, EKG's, and drug and procedure knowledge. Code Team! consists of three programs: EKG Teaching, CardioQuiz, and ACLS Protocols. \$69.95

The ACLS Teaching Series is Cardiac Arrest! and Code Team! in a single binder at significant savings. \$109.95

Blood Gases teaches difficult yet important material. Do "acid-base balance" and "A-a gradients" leave you breathless? You need this program. \$49.95

For Apple IIc/e/gs, Macintosh, Amiga
Atari ST, Atari XE, IBM with graphics card

Visa/MC orders: 801-756-6027
Check/P.O.'s: Mad Scientist Software
13422 Bayberry Circle
Alpine, Ut 84004



Dealers: This software sells! Many of your customers need ACLS certification. Contact Iliad Software at 801-226-3270 for dealer/distributor delivery.



GOMF 3.0

Are you plagued with
Task Held errors and
Guru Meditation Alerts?
You need **GOMF 3.0**!
The solution to lost data and
wasted time.

U.S. \$39.95 Cdn. \$49.95

PRO-MIDI INTERFACE

- One INPUT & One THRU.
- Two OUT's.
- Six foot cable.
- One year warranty.

U.S. \$64.95 Cdn. \$79.95

Pro-Tronic Systems Ltd.

PRO-MIDI INTERFACE

AMIGA 500 and 2000 Computers

IN THRU OUT OUT

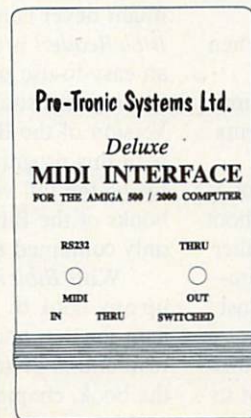
The Deluxe

MIDI INTERFACE

- One INPUT & One THRU.
- Two switchable THRU's / OUT's.
- Six foot cable.
- Switched RS-232 passthru.
- One year warranty.

U.S. \$89.95 Cdn. \$139.95

Send cheque or money order to:
Pro-Tronic Systems Ltd.
720 Sixth Street, # 227,
New Westminster, B.C.,
CANADA V3L 3C5
Specify AMIGA model for MIDI orders



Dealer inquiries welcome. Fax (604) 524-9384. B.C. residents add 6% PST.

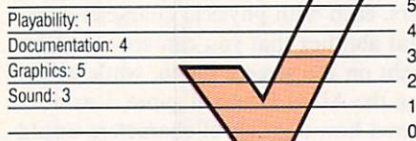
really look up against a dragon or giant spider. In *Dragons of Flame*, seeing the animated characters and monsters adds much more to the game.

The graphics are wonderful in *Dragons of Flame*, and the music is very atmospheric. SSI is getting better at making these AD & D products. Before long, the only thing keeping people from using their computers to play AD & D will be the desire to exercise their imaginations with the no-sound, no-animation board game.

—R.C.

Robocop

Data East
470 Needles Dr.
San Jose, CA 95112
(408) 286-7080
Requires 512K
\$44.95



As a movie, *Robocop* was super, combining action, a good futuristic plot line, and biting social satire. (Never mind the violence; it was necessary to the story, no matter what film critics say.) Although it tries hard to follow the main actions of the movie, as a game *Robocop* somehow never becomes quite as involving or interesting. It has challenges, certainly, and they will tax your joystick skills, but...

The story begins as Robocop quells a riot on Main Street. Various thugs approach from ahead and behind, and you dispatch most of them by pressing the fire button. This action causes Robocop to punch and the thugs to collapse and disappear. When the violence escalates to firearms, Robocop draws his weapon and eliminates the enemy. A body count seems to be the only method of scoring.

In other levels, you'll face a hostage situation in which you must shoot the hood and not the hostage, another street cleanup, a fight in a drug warehouse that is mazelike, a fight against killer robot ED-209, two more ED-209s at the steelworks, and a final hostage situation in which you attempt to take out Dick Jones, the criminal mastermind.

Though the graphics are good and the musical score is less than maddening, I rate playability low because of the joystick control. There are nine game levels and four sets of joystick

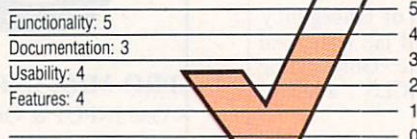


movements. With each level you attain, you'll need to remember new controls. Sorry, but I prefer challenges that arise from the game, not those that come from being forced to remember what my joystick does in a particular level.

—E.B.

BibleReader!

EasyScript! Software
10006 Covington Dr.
Huntsville, AL 35803
(205) 881-6297
Requires 512K
\$49.95



One of the nice things about reviewing new products is that an editor sometimes passes along programs that I might never come across otherwise. *BibleReader!* is one such program. It's an easy-to-use program made for both reading and studying the King James Version of the Bible. I was impressed with this program and look forward to seeing the full version with all of the books of the Bible (the demo I have only contained ten books).

With *BibleReader!*, you can call up any book by simply clicking on the icon for that book. The text is easy to read and is divided into verses, with the book, chapter, and verse indicated at the beginning of each passage.

BibleReader! has many features,

including a speech option, a screen dump to either printer or disk, a help screen, and windows that you can shrink into an icon and then click on to expand later. The two most important features of *BibleReader!* are its ability to do searches quickly and easily and the flexibility in grouping the books of the Bible in any way you like. A hard drive is especially useful (but not necessary) with *BibleReader!* because you can scan the entire Bible on the drive.

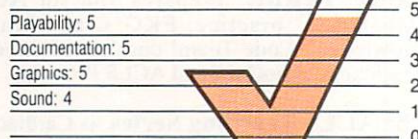
Included with *BibleReader!* is a concordance that covers most of the popular subjects that both readers and researchers of the Bible might need. With it, you can track down those verses and chapters that will help in putting together stories for children, classes, and reports on occurrences of specific events in Bible history.

Bibles in book form get used so much that the book is always a top seller at bookstores. With *BibleReader!*, users can get the needed flexibility found in the paper edition along with the ability to read it over and over again without wearing it out. A very good buy.

—R.C.

Spherical

Rainbow Arts
Distributed by Electronic Zoo
3431-A Benson Ave.
Baltimore, MD 21227
(301) 646-5031
Requires 512K
\$34.95



Spherical may not win awards for originality, but its flawless execution ranks this British import among the year's best games.

The designers borrowed choice elements from several classic contests—*Lode Runner*, *Jumpman*, and *Boulder Dash*—and enhanced the action with some exciting new twists. The results combine fast, brainteasing gameplay with true arcade-quality graphics and animation.

True to form, the game follows an outlandish, if not incomprehensible,

tales of ancient evil, curses, and magic. Cast as a tiny wizard, your job is to lead a magical starball through each room of Mirgal's castle. At the end you'll discover the secret to dispel evil forever. Over 200 diabolically designed screens—divided between one- and two-player cooperative modes—await foolhardy adventurers.

As each screen opens, the starball stands frozen near the top of the screen. You must race against the clock to trap the shimmering sphere before it is set in motion. Using your magical ability to create and dissolve blocks of stone, guide the ball to the exit square leading to the next level.

The first trick is merely getting to the ball, which is often nestled within each room's intricate architecture. Players put their joystick prowess to the test as they create a stone staircase out of thin air and climb it. Move too slowly and the ball rolls away, possibly becoming lodged in the permanent stone structure.

A myriad of objects exist to both help and hinder your progress through

the game. Hourglasses hold the starball captive for an extended period of time, allowing players to prepare a pathway. Acid stones drain power from your character; magic decanters give it back. Other potions and magic items impart special powers to overcome sizable odds. In addition to the garden-variety nasty creatures that haunt the catacombs, the game unleashes huge guardian monsters at every tenth level.

Rather than simply adding an extra character to the game, the two-player cooperative mode features over 100 new and significantly more difficult screens. Both modes offer special passwords that enable advanced players to skip over preliminary levels.

The graphics are small but colorful, boasting incredibly detailed animation. Sound effects are minimal but effective. One of six different musical themes—the usual European techno-pop—can be selected from the main menu.

The challenge—rolling a ball from point A to point B—seems deceptively

simple, almost idiotic. Yet the puzzles offered in *Spherical* are guaranteed to tax the logic and reflexes of the best arcade players. It doesn't get much better than this.

—S.M.

Hermes IconLab 1.3

Elkon Enterprises
4654 Mistletoe
Wichita Falls, TX 76310
Requires 512K
\$35

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



I enjoy designing colorful icons. They help my programs create a good first impression, and I think that's important. So, I'm always on the lookout for a better icon editor.

IconLab 1.3 has many useful features and a few minor problems. For

Even Up The Score!



Let your Amiga give you the Advantage in making better investment decisions!

Color graphics of Individual Stocks and General Market Trends help you make more profit in this volatile market. High Low Close, Moving Averages, Centered Moving Averages, Volume, Relative Strength, Stochastics, Wilder's RSI, Cycles, Trend lines and Momentum. Powerful reports such as the Relative Strength Report help you pick the best performers. Use the Market Barometers to help you time your market entries. Update Stocks, Mutual Funds and Commodities manually or automatically. Easy to use communications included. Call Today! for complete information: (313) 463-4995.

Version 2.0



See your local Dealer or Call:
Software Advantage Consulting Corporation
38442 Gail, Mt. Clemens, MI 48043

Only \$99.95 Demo Disk \$7.95

Amiga and the Investor's Advantage are trademarks of their respective companies.

SAXMAN SYSTEMS

INTRODUCING

Here it is! Proof that the AMIGA (tm) Computer is more than just great for graphics and sound. We all know about its ability to produce the BEST Desk Top Publishing, the BEST Desk Top Video, and the BEST Desk Top Music. But did you know it could also do the BEST JOB POSSIBLE with your accounting?

We, at SaxMan Systems have taken the BEST data-base available for the AMIGA (tm), SUPERBASE PROFESSIONAL (tm), from Precision, Inc., and created two powerful, and easy to use accounting systems.

System # 1 - Billing and Disbursements (tm)

This system is designed for use by small businesses. It processes cash and credit sales, prints invoices and statements, and ages your accounts receivable. It also will track your cash disbursements, and print a check register. Finally, it tracks and reports on the general ledger accounts necessary to fill out tax returns. List price is \$ 249.95

System # 2 - SaxMan Accounting System (tm)

This is a complete accounting package. Including: General Ledger, Accounts Receivable, Accounts Payable, Payroll, Inventory Control, and Job Cost Analysis. Its features are much too extensive to list here. List Price is \$ 499.95

For information contact: SaxMan Systems, 400 Walnut St., #403, Redwood City, CA 94063, (415) 368-6499

example, when I first ran the program, *MemWatch* (a utility that ensures programs are behaving properly) announced that low memory was being trampled. I also had trouble using some features on a 512K machine. The manual leaves a lot to be desired, too. You'll find plenty to read, if you can find what your looking for—the manual has no page numbers, contents, or index.

If you can overlook the minor problems, you'll find that timesaving and useful features are abundant in *IconLab* 1.3. It's like a mini paint program designed specifically with icons in mind.

One particularly nice feature allows you to convert IFF pictures, including HAM images, into other formats. For example, if you wanted to create an icon that resembled a HAM picture, you would load the picture into *IconLab*, convert it to hi res, shrink it down to icon size, and then save it out. You can also cut icons right out of a picture. Some of the other features allow you to split and join

icons, save icons as brushes, and view and save icons in 2, 4, 8, or 16 colors.

In my opinion, when I shell out \$35 for software, I expect it to be well documented, cleanly programmed, and easy to use. None of these expectations are met in *IconLab* 1.3. If you



have plenty of memory and are good at deciphering manuals, you'll probably find this program quite useful. For me, I think I'll just stick to my old, reliable public domain icon editor. It uses less memory, it's easier to use, and it didn't cost \$35.

—T.T.

Leisure Suit Larry Goes Looking for Love (In Several Wrong Places)

Sierra
P.O. Box 485
Coarsegold, CA 93614
(209) 683-4468
Requires 512K
\$59.95

Playability: 4
Documentation: 3
Graphics: 4
Sound: 4



The king of cheap suits and the star of Sierra games with incredibly long names is back in *Leisure Suit Larry Goes Looking for Love (In Several Wrong Places)*. Leisure Suit Larry is one of the best characters in the world of computer games, and his personality comes through in the second game in the Leisure Suit Larry trilogy (the third entry will be available on the Amiga soon).

In this latest adventure, Larry Laffer has won a cruise while on "The Dating Connection" television game show and \$1 million in a lottery—both by a stroke of luck. His adventures lead him from Los Angeles and the S.S. Love Tub to an airplane and Nontoonyt Island, home to topless native beauties and the evil Dr. Nonokee. The humor of game designer Al Lowe is liberally spread throughout the game, from the bad jokes that make you cringe to the offbeat situations in which our hero finds himself.

Leisure Suit Larry Goes Looking for Love (or more simply, *LL II*) is very different from the first game in the series. It is longer, has more and different kinds of graphics, and pushes a lot more interesting sounds and music through the speaker. From TV monitors for the audience in the game show studio to a side view of the S.S. Love Tub, the graphics really spice up the game and are used more intelligently than in the first version.

The plot of *LL II* is not what you might expect. Larry has accidentally obtained a strange musical instrument with secret data hidden inside that is meant for the Russians. He must evade the KGB on his travels and ultimately defeat the Soviets' contact in this hemisphere: Dr. Nonokee on Nontoonyt Island. The majority of the

Elkon Enterprises

The Revised Ultimate Hint Kit

Reach for The Revised Ultimate Hint Kit. This package offers over 30 of the hottest Walk-Thrus. Help for *Dungeon Master*, *FaeryTale*, *Kristal*, *Starflight*, *Indiana Jones*. Plus help for the *Bard's Tale* series, *Space Quest* series and the *Zork* series. We've also added help for *Battle Tech*, *Zak McKracken*, *Maniac Mansion*, *Batman C.C.* and more! Over 35 Walk-Thrus in all. We've also added the *BackDoor* Section, giving you ways to cheat on games. Including *Battle Squadron*, *StarGlider II*, *Elite*, *Falcon Virus*, *Thunder Blade*, *Carrier Command*, *Federation*, and more!

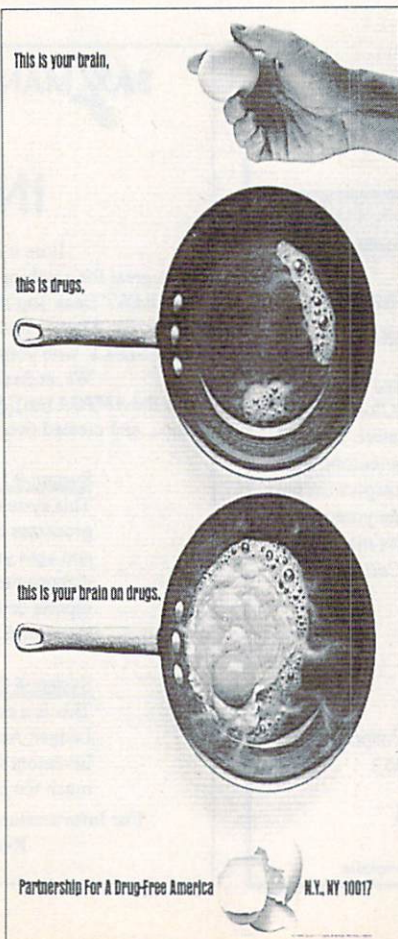
We provide you with over 75 different maps. We provide complete maps for the dungeons of *Bard's Tale I*, *Bard's Tale II*, *FaeryTale*, *Dungeon Master*, *Ultima III*, *Ultima IV*. Their are maps for *Dragon Lance*, *BatMan The Movie*.

Game & Character editors. This package has character editors for *Bard's Tale*, *FaeryTale*, *Phantasi*, *Ultima III*. Unlimited lives for *BloodMoney*, *Shadow Beast*, *PaperBoy*, *Denaris Frite Nite*, *Rampage*. Max Money for *Battle Tech*!

All Text and Maps are now printable! The Revised Ultimate Hint Kit is \$26.95 plus \$2.00 shipping. Vol. I and Vol. II customers can update by sending \$9.95 plus orinal disks.

Elkon Enterprises
P.O. Box 4164
Wichita Falls Tx 76310
Adventure Writers Wanted!

Circle Reader Service Number 109



If you have Analyze!, MaxiPlan,
Superplan, or VIP Professional,
you need

Templicity™

100 ready-made templates for:

Personal Financial Planning,
Home Office, Small Business,
1989 Federal Income Taxes,
Real Estate, Loan Analysis,
Home and Business Budgets,
Accounting, Bookkeeping,
and many other unique worksheets!

Full User Support

30 day, no risk, money-back guarantee!

Complete pkg. --100 templates-- \$34.95

To order, send check or money order to:

The Sterling Connection

Box 4850

Berkeley, CA 94704

Specify which spreadsheet you have.

To order by phone, call (415) 655-2355

Mastercard and Visa accepted. CA res. add 6% (\$2.10) sales tax.

Dealer Inquiries Invited

Version
2.0

Circle Reader Service Number 123

ATTENTION ALL AMIGA OWNERS

A complete self-tutoring Amiga BASIC programming course is available that starts with turning your computer on, to programming just about anything you want! This course is currently used in both High School and Adult Evening Education classes and has also formed the basis of teacher literacy programs. Written by a teacher, who after having taught BASIC several times, has put together one of the finest programming courses available today. This complete course of over 220 pages is now available for the **AMIGA 500**, **AMIGA 1000** and the **AMIGA 2000** computers. This course will take you step by step through a discovery approach to programming and you can do it all in your leisure time! The lessons are filled with examples and easy to understand explanations as well as many programs for you to make up. At the end of each lesson is a test of the information presented. Furthermore, ALL answers are supplied to all the questions and programs, including the answers to the tests. Follow this course step by step, lesson by lesson, and turn yourself into a real programmer! You won't be disappointed!

FOLLOW-UP COURSE - A 200 page self-learning course dealing exclusively with sequential and random access files using a unique approach for those with very limited file programming experience. Set up your own personal and business records! This course also teaches you to program with the **mouse**, designing your own custom drop down **menu title bars**, and setting up your own custom **windows**.

AmigaDOS COURSE for all Amiga Owners - Take control of your Amiga with our step by step, self-learning AmigaDOS course that addresses all AmigaDOS versions, including 1.3. All our courses involve active participation by the learner. You do the specially designed examples, read the complete explanations, follow the instructions, answer the many questions, do the tests, and check your answers.

Each course is only \$21.95 plus \$3.00 for shipping and handling. We have been developing and selling Commodore courses for over 6 years now and if you do not think that we have the best self-tutoring course you have yet come across, then just send the course back to us within 10 days of receipt for the **FULL \$24.95 refund**.

NAME: _____ AR _____

ADDRESS: _____

CITY: _____

STATE/PROV: _____ CODE: _____

I desire the Amiga BASIC programming course ☐

FOLLOW-UP course on file handling ☐ AmigaDOS ☐

The computer that the course is needed for:

AMIGA 500 ☐ AMIGA 1000 ☐ AMIGA 2000 ☐

For each desired course, send \$24.95 cheque or money order (in the currency of your country) to:

Brantford Educational Services

222 Portage Road
P.O. Box 1327
Lewiston, New York 14092

6 Pioneer Place
or Brantford, Ontario
N3R 7G7

Fax: (519) 758-2743 Telex: 061-81260

HEY BUD!
MicroMiga
Wants YOU!

By the way,
can you get this
sign off my feet?



Here's what MicroMiga discount hardware & software
gives you that most other computer stores do not...

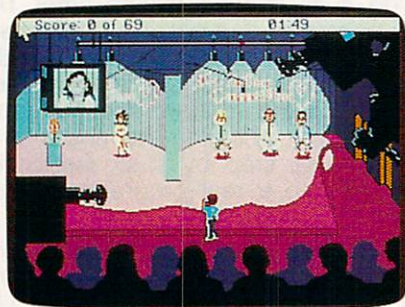
Lower prices, faster shipping, honest and competent service,
a FREE catalog, FREE public domain support software for
selected purchases, a no-hassle return policy, no hidden
charges, and over 1300 Amiga titles waiting for you. Just give
us a call, it's FREE too!

MicroMiga
Toll Free 800-733-AMIGA
FAX 619-670-9732 BBS 619-670-1095

Circle Reader Service Number 125

game centers on Larry's antics and not as much on his sex drive.

However, don't think *LL II* isn't worthy of the Leisure Suit Larry name. It has the same spirit as the first game and offers a filth slider to control how dirty the game is—which isn't very much, even on the filthiest setting. There's an option to change the trite phrase that everyone in the game says to Larry, and the many humorous names and situations will keep you in stitches. The puzzles themselves aren't too difficult.



LL II is a highly interactive game—most of your time will be spent enjoying the scenery and locations. Sierra has jumped up many notches with the new development system, and I hope it will keep things going in this direction. The only complaint I have is that no matter what I do, Larry always goes off by himself in the garden on the first island. Talk about frustration!

—R.C.

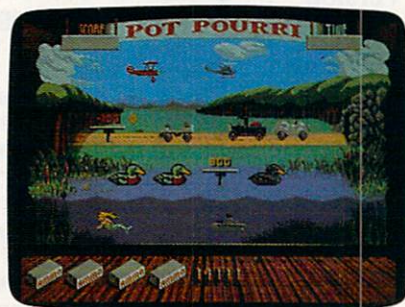
Sideshow

Actionware
38 W. 255 Deerpath Rd.
Batavia, IL 60510
(708) 879-8998
Requires 512K; 1MB for additional sound effects
\$44.95

Playability: 2	5
Documentation: 3	4
Graphics: 3	3
Sound: 3	2
	1
	0

Sideshow is a collection of eight separate arcade games modeled after the midway of a circus or county fair. Depending upon whether you select adult or child, you're initially given a pre-determined number of tokens with which to play these games.

The object of *Sideshow* is to visit and master each of the eight booths three times. As the program progresses, your hunger increases, which requires you to pay a visit to and spend your valuable tokens at the food concession stand. Thus the faster you play the booths, the less hungry you'll be.



While the games are graphically excellent, they all have one thing in common: You move the mouse pointer and press the button to shoot or throw at some type of fixed or moving target. In *Balls*, you shoot at green balls as they pop out of milk pails. In *Strength*, you fire at weights at the bottom of columns to make them rise to ring a bell at the top (which are constantly being purloined by monkeys).

There are two shooting-gallery games, a game where you throw knives at objects behind doors, and another where you fire at moving clock pendulums. The most interesting is the dunk tank, where you dunk poor Willy in the water if you hit a target.

Every so often, random events occur that enable you to acquire more tokens or decrease your hunger. If you run out of tokens or become too hungry, you must leave the sideshow and start again. *Sideshow* can also be played with Actionware's Phasar Gun, but the company readily admits that the targets in most of the events are too small to use the gun effectively.

While the graphics, sound, and animation effects are excellent and the games cute at best, the play is basically routine and bogs down with the token and hunger requirements.

—S.K.

HOW TO GET THE DISK

Don't Miss Out on One of the Best Parts of Amiga Resource!

- ▶ "On Disk" programs
- ▶ IFF pictures from "Amiga Art Gallery"
- ▶ "Best of the Boards"
- ▶ 8-color Workbench icons
- ▶ Programming examples
- ▶ Optimized disk layout
- ▶ And much more

And you'll find all the documentation for the disk in the following "On Disk" section.

COMPUTE!'s Amiga Resource Disk expands beyond the limits of a paper magazine.

-----ORDER NOW!-----

YES! Send me _____ copies of this issue's AMIGA RESOURCE DISK (June 1990). I've enclosed \$7.95 plus \$2.00 postage and handling (\$9.95) for each disk.

Name _____
Address _____
State/Province _____
ZIP/Postal Code _____

Mail to Amiga Resource Disk
P.O. Box 5188
Greensboro, NC 27403

Amount (\$7.95 per disk) \$ _____
Postage (\$2.00 per disk) _____
Sales Tax* _____
Total \$ _____

For credit card orders: (\$20.00 minimum)

MC ☐ VISA ☐ Exp. Date _____
No. _____

Signature _____
(Required)

*Residents of NY, PA, and NC add appropriate sales tax for your area. Payment must be made in U.S. dollars by check or credit card drawn on U.S. bank.

ON DISK

Your Guide to This
Issue's Programs

Amiga Resource
Volume 2, Number 3
June 1990

CONTENTS

68 Break Down

Exercise your Amiga's mouse in this fast-paced arcade-style game.

69 Rd

Replace *More* with this powerful text reader that supports ANSI codes.

71 Rotar

Connect the pipes. Plumbing has never been like this before.

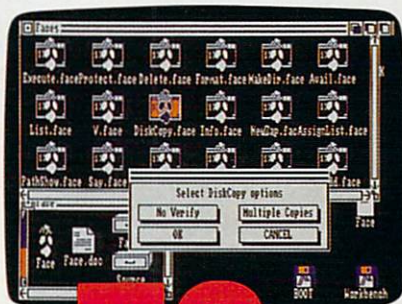
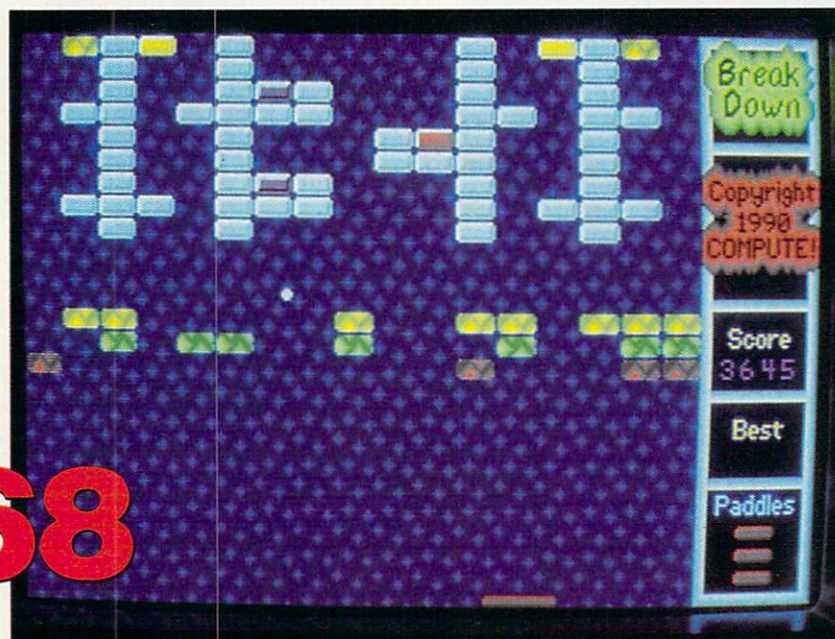
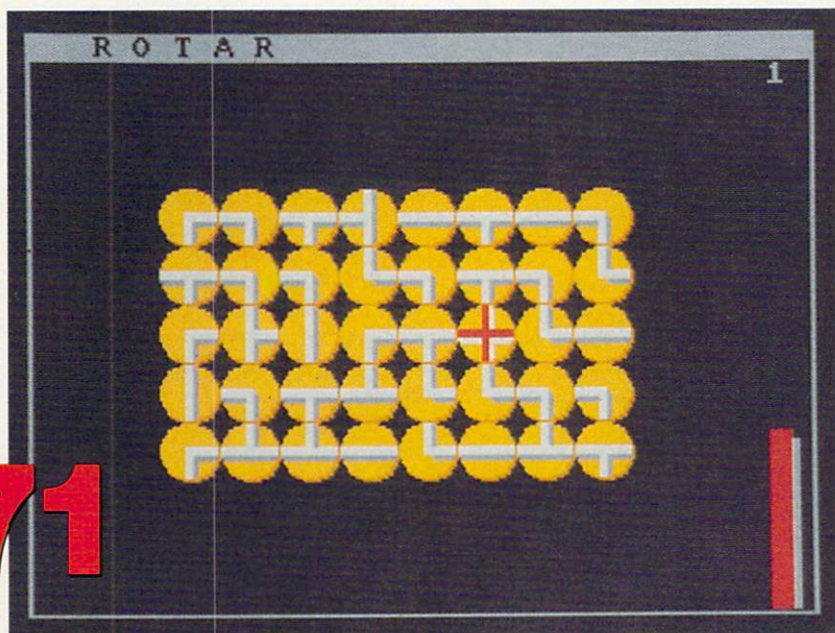
72 Face

Add a full Intuition interface to virtually any CLI-only program.

74 Disk Update

75 How to Use the Disk

See page 66 for ordering information.



ALSO ON DISK

76 Programmer's Page: *Font Viewer*

91 Best of the Boards: *IconMaster*

94 Amiga Art Gallery

All "On Disk" software is original work and not in the public domain. These programs are copyright 1990 COMPUTE! Publications, Inc., all rights reserved.

Break Down

Rhett Anderson
Sound Routines and Original Music by
Randy Thompson

Are you ready for 16 levels of arcade action? If you are, pop in your *Resource Disk* and double-click on the *Break Down* icon. This *Breakout*-style game features unique background patterns and blocks with special powers. And it's our first game to include a full-blown musical score.

There are three kinds of blocks in *Break Down*: standard, wall, and special. You progress through the levels by using your paddle to knock a ball into every standard brick on the screen. The standard blocks are trans-

lucent red, green, and yellow. Wall bricks are solid gray and can never be broken. Power blocks each give you a different special benefit.

Red power blocks give you a second paddle which floats above your main paddle. This paddle gives you an extra chance to strike the ball. It also provides you with a quick way to change the trajectory of the ball if you get into a rut with the single paddle.

Each purple power block gives you an extra paddle. You start *Break Down* with three paddles. The number of paddles in reserve is shown in the scoring box on the right side of the screen. You can have a maximum of five paddles in reserve, although only three are shown in the box. You lose a paddle whenever the ball goes off the bottom of the screen. When you lose your last paddle, the game ends.

Striking a green power block completes a level despite the number of standard bricks left on the screen. Note that striking these blocks may cause you to miss out on other special blocks which might be available. They may also prevent you from obtaining extra points.

Yellow power blocks slow down your ball. The change takes effect the next time the ball strikes your paddle. There are three types of blue power blocks. Each is worth the number of points it is labeled with. When

the CLI. To start playing, press F1. Use the mouse to control the paddle. Press the space bar to pause the game at any time. You can exit the game by pressing Esc.

Break Down is written entirely in machine language for speed, but its sounds and graphics use up quite a bit of memory. You should have no problem playing the game on a 512K machine if you boot with the *Resource Disk* and run *Break Down* before running any other program. If you have more memory, you should have no trouble at all unless you're running other programs which use large amounts of chip RAM.

For optimum performance, *Break Down* turns off multitasking, but when you press Esc to exit it, all resources are returned to the system.

Playing Tips

Try to progress through the levels as quickly as possible. After it hits the paddle several times, the ball speeds up and becomes more difficult to hit.

Hit the ball with different parts of the paddle to change the ball's angle.

For the highest scores, don't strike the green power blocks which take you to the next level.

Learn the sequence of screens. Knowing whether you should take a double paddle into the next level can make a big difference.

When you strike a power block, you lose the powers that you already have. Try to hit the blue power blocks first to avoid losing double paddles.

Hit the purple power blocks whenever you can, but remember that you can retain only five paddles at a time.

Remember to take breaks—food and sleep are an important part of staying alive.



lucent red, green, and yellow. Wall bricks are solid gray and can never be broken. Power blocks each give you a different special benefit.

Red power blocks give you a second paddle which floats above your main paddle. This paddle gives you an extra chance to strike the ball. It also provides you with a quick way to change the trajectory of the ball if you get into a rut with the single paddle.

Each purple power block gives

you strike these, 100, 200, or 400 points will be added to your score.

Break Down keeps track of your current high score until you exit the game. Between games, you can watch the computer play. This is a good way to get acquainted with the various levels.

Operations

Start the game by double-clicking its icon or by typing BREAKDOWN from

SPECS

Break Down

PROGRAM SIZE: 219,584 bytes

MINIMUM CONFIGURATION

512K RAM

AmigaDOS 1.2

ENVIRONMENT

Workbench

Double-click icon

CLI

RUN BREAKDOWN

Rd

Martin Taillefer

Rd is an efficient, no-nonsense file reader. It is fast and reliable, runs from the Workbench or the CLI, and takes up less than 15K of disk space.

Besides all of the standard features that you'd expect from a file reader, such as pull-down menus, a scroll bar, a resizable Workbench window, and keyboard- and mouse-controlled scrolling, *Rd* can also print files, jump to any specified line within the text, display ANSI color and font style changes, and search for any group of letters or characters.

Getting Started

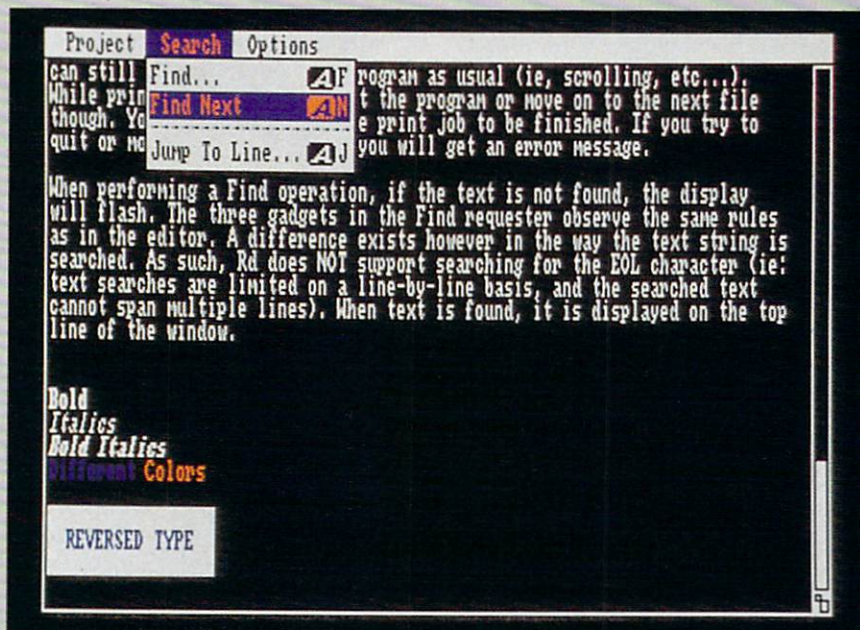
The easiest way to use *Rd* is to click on the icon of the desired text file, hold down the shift key, and then double-click on the icon of *Rd*. *Rd* will appear with the selected text file displayed in its window. If the text file that you wish to read doesn't have an icon, simply double-click on *Rd*'s icon and select a file using the file requester that appears.

Using the file requester is easy. You simply select a file by double-clicking on its filename or by entering the filename into the string gadget labeled File and hitting Return. If the file is not on the currently displayed drive, click the right mouse button (or click on the Drives gadget) to view all of the devices connected to your Amiga. Click on the name of the desired drive; then select the file that you wish to read.

To list the files found within a directory, simply click on the directory name that appears in the file requester's window. You may return to the previous directory by clicking on the Parent gadget. You may also enter the name of a device and/or directory in the string gadget labeled Drawer.

If you wish to abort the program without reading a file, simply click on the file requester's Cancel gadget.

Using *Rd*'s file requester, you can read any type of file—even nontext ones. Viewing a program file or a .info file in ASCII, for example, is perfectly acceptable. All you'll see is a bunch of nonsensical characters, but *Rd* is happy to display whatever you tell it to.



Read Me

Once you've selected a file, *Rd* loads the file and displays it in the program's resizable window.

There are a number of ways you can scroll through the text. First, you can use the vertical scroll bar that appears on the right side of *Rd*'s window. Second, you can use the cursor-up and -down keys. Third, and probably easiest, you can move the mouse pointer near the bottom of the screen and hold down the left mouse button. This scrolls the text up. Move the mouse pointer up toward the top of the screen and the text scrolls down. Release the mouse button to stop the scrolling. The speed of the scrolling depends on how far left or right the mouse pointer is in relation to the window. Move the pointer to the left to speed up scrolling; move it to the right to slow down.

If *Rd*'s window isn't wide enough to display all of the characters in a line, you can use the cursor-left and -right keys to scroll the text sideways.

Rd has several keyboard-accessible features and supports most of the keyboard commands used by Commodore's *More* program. The following chart explains what each of these keypresses does.

Keypress	Function
Cursor Up	Scroll text down
Cursor Down	Scroll text up

Shift-Cursor Up	Page up
Shift-Cursor Down	Page down
Alt-Cursor Up	Move to top of file
Alt-Cursor Down	Move to bottom of file
<	Move to top of file
>	Move to bottom of file
Backspace	Scroll text down a line
Return	Scroll text up a line
R	Read next file
P	Print current file
?	Display program info
F, /, or period	Find
N	Find next
J	Jump to specified line
Q, Esc, or Ctrl-C	Exit program
A or space bar	Toggle autoscrolling on and off

While autoscrolling is on:

Left Cursor	Slow down scrolling
Right Cursor	Speed up scrolling

While autoscrolling is off:

Left Cursor	Scroll text right
Right Cursor	Scroll text left

Many of these commands are also available by using the program's pull-down menus.

Menus

Rd has three pull-down menus: Project, Search, and Options. The Project menu offers the four options Read Next File, Print File, About, and Quit. Read Next File brings up the program's file requester and allows you to

select another file to read (clicking on Cancel aborts the program). Or, if you selected several text files before you shift-double-clicked on *Rd*, this option automatically loads and displays the next highlighted file.

The Print File option prints the current text file. After selecting this option, a small draggable window bar with the title Printing appears. To abort the printing process, click on this window's close box.

Printing is handled by a background process, so you can continue to use *Rd* while printing is still in progress (Isn't multitasking great?). Because the printing process needs continual access to the file being printed, you aren't allowed to quit *Rd* or load a new file until printing is complete.

The About option brings up a window that lists the author's name and the program's copyright message. Click on OK to get rid of this window.

Quit, of course, closes the program window and returns you to the Workbench.

The Search menu contains the options Find, Find Next, and Jump To Line. Select Find and a requester will open up, allowing you to enter the letter, word, or phrase that you're searching for. You can also toggle any of three gadgets that control how *Rd* searches the text. Select the first gadget and *Rd* will ignore the letters' case (an uppercase S, for example, would match a lowercase s). When the Backward gadget is selected, *Rd* searches backward through the file, starting from the first line shown on the screen (normally, *Rd* searches forward). With the Whole Word gadget activated, *Rd* only finds text if it's found by itself, not within another word. For example, the word *is* would be found in the phrase *This is ridiculous*, but not in the word *This*.

Click in the Find string gadget, enter the text that you wish to find, and hit Return to start the search. If the text is found, the line in which it's located moves to the top of the window. Choose the Find Next option to continue the search. The screen flashes when no more matches can be found.

The Jump To Line option asks you to enter a line number and then immediately displays that line. If the line number is too large, *Rd* simply

moves to the end of the file.

The Options menu has only one option: Auto Scroll. This option works as a toggle. Select it once to activate it; select it again to turn it off. When autoscrolling is on, the text continually scrolls upward, allowing you to read the words as they pass. Press cursor left to slow the text, or press cursor right to speed it up. If you prefer, you can use the A key or the space bar to turn autoscrolling on and off.

ANSI Support

Rd supports ANSI (American National Standards Institute) escape codes for changing character color and font style. This allows you to read text files that contain ANSI codes and create text files that, when read with *Rd*, have color-highlighted text as well as bold and italic characters.

Below is a list of some ANSI codes that you can use with *Rd*. Whenever you see ESC, it means to press the Escape key (do not type in the letters E, S, and C). You must use an editor that can accept the escape character (ASCII 27) as input to take advantage of the ANSI codes.

ANSI Code	Result
ESC[0m	Normal characters
ESC[1m	Bold characters
ESC[3m	Italic characters
ESC[4m	Underlined characters
ESC[7m	Inverse-video characters
ESC[30m	Change foreground to Color 0
ESC[31m	Change foreground to Color 1 (the default)
ESC[32m	Change foreground to Color 2
ESC[33m	Change foreground to Color 3
ESC[40m	Change background to Color 0 (the default)
ESC[41m	Change background to Color 1
ESC[42m	Change background to Color 2
ESC[43m	Change background to Color 3

The foreground and background colors depend on your Preferences settings. On a standard Workbench disk, Color 0 is blue, Color 1 is white, Color 2 is black, and Color 3 is orange. If you're using an eight-color Workbench screen, the values found in the ANSI color codes can go as high as 37 for the foreground color and 47 for the background color.

Unless you change it with one of

the ANSI codes, the background color defaults to Color 0, and the foreground color defaults to Color 1. Be careful not to give the background and foreground the same color. If you do, your characters will be invisible.

CLI Use

The syntax for using *Rd* from the CLI is

RD filename(s)

where *filename(s)* is the name or names of the files that you wish to read. If you do not specify a filename, *Rd* will bring up a file requester and ask you to choose one.

If you follow the RD command by more than one filename, *Rd* loads the first file specified. To read the next file in the list, you select the Read Next File option from the program's Project menu. You can continue to select this option until all the files have been read. When there are no more files, *Rd* displays its file requester and asks for a new filename.

Optionally, you can enter a list of filenames into a text file and then enter the command

RD <filename

For example, if the file FILELIST contained the following text,

```
README
DOCS
MYTEXT
```

then entering RD <FILELIST would be the same as entering RD README DOCS MYTEXT.

Rd accepts all of the standard AmigaDOS wildcards, plus those found in ARP. Especially notable are *, which is identical to #?, and ~, the "not" wildcard, which lets you exclude files. The command RD ~.INFO, for example, would load the first file in the current directory that did not end with a .info extension. Wildcards can only be used from the CLI.

ARP Required

Rd requires arp.library, a small system file that goes in the libs directory of your Workbench disk. We've included arp.library on the Resource Disk, so the program runs fine as long as you

boot from this disk. You must copy arp.library onto your own disk if you plan to boot with that disk and then run *Rd*. For your convenience, we've included an install file that automates this process.

Open the Install drawer and you'll find the file InstallARP. InstallARP copies arp.library to your Workbench's libs directory. To use it, you must boot with the Workbench disk that you want the file copied to; then double-click on the InstallARP icon.

SPECS

Rd

PROGRAM SIZE: 12,916 bytes

SUPPORT FILES

arp.library 17,100 bytes

MINIMUM CONFIGURATION

512K RAM

AmigaDOS 1.2

ENVIRONMENT

Workbench

Double-click icon

CLI

RD filename(s)

Rotar

John Thompson

It's you against the clock in *Rotar*, a game of strategy that requires a keen mind and a joystick. Fifty levels are ready to challenge you. Each is a unique puzzle.

Rotar places you in a grid of disks. One disk has a red plus sign on it. This is the hot disk. (In higher levels, there may be more than one hot disk.) Your goal is to rotate the disks so that the tubes on the disks are all connected to the hot disk. Of course there's a trick that keeps the game from being trivial—you can only travel between disks if there's a direct connection between the two.

To play, double-click on the Rotar icon, which can be found in the Rotar directory of the *Resource* disk. *Rotar* will load the file, Rotar.dat, containing the 50 levels. When the levels have loaded, you'll be playing the first level.

Mind over Silicon

On the right side of the screen is a timer bar that steadily counts down. When the bar disappears, you have only a few moments left to complete your mission.

Rotar has three menus: the Rotar menu, the Game menu, and the Scores menu. From the Rotar menu, you can select About, Rules, Pause, or Quit. About displays the copyright message, Rules gives a brief rundown of the rules, Pause stops the game until you press the joystick button, and Quit terminates the game. The Game menu has the options Standard, Random, Reset, and Level. Standard selects the default game, Random selects an alternative game, Reset redraws the current screen and initializes the timer, and Level allows you to type in a level number if you'd like to skip the lower levels. The Scores menu has the single option Clear High Scores, which wipes the Rotar.scores file clean. Menu options are selectable only during game play.

To play, plug a joystick into port 2. You control the orange dot that starts out at the center of the disk that has the red plus sign. You can move the dot by moving the joystick, but you can only move to disks that are connected to the disk where you are. Once you move to a disk, you can rotate it by pressing the fire button. Each press rotates the disk a quarter turn clockwise. Before time runs out, you must connect all the pipes. When you think

you've accomplished this, return to the red plus disk and press the fire button. The red color will flow through the pipes. Any unconnected pipes will remain white. If you've succeeded, you advance to the next level. Otherwise, your progress is graphed and you must try the same puzzle again until you solve it.

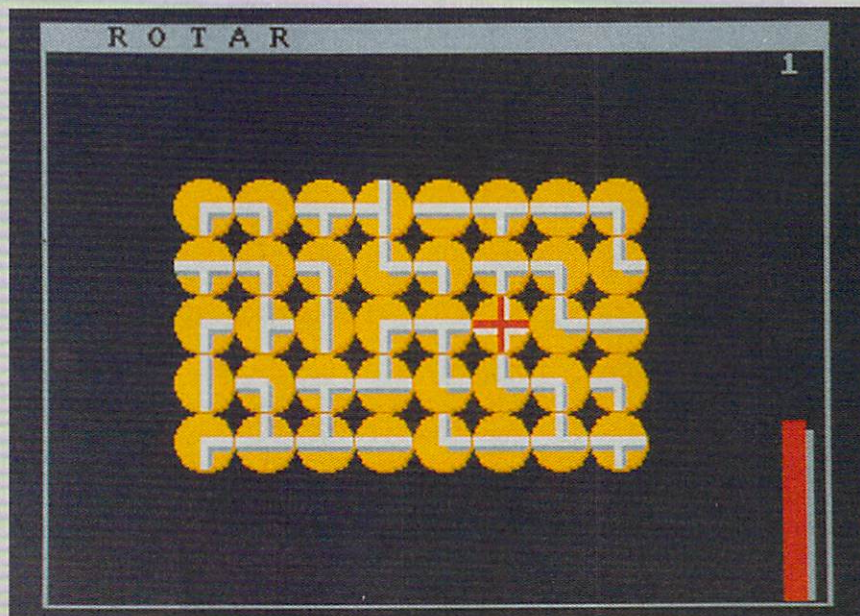
Rotar saves the best score for each level in a disk file. You must progress through the levels sequentially. You aren't allowed to jump to a higher level unless you've already played that level and have a high score for it, so you'll want to think twice before using *Rotar*'s Clear High Scores option.

The Random game is a bit different. In this variation, you must simply connect as many disks as possible and then return to the red plus and click to claim your territory. You'll be shown your progress graphically. Random is genuinely random. In some games, you may be able to connect virtually the entire board; in other games, you might not be able to connect anything.

Hints and Tips

Don't expect to be a *Rotar* pro the first time you play. It takes a while to learn the ins and outs of the game. Here are a few hints for the frustrated.

- Approach the problem from a new direction. If you can't seem to connect one disk without disconnecting another, circle around from another direction to approach the problem disk.



- If there isn't a free pipe end in position to connect the disk you want to connect, look for a nearby free end and then rearrange the disks to bring that end into play.
- Disks can be connected so that they form a loop. But a loop does you no good. Rotate a disk to break the loop and you'll have two more free ends to play with.

SPECS

Rotar

PROGRAM SIZE: 70,508 bytes

SUPPORT FILES:

Rotar.dat 11,299

Rotar.scores 118

Rotar.sprite 64

MINIMUM CONFIGURATION

512K RAM

AmigaDOS 1.2

ENVIRONMENT

Workbench

Double-click icon

CLI

CD ROTAR

RUN ROTAR

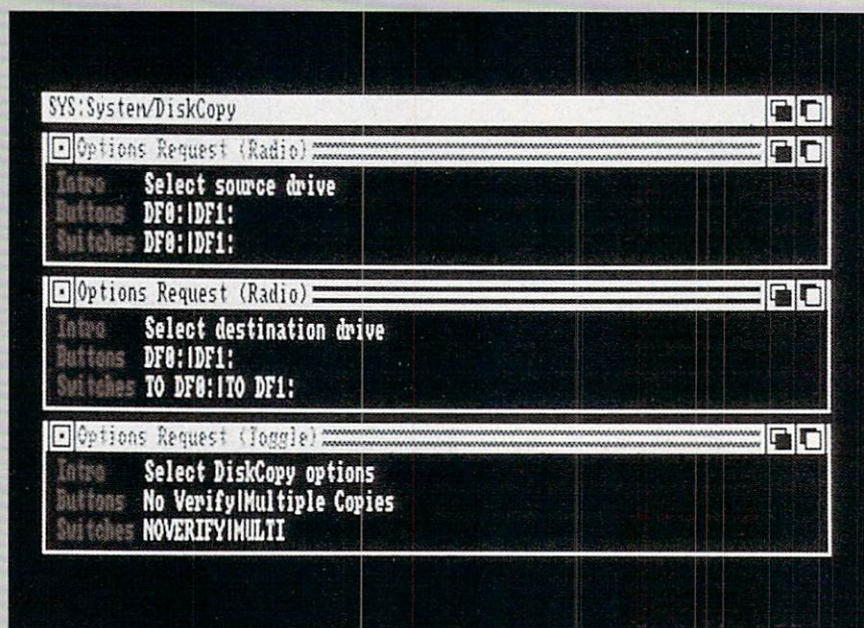
Face

Tim Midkiff

Sometimes a program's interface is more important than the program itself. There are plenty of useful programs that I don't use simply because they have one or more of the following deficiencies: arguments I can't remember, interfaces I don't like, or features that can't be accessed from the Workbench. *Face* is designed to alleviate these problems.

Face allows you to give programs a facelift, so to speak. It can take a program and add a customizable, intuitive, mouse-driven, Workbench-accessible interface. Simply by arranging a few windows on *Face*'s screen and answering some prompts, you can create gadgets and file requesters to operate almost any program.

At the least, *Face* can be used to provide programs with a standard file requester. Imagine giving the CLI's De-



lete command a file requester that asks you which file you want to delete. Of course, *Face* also allows you to run such CLI-only utilities from the Workbench, clicking on buttons and gadgets to specify the command's various parameters.

Making a Face

To use *Face*, double-click on the program's icon or enter FACE from the CLI. A file requester appears with the instructions *Select Run File* (a run file is any program or command that can be run from the Workbench or CLI). Using the file requester, choose the program or command that you feel needs a facelift. For example, let's say you choose the CLI's versatile Type command. A blank screen appears with the pathname of the chosen file (C:Type) displayed in the screen's title bar.

Face has just one pull-down menu. You use the first four options—File Request, Radio Buttons, Toggle Buttons, and String Constant—to design the program's new interface. For the Type command, the first item you want to choose is Radio Buttons. This option allows you to define a requester that will contain a series of multiple-choice gadgets. Such a requester waits until one of its gadgets is selected before it leaves the screen.

When you select Radio Buttons, a window with three string gadgets appears. In the first gadget, marked Intro,

enter the question *What do you want to do?*. This text will become the title of your requester.

The line labeled *Buttons* is where you place the descriptive text for each of your requester's gadgets. For our example, enter the text *Read a File* | *Print a File* | *Speak a File*. This defines three gadgets. The vertical bar (|), which you can find on the keyboard just left of the backspace key, separates the text used for each gadget.

The last line, labeled *Switches*, determines what happens when one of your newly defined gadgets is selected. Specifically, the characters you place here are added to the Type command before it's executed. Enter the text |>PRT:|>SPEAK: into the Switches line. Again, the vertical bars serve to separate the entries.

Because the Switches text begins with a vertical bar, nothing will be added to the Type command if your Read a File gadget is selected. If the Print a File gadget is selected, the >PRT: option will be used. Similarly, if someone clicks on your Speak a File gadget, the text >SPEAK: will be added to the Type command. You must have as many Switches as you have Buttons. In other words, both lines must contain an equal number of vertical-bar characters.

To check your work as you go along, select the Demo option from *Face*'s pull-down menu. This option allows you to test-drive your new inter-

face. If you've entered text into the Radio Buttons' window correctly, a requester should appear with the title *What do you want to do?* and three buttons, labeled *Read a File*, *Print a File*, and *Speak a File*. Select one of the buttons, and *Face* will show you the final command that will be executed by the computer when your new Type command is actually run. If you choose the *Print a File* gadget, for example, *Face* displays the command `Type >PRT:`.

Note that your program is far from complete; the Type command is missing a filename. For that you'll need to add a file requester to your interface. Select the pull-down menu's *File Request* option and another window appears, just below the Radio Buttons window. The first string gadget in this window is labeled *Intro*. This is where you put the title of your file requester. For our example, click in the *Intro* box and enter the words *Choose a text file*. The next two string gadgets let you specify which drawer and/or file the file requester defaults to using. If you want the file requester to automatically display files found in the S: directory, enter S: into the *Drawer* gadget. For our purposes, leave the *Drawer* and *File* gadget boxes blank. This tells the requester to display the files found in the current directory; the user can search the other directories simply by clicking on their names.

Select *Demo* again to test your program, click on the *Print a File* gadget and then select a file from the newly created file requester. Now the Type command shown by *Face* is complete.

Using Face Programs

In order to use your new-and-improved Type-command interface, you must first save your work. Select *Save* from *Face*'s pull-down menu and enter a filename into the file requester that appears. You might also specify which directory your interface program should be saved to because *Face* will always try to save to the last accessed directory, in this case C:. Do not save over the program to which you are giving a facelift—use a unique filename, such as *Type.face*. Hit *Return* or click on *OK* when you've finished. When the save operation is complete, choose *Quit* from the pull-down menu.

All *Face*-created programs are

saved with Workbench-accessible icons. To use the Type program, just double-click on the icon; first your Radio Buttons requester and then your file requester appear. Once you've entered a filename, the Type command is sent to AmigaDOS and executed. If you chose *Read a File*, the file is output to a window; if you chose *Print a File*, the file is sent to your printer (assuming you have a printer); and if you selected *Speak a File* and the Amiga's SPEAK device is mounted, your Amiga will read the file to you.

Plan Ahead

A *Face*-created program does not replace the command that it enhances. Instead, it operates as an alternative interface. For example, you can still use the Type command from the CLI. In fact, you must have a copy of the Type command somewhere on disk in order for the *Face*-created program to work.

The programs you create with *Face* look for the original program in the location you specify when you run *Face*. So if you tell *Face* to enhance the Type command found in DF0:C, that's where your interface program will always look for Type. As a result, it's best if you tell *Face* to load files from C: when modifying CLI commands. This way, the *Face*-created program will work no matter which drive or hard disk partition your C: directory is located in.

Designing an interface program with *Face* takes some careful planning. The order in which your requesters appear is very important because a program created with *Face* actually builds a CLI command string as you click on gadgets and select filenames. The first item placed in the string is the name of the program to be run. What follows next depends on which *Face* requester appears next. When all the requesters have been satisfied and the command string is complete, *Face* gives the command to AmigaDOS and the specified program is executed.

You determine the order of your requesters by arranging the requester windows on *Face*'s design screen. The requester with the topmost window appears first, and the requester whose window is found closest to the bottom of the screen appears last. For example, if you drag the Type com-

mand's Radio Buttons window below the File Request window and then select *Demo*, the file requester would appear first; then the *What do you want to do?* requester would pop up. Consequently, the resulting Type command would end up looking something like `TYPE filename >PRT:`, which is incorrect (>PRT: must appear first).

If you're unsure about the order in which a program expects its arguments, check that program's manual. You want your *Face* program to create a command that works from the CLI, even though you are not using the CLI. A book on AmigaDOS or Commodore's own *Enhancer* manual will help immensely when you're designing interfaces for CLI commands such as Type.

Additional Options

The Type example uses only two of *Face*'s interface options—File Request and Radio Buttons. *Face* also offers Toggle Buttons and String Constant. Toggle Buttons are similar to Radio Buttons, except that Toggle Buttons are toggled on and off like light switches. Once you've set these buttons to your liking, you click on *OK* to accept your settings. (An *OK* gadget and a *CANCEL* gadget are automatically included on all Toggle Buttons requesters.)

You define a Toggle Buttons requester the same way you define a Radio Buttons requester: Select the Toggle Buttons menu option, enter the requester's title into the *Intro* Box, the gadget names into the Buttons box, and the command line parameters for each gadget into the Switches box. For our Type example, you might define a Toggle Buttons requester that controls some of the Type command's output options. You could enter *Output Options* as the requester's title, *Number Each Line* | *Hexadecimal* as the Buttons text, and *OPT N* | *OPT H* as the Switches text.

The String Constant option inserts a string into the final command without requesting input from the user. For example, if you want your Type program to always list files with line numbers, select String Constant and enter *OPT N* into the window that appears.

To start designing an interface for a new program or to modify an existing one, select the *Open* option from

the pull-down menu. To exit *Face*, select Quit. The Quit option does not warn you if you've made any changes to the current program, so be sure to save your work first.

Pipe Through More

Face automatically opens a window for programs that need to output information, as with our Type program. But if you want to scroll through the information at your own pace, *Face* can also send program output to the *More* file reader found on your Workbench disk. (As it is now, the window opened by *Face* closes immediately after a program has finished printing text.)

To send a program's output to *More*, select the Pipe Through More option from *Face*'s pull-down menu. A check mark appears next to this option when it's active. Now resave your program to finalize the change. If you do this with the Type example, the program will automatically run *More* and load the selected text file whenever your Read a File gadget is clicked.

Pipe Through More takes advantage of Workbench 1.3's new PIPE: device. As a result, this option works under Workbench 1.3 only. You must also mount the PIPE: device, either in your startup-sequence or from the CLI, in order for this option to work. Note that PIPE: is automatically mounted in the startup-sequence that comes on the Workbench 1.3 disk. Finally, *More* must be located in the SYS:Utilities drawer so *Face* can find it. This is where *More* is located on all stock Workbench 1.3 disks.

The Fine Print

No more than eight windows can be opened on the *face* screen. This limits you to a maximum of eight requesters in your interface.

Button requesters can contain a maximum of 16 buttons, and the text for each button is limited to 33 characters. The total number of characters for a requester cannot exceed 80. Also, the CLI command built by a *Face* program must be 255 characters or less in length.

Face always creates programs that are 14,496 bytes long.

ARP Required

Face requires arp.library, a small system file that goes in the libs directory

Disk Update

Here's where to turn for bug fixes, operating notes, and updates for the programs found on the Resource Disk. Readers experiencing difficulty with a disk should first read "How to Use the Disk," found in every issue of Amiga Resource. If you're still having trouble, write us (see the section "Where to Write" in "Reader's Feedback").

A number of people have experienced problems with the February 1990 issue's address-book program because of incorrect Preferences settings. This program determines your modem speed and printer configuration from the current Preferences setting. Here are the correct settings.

Serial should be set to your modem's baud rate. If you're using a 1200-baud modem, set serial at 1200 baud. Printer should be configured as six lines per inch (6 LPI) and ten characters per inch (10 CPI). Also, avoid using large printer fonts, such as Orator, because they will mess up your line spacing.

Boot the Disk

Occasionally we'll receive a call from a reader who is having trouble viewing the "Art Gallery" pictures. If

you're having trouble, try booting your computer with our disk before you double-click on a picture's icon. You should boot with our disk because the program we use to display pictures requires a file called arp.library. This file must be located in the LIBS: directory of the Workbench disk that you boot your computer with (our disk contains this file). If you prefer, you can use the InstallARP script found on this issue's disk to copy arp.library to the LIBS: directory of your own Workbench disk.

The "Art Gallery" pictures are simply data files. Because they are saved in standard IFF format, you can also load them into a paint program, such as *DeluxePaint*, and view them there.

If you're having trouble with last issue's *Stars II* program, it might be because you've deleted some of the math libraries from your Workbench disk. In order to perform accurate calculations, *Stars II* requires the libraries mathiee-doubbas.library and mathiee-doub-trans.library. These libraries may be found on the *Resource Disk*, so *Stars II* runs fine as long as you boot with our disk.

—Troy Tucker

of your Workbench disk. We've included arp.library on the *Resource Disk*, so the program runs fine as long as you boot from this disk. You must copy arp.library onto your own disk if you plan to boot with that disk and then run *Face* or any of the program interfaces created with *Face*. For your convenience, we've included an install file that automates this process.

Open the Install drawer and you'll find the file InstallARP. InstallARP copies arp.library to your Workbench's libs directory. To use it, boot with the Workbench disk that you want the file copied to; then double-click on the InstallARP icon. Your Workbench disk must have at least 17,100 bytes in order for arp.library to fit.

Extras

On disk this issue, you'll find an example *Face* program. To see how it works, run *Face* and select the program. ▲

SPECS

Face

PROGRAM SIZE: 17,620 bytes
SUPPORT FILES
arp.library 17,100 bytes
MINIMUM CONFIGURATION
512K RAM
AmigaDOS 1.2
ENVIRONMENT
Workbench
Double-click icon
CLI
FACE

HOW TO USE THE DISK

Every issue of *Amiga Resource* has a companion disk that features the exclusive programs we offer each issue, as well as the "Best of the Boards" program and the "Art Gallery" screens. You can get this disk in three ways. First, you may buy *Resource* with the disk in a poly-bag at your bookstore or from your computer dealer. Second, you may subscribe to the magazine with the disk. Third, you may order single copies of this disk (see the back-issues/disk-order ad elsewhere). If you experience a problem with the disk, even after you've read the programs' documentation, please contact us at (919) 275-9809 between 9:00 a.m. and 4:30 p.m. Eastern standard time, Monday through Friday.

To use the disk, insert it into your disk drive and then turn on your computer. (Amiga 1000 owners must boot with Kickstart first.) You may boot with your own Workbench disk, but the icons will not be as colorful as they are when you boot with the magazine disk.

You run programs by double-clicking on their icons. Some programs may be found within drawers (icons that resemble file folders). Please look into each drawer on the disk. We recommend that you read the "On Disk" section of the magazine prior to running any of our programs. If you wish to move a program that is in a drawer to another disk, be sure to copy the entire drawer so that you can be sure you copy all the support files that the program may need.

Most programs on the disk are accessible through the Workbench environment. Some programs, however, are designed to work only in the CLI environment. Such programs do not have icons and are not visible from the Workbench. Since the magazine disk may be too full to include many CLI commands, you will have to boot with your own disk to access the CLI and work with these programs.

Artwork from "Amiga Art Gallery" may be found in the ArtGallery drawer. To view a picture, double-click on its icon. When the painting appears on-screen, simply click the mouse once to return to the Workbench.

Our disk is not copy-protected. We encourage you to make a backup of the disk as soon as possible. With the exception of the program in our

"Best of the Boards" column, the contents of the disk are copyrighted and may not be used by anyone other than the owner of the magazine. Artists who appear in "Amiga Art Gallery" hold the copyrights to their own work. Amiga Workbench version 1.3 is copyright 1985, 1986, 1987, and 1988, Commodore-Amiga, Inc. all rights reserved. All other disk contents are copyright 1990, COMPUTE! Publications, Inc., all rights reserved. We ask that you respect the copyrights of the works on the disk and of the disk in its entirety.

We suggest that you write-protect the disk by sliding the write-protect tab to the open position. This will cause programs that attempt to write to the disk to fail. You can slide the write-protect tab to the closed position to allow writing, but there may not be enough room on the disk for any more files. If this is true, copy the offending program to another disk to use it.

On Disk This Issue

This issue's *Face* and *Rd* programs require *arp.library*, a small system file that goes in the *libs* directory of your Workbench disk. We've included *arp.library* on the *Resource Disk*, so the programs run fine as long as you boot from this disk. You must copy *arp.library* onto your own Workbench disk if you plan to boot with that disk and then run these programs. For your convenience, we've included an install file that automates this process.

Open up the Install drawer and you'll find the file *InstallARP*. *InstallARP* copies *arp.library* to your Workbench's *libs* directory. To use it, you must boot with the Workbench disk that you want the files copied to; then double-click the *InstallARP* icon.

Because of the number and size of this issue's programs, we were unable to fit any of the source code from our On Disk programs on the disk. If demand is great enough, however, we'll put the missing source code on next issue's disk.

John Thompson's *Rotar* program was written in Amiga Basic and then compiled using Absoft's *AC/BASIC*. Because *AC/BASIC* creates stand-alone programs, you do not need a copy of Amiga Basic to run *Rotar*. All you have to do is double-click on its icon.

The program listing for "Program-

mer's Page" is found in the disk's *ProgPage* drawer. This is a BASIC listing saved as ASCII. When you double-click on its icon, the listing is automatically loaded into the *Rd* file reader. If you wish to run this program, you must create the necessary *bmap* files by following the instructions found in the "Programmer's Page" article; then load the BASIC listing into Amiga Basic and enter *RUN*.

On Disk Directory

Install (dir)	InstallARP
.info	CD
InstallARP.info	Echo
c (dir)	EndCLI
Ask	IconX
Colorbench	LoadWB
Else	run
EndIf	V
If	
NewCLI	
type	
system (dir)	
DiskCopy	
l (dir)	
Disk-Validator	Port-Handler
devs (dir)	
printers (dir)	
generic	printer.device
parallel.device	
system-configuration	
s (dir)	startup-sequence
InstallARP.script	diskfont.library
libs (dir)	info.library
arp.library	
icon.library	
version.library	
Rotar (dir)	Rotar
.info	Rotar.info
Rotar.dat	Rotar.sprite
Rotar.scores	
BestofBoards (dir)	IconMaster
.info	IM_ReadMe
IconMaster.info	
IM_ReadMe.info	Lady Otway
ArtGallery (dir)	Roses
.info	Versailles
Lady Otway.info	
Roses.info	
Versailles.info	FontViewer.bas
ProgPage (dir)	
.info	BestofBoards.info
FontViewer.bas.info	BreakDown.info
ArtGallery.info	DiskCopy.info
BreakDown	Face
Disk.info	Install.info
DiskCopy.face.info	Rd
Face.info	Rotar.info
ProgPage.info	
Rd.info	

All "On Disk" software is original work and not in the public domain. These programs are copyright 1990 COMPUTE! Publications, Inc., all rights reserved. As such, it is illegal to upload, distribute, or sell the software contained on our disk without our written permission. Please respect the copyrights of the works on the disk and of the disk in its entirety.

PROGRAMMER'S PAGE

Daniel L. Stockton

Disk-Based Fonts

One attractive feature of NotePad (the mini-word processor that you can find in the Utilities drawer of your Workbench disk) is its ability to use a variety of text fonts. This article explains how to use those same fonts—or any disk-based text font—in Amiga Basic. Amiga Basic does not provide any direct means of loading a custom font from disk. However, this can be accomplished by calling the system routines that are used by the Amiga's operating system.

Where Are My Fonts?

The fonts used by NotePad are located in the Fonts: device. This logical device is normally assigned to the fonts directory of the disk from which you booted. You can use the FILES command to get a listing of that directory. Type the following command in the BASIC output window and press Return.

FILES "FONTS:"

Each font in the fonts directory has its own subdirectory, which contains the various sizes for that font. Font sizes are specified in units called *points*, which are equal to 1/72 inch. A 9-point font has characters 9/72 inch in size, for instance. The different text styles (italic, boldface, and so on) are not stored in the font directory; these styles are generated by selectively distorting the shapes found in the basic font file.

The program included with this article can select any of the disk-based fonts, with eight styles for each font. Table 1 lists the fonts, and Table 2 lists the various styles. Note that Topaz 8 and Topaz 9 are *not* on the Workbench 1.3 disk. Instead, they are in the computer's ROM.

The program uses two system libraries, named *graphics.library* and *diskfont.library*. In order for Amiga Basic to use these libraries, it must have a file description of the library in

Table 1: Fonts

Fonts	Sizes (in Points)
Diamond	12, 20
Emerald	17, 20
Garnet	9, 16
Opal	9, 12
Ruby	8, 12, 15
Sapphire	14, 19
Topaz	8, 9, 11

Table 2: Font Styles

Style Number	Text Style
0	Plain text (Workbench default)
1	Underline
2	Boldface
3	Boldface and underline
4	Italic
5	Italic and underline
6	Italic and bold
7	Italic, bold, and underline

a form it understands. This form is called a *bmap file*. The bmap file is essentially a list of pointers that allow BASIC to access library routines.

Before you can run the program, you must make sure that the correct bmap files are present on the same disk as the program. The first such file, *graphics.bmap*, is included in the BASICDemos drawer of the Amiga Extras disk. The second file, named *diskfont.bmap*, must be created.

You can create *diskfont.bmap* quite easily. The Extras disk contains a BASIC program named *ConvertFd* as well as a directory named *FD1.3* (*FD1.2* for users of version 1.2). Run the *ConvertFd* program, using the file named *diskfont.lib_fd*. When the program has finished running, the disk will contain *diskfont.bmap*.

Before you run the program, make sure that both *graphics.bmap* and *diskfont.bmap* are on the same disk as the program. The location of these files is important. They must be either in the current directory or in the LIBS: directory (they are usually as-

signed to the directory named LIBS on the disk used when you booted your computer). The LIBS (LIBrarieS) directory is a good place for bmap files, as their purpose is to give you access to libraries. If you don't have the bmap files in the correct place, BASIC will stop with a *File not found* error when you run the program.

When you run the program, it displays the various fonts on the screen in different sizes and waits for you to click the mouse button before proceeding to the next font.

The most important part of the program is contained in the subprogram named *FontSelect*, which appears at the end of the program. After you have tested the program and have saved a copy, delete everything in the program except the *FontSelect* subprogram. Then save the subprogram under a new name as an ASCII file so that it can be MERGED with other programs. To save a program in ASCII form, add the characters *,a* to the end of a normal save command. For instance, to save the subprogram with the name *FontSelect*, type the following command in the BASIC output window and press Return.

SAVE "FONTSELECT",A

The *FontSelect* subprogram is invoked with a *CALL* statement in the main program. Three items of information are passed to *FontSelect* in the form of variables.

The first variable is a string named *font\$*. This string contains the name of the font you wish to use (Garnet, Ruby, and so on). If the string is a null string (" "), a string containing no characters, only a style change occurs.

The second and third variables passed to *FontSelect* are numeric variables of the short integer type. The variable *height%* defines the point size (see Table 1), and *style%* defines the style (see Table 2).

Order Toll Free **ComputAbility** Order Toll Free

800-558-0003 Consumer Electronics 800-558-0003

AMIGA SOFTWARE			
1943	25.95	Carmen SanDiego/World	30.95
3D Pool	21.95	Champions of Kyrin	31.95
A-Talk 3	64.95	Chaos	24.95
Adventure, The	114.95	Chessmaster 2100	31.95
Adventures Thru Time	30.95	Chronoquest	25.95
After Burner	30.95	Clue	24.95
Albion Ranger	28.95	Codename: Iceman	37.95
All Dogs Go To Heaven	30.95	Colony's Bequest	37.95
Altered Beast	30.95	Comic Art Disks (each)	20.95
Amiga	87.95	Comic Art Disks (each)	20.95
Aquanaut	25.95	Conquest of Camelot	37.95
Archipelagos	23.95	Cribbage King/Gin King	37.95
Audio Master II	62.95	Cross Dos	18.95
Aunt Arctic Adven.	24.95	Curse of the Azure Bonds	26.95
Aztec C Developer V5.0	177.95	Cycles	29.95
Aztec C Professional V5.0	119.95	Day of the Viper	24.95
B.A.D.	29.95	Deathbringer	25.95
B.A.T.	31.95	Defender of the Crown	31.95
Balance of Power 1990	30.95	Deluxe Music Constr 2.0	61.95
Battlstry	21.95	Deluxe Paint II	94.95
Bar Games	28.95	Deluxe PhotoLab	94.95
Bars and Pipes	169.95	Deluxe Print II	51.95
Barbarian II	24.95	Deluxe Productions	128.95
Bards Tale II	38.95	Deluxe Video III	94.95
Batman	28.95	Designasaurus	30.95
Battle Chess	29.95	DigitalPaint 3.0	64.95
Battle Hawks 1942	31.95	Digiview Gold	124.95
Battle Squadron	24.95	Dinosaur Discovery Kit	25.95
Battles of Napoleon	31.95	Dragon Master	28.95
BattleTech: The Cr Hk Inc.	30.95	Distant Sun	41.95
Baud Bandit	30.95	Dos 2 Dos	30.95
Bermuda Project	24.95	Double Dragon II	24.95
Beyond Dark Castle	22.95	Double Dribble	28.95
Blade of Steel Hockey	28.95	Dragon Force	31.95
Block Out	24.95	Dragon's Lair	33.95
Blood Money	25.95	Dragon's Lair II	43.95
Blue Angels	28.95	Dragons of Flame	25.95
Broadcast Tiller	167.95	D.U.D.E.	29.95
Bubble Bobble	22.95	Dungeon Master	24.95
Buffalo Bills Rodeo Game	24.95	Dungeon Quest	31.95
Can Do	84.95	Earl Weaver Baseball	31.95
Carmen SanDiego/Europe	30.95	Comm or MLBPA	14.95
Carmen SanDiego/USA	30.95		
Elan Performer	35.95	King's Quest 1, 2, or 3	30.95
Empire	31.95	King's Quest 4	37.95
Excellence 1 Meg	158.95	Knight Force	28.95
F-16 Combat Pilot	31.95	Knight of Legend	30.95
F-19 Stealth Fighter	CALL	Kristal	31.95
F-40 Pursuit Sim.	28.95	Laser Squad	24.95
FA/18 Interceptor	31.95	Last Duel	24.95
Falcon	31.95	Leisure Suit Larry	25.95
Operation Counterstrike	16.95	Leisure Suit Larry II or III	37.95
Fantavision	37.95	Life and Death	31.95
Federation	31.95	Lights Camera Action	51.95
Fendish Freddy	30.95	List & Label	30.95
First Letters & Words	25.95	Logiworks	184.95
First Shapes	25.95	Lords of the Rising Sun	31.95
Flight Simulator II	30.95	Lords of War	24.95
Gauntlet II	30.95	Luxor	19.95
Gargish Khan	41.95	M2 Amiga	147.95
Grand Prix Circuit	27.95	M2 Amiga Debugger	77.95
Graphic Starter Kit	62.95	Magi Johnson 1 Meg	31.95
Gunslinger	34.95	Maniac Hunter - NY or SF	30.95
Hardball II	28.95	Manhunter 2	30.95
Heat Wave	28.95	Maniac Mansion	28.95
Heros Quest	37.95	Math Talk or Fractions	25.95
Hillfarr	31.95	Math Marauders	21.95
Hound of Shadow	25.95	Maya Beacon Typing	31.95
Hoyle's Book of Games	21.95	Maxiplex 1	147.95
If It Moves Shoot It!	19.95	Micro Fiche Filer Plus	114.95
Ikari Warriors	24.95	Microleague Wrestling	24.95
Indiana Jones-Action Game	25.95	Might Rec Studio V1.1	39.95
Indiana Jones-Graphic Adv	30.95	Might and Magic II	37.95
Infestation	24.95	Modeler 3D	62.95
IntroCad	46.95	Monopoly	24.95
Invasion +	174.95	Movie Better	169.95
Iron Lord	25.95	Musix	59.95
Island of Lost Hope	23.95	Neuromanor	28.95
It Came From The Desert	31.95	New York Warriors 1 Meg	30.95
Jack Nicklaus Golf	31.95	Night Force	28.95
Jeltons	30.95	Night Hunter	25.95
Joan of Arc	28.95	Nuclear War	30.95
Kampfgruppe	37.95	Omniplay Baseball 5 on 5	30.95
Karaoke Headlines 1 or 2	44.95	Omniplay Horse Racing	30.95
Keyball Control Seq L3	21.95		
Kid Talk	25.95		
		On Line Platinum	58.95
		Operation Wolf	22.95
		Page Renderer 3-D	94.95
		Page Setter 2	74.95
		Page Stream	119.95
		Pagefliper Plus/FX	87.95
		Panzer Strike	29.95
		Pen Pal	84.95
		Persian Gulf Inferno	24.95
		Phasar 4.0	54.95
		Photon Paint 2.0	87.95
		Pic Magic	57.95
		Planet of Lust	24.95
		Pocket Rockets	24.95
		Police Quest 1	30.95
		Police Quest 2	37.95
		Pool of Radiance	31.95
		Populous	32.95
		Power Windows 2.5	54.95
		Powerdrome	25.95
		Print Master Plus	24.95
		Pro Motion	51.95
		Pro Tennis Tour	25.95
		Pro Video Gold	167.95
		Pro Write 2.5	69.95
		Pro Fonts 1 or 2	21.95
		Professional Draw	112.95
		Professional Page	167.95
		Project D Backup	30.95
		Prospector Maps of Zor	24.95
		Puffy's Story	25.95
		Puzzle Storybook	25.95
		Quick Silver	41.95
		Obx	22.95
		Quarter Back	42.95
		Rambo III	22.95
		Rampage	24.95
		Raw Copy	34.95
		Remegade	22.95
		Rhythmic Notebook	25.95
		Rick Dangerous	21.95
		Rick Davis Soccer 1 Meg	30.95
		Rick	24.95
		Robocop	28.95
		Rocket Ranger	31.95
		Romance/Three Kingdoms	44.95
		Scene Generator	24.95
		Scrabble	24.95
		Scribble Platinum	87.95
		Service Accounting Mgr	239.95
		Sex Vixens-Outter Space	22.95
		Shadow of the Beast	31.95
		Shark Attack	24.95
		Shuttlecock Cafe	24.95
		Sim City	30.95
		Terrain Ed.	14.95
		State or Die	25.95
		Smooth Talker	25.95
		Space Ace	34.95
		Space Harrier	30.95
		Space Quest 1 or 2	30.95
		Space Quest 3	37.95
		Space Rogue	30.95
		Spell Bee	25.95
		Star Flight	31.95
		Star Trek: The Final Frontier	34.95
		Star Wars	38.95
		Strike Ace	30.95
		Strip Poker II	23.95
		Styx	21.95
		Stunt Truck	21.95
		Super Contra	28.95
		Super Star Basketball	CALL
		Superbase Personal	46.95
		Superbase Personal 2	87.95
		Superbase Pro 3.0	169.95
		Superbike Simulator	30.95
		Superman	87.95
		Swords of Aragon	25.95
		Swords of Twilight	31.95
		T.V. Show V2.0	64.95
		T.V. Sports Basketball	31.95
		T.V. Sports Football	31.95
		Targhan	24.95
		Tek Break 2.0	48.95
		Teenage Mutant Turtles	28.95
		Terror Pods	25.95
		Tetris	20.95
		Test Drive 2 - The Duel	29.95
		Cal Challenge	15.95
		European Challenge	15.95
		Muscle or Super Cars	15.95
		Their Finest Hour	37.95
		Thinker	57.95
		Third Courier	28.95
		Thunder Blade	20.95
		Times of Lore	24.95
		Trackers Quest	21.95
		Tunnels of Armageddon	24.95
		Turbo Out Run	31.95
		Turbo Silver 3.0 1 Meg	112.95
		TV Text	64.95
		TV Text Professional	99.95
		Typhoon of Steel	31.95
		Typhoon Thompson	30.95
		Ultima 4	38.95
		Ultima III	24.95
		Ultra Design	219.95
		Ultarad Plus	57.95
		Universe 3	31.95
		Vette	30.95
		Video Effects 3-D	113.95
		Video Tiler V1.5	92.95
		VideoScope 3D	122.95
		Viva-Amiga	122.95
		Voice Recognition	109.95
		Vortex	24.95
		War in Middle Earth	30.95
		War of the Lance	25.95
		Wayne Gretzky Hockey	30.95
		Weird Dreams	24.95
		Wild Walker	25.95
		Wings of Fury	24.95
		Worlds of Warcraft	167.95
		World Atlas	35.95
		World Class Leader Board	28.95
		Xanphobe	25.95
		Zak McKracken	28.95
		Zork Zero	38.95

MASTER 3A
Disk Drive **\$121**
FREE DELIVERY
to the 48 Contiguous States

IVS Trumpcard Hard Drive Packages for A2000 Series

Seagate	
ST-125N 20 MEG	419 DEL
ST-138N 30 MEG	449 DEL
ST-157N-1 49 MEG-28ms	509 DEL
ST-177N 60 MEG NEW!	619 DEL
ST-277N-1 60 MEG	589 DEL
ST-296N 80 MEG	619 DEL

Quantum Pro Drive	
40 MEG SCSI Pro Drive	529 DEL
80 MEG SCSI Pro Drive	769 DEL
100 MEG SCSI Pro Drive	839 DEL

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

Hard Drive Cards (A-2000)

Seagate	
ST-125N 20 MEG	439 DEL
ST-138N 30 MEG	469 DEL
ST-157N-1 49 MEG - 28 ms	529 DEL
ST-177N 60 MEG NEW!	639 DEL

Quantum Pro Drive	
40 MEG SCSI Pro Drive	549 DEL
80 MEG SCSI Pro Drive	789 DEL
100 MEG SCSI Pro Drive	859 DEL

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

SUPRA MEMORY

Supra Ram 500	79 Del
Supra Ram 2000-2 MB	289 Del
Supra Ram 2000-4 MB	449 Del
Supra Ram 2000-6 MB	609 Del
Supra Ram 2000-8 MB	769 Del
Includes FREE DELIVERY	
in the Contiguous 48 States	

CALL FOR ALL YOUR
AMIGA™
NEEDS

Trumpcard 500 Hard Drive Packages for Amiga 500

Seagate	
ST-125N 20 Mb	489 Delivered
ST-138N 30 Mb	519 Delivered
ST-157N-1 49 Mb -28ms	579 Delivered
ST-177N-60 Mb NEW	689 Delivered

Quantum Pro Drive	
40 MEG SCSI Pro Drive	599 DELIVERED
80 MEG SCSI Pro Drive	839 DELIVERED
100 MEG SCSI Pro Drive	909 DELIVERED

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

Trumpcard 500 Ram Expander available - 512k • 1 MEG • 2 MEG • 4 MEG

PRINTERS

PRICES SLASHED **star** MICRO

NX1000 Multifont 2	NX1000 Rainbow
\$158	\$205
Star XB 2410	415

Panasonic

KX-P1124	\$279
Panasonic 1180	179
Panasonic 1191	229

Quantum Pro Drives

40 MEG SCSI Pro Drive	369
80 MEG SCSI Pro Drive	599
100 MEG SCSI Pro Drive	679

XETEC Fast Card Hard Drive Packages for Amiga 2000

Seagate	
ST-125N 20 MEG	399 Del
ST-138N 30 MEG	429 Del
ST-157N-1 49 MEG-28ms	489 Del
ST-177N 60 MEG NEW!	599 Del
ST-277N-1 60 MEG	569 Del
ST-296N 80 MEG	599 Del

Quantum Pro Drive	
40 MEG SCSI Pro Drive	509 DEL
80 MEG SCSI Pro Drive	749 DEL
100 MEG SCSI Pro Drive	829 DEL

Card features Xetec's DMAx hard, autoboot ROM, auto-config capability, 25 pin SCSI conn., disk, utility manual.

FREE DELIVERY IN THE CONTIGUOUS 48 STATES

XETEC Fast Card System Hard Drive Packages for Amiga 500

Seagate	
ST-125N 20 MEG	629 Del
ST-138N 30 MEG	659 Del
ST-157N-1 49 MEG-28ms	709 Del
ST-177N 60 MEG NEW!	829 Del
ST-277N-1 60 MEG	799 Del
ST-296N 80 MEG	829 Del

Quantum Pro Drive	
40 MEG SCSI Pro Drive	739 DEL
80 MEG SCSI Pro Drive	979 DEL
100 MEG SCSI Pro Drive	1049 DEL

System includes adapter 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

Seagate SUPER SALE

ST-125N 20 MEG - SCSI	289
ST-138N 30 MEG - SCSI	299
ST-157N 49 MEG - SCSI	329
ST-157N-1 49 MEG - 28 ms	349
ST-177N 60 MEG - SCSI	459
ST-225N 20 MEG - SCSI	255
ST-251N 40 MEG - SCSI	375
ST-277N-1 60 MEG - SCSI	429
ST-296N 80 MEG - SCSI	459
ST-1096N 80 MEG - 24ms	499

VIDEO PACKAGE

PANASONIC 1410 CAMERA
16MM LENS WITH
VARIABLE IRIS
COPYSTAND WITH LIGHTS
DIGIVIEW GOLD 4.0

\$419 DELIVERED!

Disk-Based Fonts

```
'Program SelectFont
'Provides use for Amiga disk based fonts from Amiga Basic

DEFLNG a-z
LIBRARY "diskfont.library"
LIBRARY "graphics.library"
DECLARE FUNCTION OpenDiskFont LIBRARY
DECLARE FUNCTION AskSoftStyle LIBRARY

'The above commands must be placed in the main body of your program

TestSection:
BREAK ON
ON BREAK GOSUB Housekeeping
READ t1$,t2$
FOR i=0 TO 6 'look at 7 fonts
  READ font$,height%
  CALL FontSelect(font$,height%,style%)
  FOR style%=0 TO 4 STEP 2 'look at 3 styles each
    CALL FontSelect(" ",0,style%)
    IF style%=0 THEN
      LOCATE 1,1:PRINT "This is the";height%;"point ";font%;" font"
      PRINT "Click left mouse button for the next font"
      PRINT t1$:PRINT t2$
    ELSEIF style%=2 THEN
      a$="YOU ARE LOOKING AT BOLD STYLE"
      PRINT
      CALL text(WINDOW(8),SADD(a$),LEN(a$)):PRINT
    ELSEIF style%=4 THEN
      a$="THIS IS ITALICS STYLE"
      PRINT
      CALL text(WINDOW(8),SADD(a$),LEN(a$)):PRINT
    END IF
  NEXT style%
NEXT i

WaitForMouse:
IF NOT MOUSE(0) THEN WaitForMouse
CLS
'include the following CALL statement when using workbench 1.2
'as it closes fonts and frees memory
CALL CloseFont(WINDOW(8),fontptr)
NEXT i

Housekeeping:
CALL FontSelect("topaz",8,0) 'return to default system font
LIBRARY CLOSE
END

DATA ABCDEFGHIJKLMNOPQRSTUVWXYZ0123456789!@#$%
DATA abcdefghijklmnopqrstuvwxyz`*()=+\\/?<[
DATA topaz,9,ruby,12,diamond,12,opal,11
DATA emerald,20,garnet,16,sapphire,19
REM End Of TestSection

SUB FontSelect(font$,height%,style%) STATIC
IF font$ <> "" THEN
  textAttr(0)=SADD(font$+"font"+CHR$(0))
  textAttr(1)=height%*65536%
  fontptr=OpenDiskFont(VARPTR(textAttr(0)))
  IF fontptr THEN SetFont WINDOW(8),fontptr
END IF
permitted%=AskSoftStyle(WINDOW(8))
CALL SetSoftStyle(WINDOW(8),style%,permitted%)
END SUB
```

Opening and Closing Libraries

A few additional statements are needed to prepare for the CALL to FontSelect and to clean up afterward. In Program 1, the preparatory statements are grouped together at the beginning, immediately after the first two REM statements.

The DEFLNG statement causes all simple variables to default to the long integer type. (Note that this declaration is overridden by the short-integer type specifier attached to

height% and style%.)

The LIBRARY and DECLARE FUNCTION statements actually give you access to library routines. These statements should appear in the initialization section of the program, before the first CALL to the FontSelect subprogram.

When the program is about to terminate, you should take some additional steps to close the fonts and the libraries. The CALL to the CloseFont function closes any fonts that might

have been opened previously.

The final CALL to FontSelect resets the font to the system font, Topaz. While not absolutely necessary, it's considered good manners for programs that change the computer environment to restore the original environment as closely as possible before terminating.

The LIBRARY CLOSE statement closes libraries that were previously opened. If you omit these final housekeeping chores, the computer may not crash, but the libraries will remain open, wastefully occupying memory which would otherwise be freed for other tasks.

The program module named TestSection uses another system routine named *text* when printing words in boldface and italic styles. This method prevents the characters in those words from overlapping, as they would if you printed the words with the PRINT statement. ▲

Have a question?

Write to
Readers' Feedback
Amiga Resource
P.O. Box 5406
Greensboro, NC 27403.

BUCKS FOR BYTES!

Amiga Resource is looking to buy utilities, games, applications, and tutorials. If you've written a program you think other readers might enjoy or find useful, send it, on disk, to

Submissions Reviewer
Amiga Resource
P.O. Box 5406
Greensboro, NC 27403

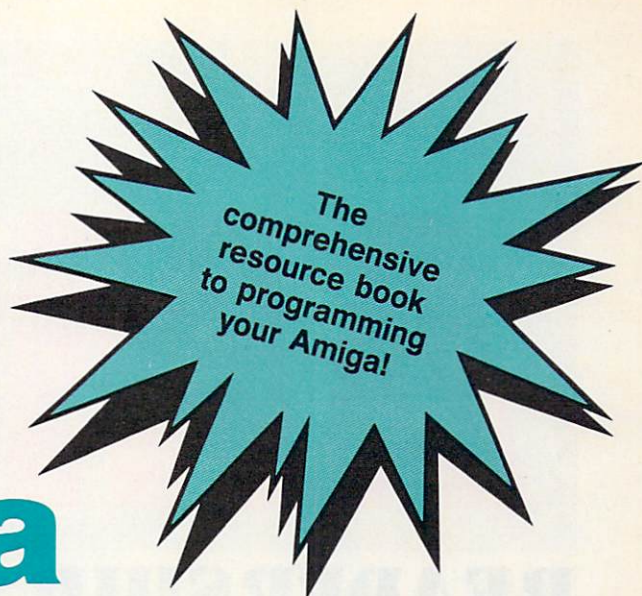
Please enclose an SASE if you wish to have your materials returned.

Articles are reviewed within four weeks of submission.

NEW RELEASE

COMPUTE!'s
Amiga Resource Announces

Mapping the Amiga



By the Associate Editors of *Amiga Resource*

Rhett Anderson and Randy Thompson

Written by the editors of *Amiga Resource*, *Mapping the Amiga* brings together the most vital information for programmers. This comprehensive reference guide includes a list of every hardware register, a discussion of libraries, and alphabetical lists of the system functions and system structures with C, machine language, and Modula-2 syntax. Sample programs show you how to use such things as the Blitter and Copper. 416 pages. **\$22.95**

Order your copy today.

Just complete the coupon below and mail it with your payment to:

Mapping the Amiga
P.O. Box 5188
Greensboro, NC 27403

▼ Excerpt from Chapter 1, Library Functions

Delay	
Description:	delays a process for a specified amount of time
Library:	dos.library
Offset:	-\$00C6 (-198)
Modula-2 Module:	DOSProcess
Syntax:	Delay(ticks)
C:	void Delay(long)
Machine Language:	Delay(d1)
Modula-2:	Delay(ticks: LONGINT)
Arguments:	ticks = number of ticks to wait (50 ticks per second)
Result:	none
DeleteExtIO	
Description:	returns memory allocated by CreateExtIO
Library:	amiga.lib (linked library)
Modula-2 Module:	IOUtils
Syntax:	DeleteExtIO(ioRequest, size)
C:	void DeleteExtIO(struct IORequest *, long)
Machine Language:	move.l #size, (sp) pea ioRequest jsr -DeleteExtIO addq.l #4, sp
Modula-2:	DeleteExtIO(ioReq: ADDRESS; size: CARDINAL)
Arguments:	ioRequest = IORequest block to delete size = size of IORequest block in bytes
Result:	none
DeleteFile	
Description:	deletes a file or directory
Library:	dos.library
Offset:	-\$0048 (-72)
Modula-2 Module:	DOS
Syntax:	success = DeleteFile(name)
C:	long DeleteFile(char *)
Machine Language:	d0 = DeleteFile(d1)
Modula-2:	DeleteFile(name: STRPTR): BOOLEAN
Arguments:	name = NULL terminated string that specifies the file to delete
Result:	TRUE if successful; FALSE if unsuccessful

Yes!

Please send me _____ copies of the brand new *Mapping the Amiga* from the editors of *Amiga Resource*. I've enclosed \$22.95 plus \$2.00 shipping and handling for each book and *sales tax where required.

_____ Subtotal
_____ *Sales Tax (Residents of NC, NY, and PA add appropriate sales tax for your area)
_____ Shipping and handling (\$2 U.S. and Canada, \$5 airmail per book)
_____ Total Enclosed
_____ Check or money order _____ MasterCard _____ VISA

Signature _____
(Required)
Acct. No. _____ Exp. Date _____
Name _____
Street Address _____
(No P.O. Boxes please)
City _____ State _____ ZIP _____

All books ship via UPS.

0490A2

This offer expires June 30, 1990. All orders must be paid in U.S. funds drawn on a U.S. bank. Orders will be shipped UPS Ground Service. Please allow 4-6 weeks for delivery.

AMIGA RESOURCE

READERSHIP SURVEY RESULTS

We'd like to thank the hundreds of readers who responded to the readership survey published in the February 1990 issue. We'll use this information as we plan our future issues. Here are the results. We think you'll find a few of the answers surprising.

What computer(s) do you own or use?

Amiga 500	54.1%
Amiga 2000	30.2%
Amiga 1000	20.0%
Amiga 2500	0.5%

Other computers included Atari 8-bits and STs, TI-99s, Kaypros, and DEC's. The leaders among the non-Amigas were

Commodore 64	9.8%
PC Clones	5.9%
Commodore 128	3.9%

Which peripherals do you own or use with your computer?

Second floppy drive	81.0%
Dot-matrix printer	73.7%
Modem	52.7%
Color printer	30.2%
Hard drive	29.8%
Video digitizer	16.1%

Audio digitizers, MIDI devices, and laser printers lagged far behind.

Which language do you prefer for programming?

I don't program my Amiga	44.4%
BASIC	33.7%
C	17.6%
Machine language	4.9%

Other languages mentioned included Modula-2, COMAL, Forth, Pascal, and ARexx.

Which version of AmigaDOS do you use most often?

1.3	75.1%
1.2	19.5%
Don't know	4.9%

Versions 1.1 and 1.4 each received one vote.

Which environment do you use?

Both Workbench and CLI	77.1%
Workbench	15.6%
CLI	5.4%
Don't know	3.4%

Which parts of the magazine do you like best?

Features, Departments, and On Disk were the most popular selections.

Which columns do you read regularly?

As is the case with all of our publications, "Readers' Feedback" is by far the most read column (the favorite of 78.5% of the respondents). Other popular columns include "Trends," "Taking Sides," and "CLI Clips." There seems to be interest in all of the columns (the least read column, "Programmer's Page," garnered the interest of a respectable 37% of the respondents).

Please rate *Amiga Resource* on a scale of 1 to 10.

Quality of writing and editing	8.37
Quality of disk	7.94
General news and product info	7.58
Graphic presentation	7.42
Technical information	7.17

The overall grade *Resource* earned was 8.10.

Do you use programs on the disk?

Yes	55.1%
No	39.0%

What types of programs would you like to see in upcoming issues?

We received many suggestions that we'll consider. The most popular requests were for utilities, games, graphics programs, and productivity programs.

What other Amiga publications do you read regularly?

You responded with the names of 37 magazines, including a few we've never seen. *AmigaWorld* is number 1, with 74.6%, followed by *Amazing*, at 31.2%; *Info*, at 29.8%; *Amiga Plus*, at 25.4%; and *AmigoTimes*, at 18.5%.

Additional comments

The number 1 response was "go monthly."

ESTABLISHED
1967

MONTGOMERY GRANT

COMPUTE
AMIGA 6/80

OUTSIDE USA & CANADA CALL
(718) 692-0790

FOR CUSTOMER SERVICE
Call: Mon-Wed, 9-5/Thurs, 9-6
Fri, 9-4:30 (718) 692-1148

Retail Outlet, Penn Station, Main Concourse
(Beneath Madison Square Garden) NYC, N.Y., 10001
Store Hours Mon-Thurs 9-7:30/Fri 9:00-6:00/Sat CLOSED
Sun 9:30AM-7PM

FOR ORDERS & INFORMATION IN USA & CANADA CALL TOLL FREE

1-800-759-6565

OR WRITE TO:
Montgomery Grant; Mail Order
Department P.O. Box 58,
Brooklyn N.Y., 11230

FAX NO. #7186923372
TELEX 422132 MGRANT

ORDER HOURS: Mon-Thurs, 9:00am-7:00pm / Fri, 9:00am-6:00pm / Sat CLOSED/Sun 9:30am-6:00pm (ET)
NO SURCHARGE FOR CREDIT CARD ORDERS / WE INVITE CORPORATE AND EDUCATIONAL CUSTOMERS
RUSH SERVICE AVAILABLE / TOLL-FREE TECHNICAL SUPPORT

<p>AMIGA 500</p> <ul style="list-style-type: none"> • Amiga 500 w/512K RAM • Built-in 3.5" Disk Drive • Mouse • System Software • Amiga Basic <p>PRICE JUST DROPPED CALL</p> <p>Amiga 500 w/1084 & 1010 Disk Drive.....CALL</p>	<p>AMIGA 500</p> <ul style="list-style-type: none"> • Amiga 500 w/512K RAM • Built-in 3.5" Disk Drive • Mouse • System Software • Amiga Basic <p>COMPLETE W/1084 RGB COLOR MONITOR PRICE JUST DROPPED CALL</p>	<p>AMIGA 2000</p> <ul style="list-style-type: none"> • 1MB Expandable to 9MB • Built-in 3.5" Disk Drive • Mouse • System Software • Amiga Basic <p>PRICE JUST DROPPED CALL</p>	<p>AMIGA 2000</p> <ul style="list-style-type: none"> • 1MB Expandable to 9MB • Built-in 3.5" Disk Drive • Mouse • System Software • Amiga Basic <p>COMPLETE W/1084 RGB COLOR MONITOR PRICE JUST DROPPED CALL</p>
<p>AMIGA 500</p> <p>RGB COLOR PACKAGE</p> <ul style="list-style-type: none"> • Amiga 500 w/512K RAM • Built-in 3.5" Disk Drive • Mouse • RGB Color Monitor • System Software • Amiga Basic <p>PRICE JUST DROPPED CALL</p>	<p>AMIGA 500</p> <p>2500/30</p> <ul style="list-style-type: none"> • 3MB RAM • 25MHz • Built-in 3.5" Disk Drive • 40MB Hard Drive • Mouse • Amiga Basic • System Software <p>PRICE JUST DROPPED CALL</p>	<p>AMIGA 2000</p> <p>RGB COLOR PACKAGE</p> <ul style="list-style-type: none"> • A-2000 Computer • 3.5" Disk Drive • RGB Color Monitor • Mouse • System Software <p>PRICE JUST DROPPED CALL</p>	<p>AMIGA 2000</p> <p>AMIGA 2000 HD</p> <ul style="list-style-type: none"> • 1MB RAM • Built-in 3.5" Disk Drive • 40MB Hard Drive • Mouse • Amiga Basic • System Software <p>PRICE JUST DROPPED CALL</p>

ADDED BONUS:- WE OFFER A FREE 6 MONTH PARTS & LABOR WARRANTY
ON ALL AMIGA COMPUTERS PURCHASED THRU MONTGOMERY GRANT.
MORE THAN TWICE WHAT THE MANUFACTURER OFFERS!

The Lowest Pricing - Lifetime Toll Free Technical Support -
Extended Warranty STANDARD - All You Expect From
MONTGOMERY GRANT

GREAT VALLEY PRODUCTS

IMPACT A-2000-2/0.....\$269 / IMPACT A-2000 8/0.....\$309
28MHz 68030 ACCELERATOR FOR A-2000.....\$769
GVP 3001 KIT WITH 68030, 4MB, 68882.....\$2379
3001 KIT WITH QUANTUM 40MB.....\$2779
3001 KIT WITH QUANTUM 80MB.....\$3079

A-2000 HARD CARDS

IMPACT A-2000 HC/45.....\$529
IMPACT A-2000 HC/400.....IN STOCK

ALL OTHER GVP PRODUCTS IN STOCK

AMIGA PERIPHERALS

COMMODORE 1084 RGB
COLOR MONITOR.....\$279
A-1010 DISK DRIVE.....\$129
A-2286D AT BRIDGEBOARD.....\$1079
A-2088-D BRIDGEBOARD.....\$489
A-501 EXPANSION MODULE.....\$149
A-590 HARD DRIVE.....\$519
A-2630 ACCELERATOR BOARDS.....IN STOCK
ALL OTHER AMIGA PERIPHERALS IN STOCK!

PRINTERS

EPSON	CITIZEN
LX-810.....\$199.95	GSX-140.....\$349.95
FX-850.....\$349.95	Color Option Kit.....CALL
LO-510.....\$339.95	PANASONIC
LO-1010.....\$449.95	KXP-1180.....\$174.95
HEWLETT	KXP-1191.....\$214.95
PACKARD	KXP-1124.....\$289.95
HP DESKJET.....\$599.95	KXP-1624.....\$429.95
HP DESKJET +.....\$689.95	KXP-1695.....\$419.95
HP LASERJET IIP	CANON
w/Toner.....\$999.95	BJ-130E.....\$549.95
HP PAINTJET.....\$949.95	OKIDATA
HP LASERJET	OKIMATE 20.....\$229.95
SERIES II w/Toner.....\$1579	w/Plug'n Print.....\$199.95
HP LASERJET III	172 TURBO.....\$239.95
w/Toner.....\$1699	182 TURBO.....\$239.95
STAR	OKIDATA 320.....\$369.95
NX-1000.....\$164.95	OKIDATA 321.....\$469.95
NX-1000.....\$164.95	OKIDATA 330.....\$469.95
RAINBOW.....CALL	OKIDATA 391.....\$639.95
NX-2410.....\$287.95	OKIDATA 393.....\$989.95
XB-2410.....\$439.95	OKIDATA 393.....\$989.95
XB-2415.....\$559.95	OKIDATA 393.....\$989.95
COLOR OPTION KIT	OKIDATA 393.....\$989.95
FOR XB PRINTERS.....CALL	Color.....\$1069.95
NEC MULTISYNC IID MONITOR.....\$649	

OTHER PERIPHERALS FOR AMIGA

ASDG DUAL SERIAL PORT BOARD.....\$249	GENLOCKS	MINITECS MIDI INTERFACE.....\$49	PROFESSIONAL PAGE 1.3.....\$189
A-MAX MAC Emulator for AMIGA.....\$119	MAGNI-4004/4004S.....\$1359	MINI MEG (2MB Expander for A-500, A-1000).....\$339	SHARP JX1000 A ColorScanner w/Software & Cables.....\$739
AMIGA A-TOSH Compatible Drive for A-MAX.....\$165	MAGNI 4004 or 4004S/ 4010.....\$1569	MICROBOTICS	SUPRA RAM 2000
A-MAX ROM.....\$129	MINIGEN.....\$188	Memory Upgrades for A-2000	2MB RAM.....\$269
CALIFORNIA ACCESS	NERIKI GENLOCK.....CALL	8up OK.....\$159	4MB RAM.....\$419
3.5" DISK DRIVE.....\$119	OMNIGEN.....CALL	8up OK with 2MB.....\$309	6MB RAM.....CALL
CANON SCANNER.....\$889	SUPER GEN.....\$619	8up OK with 4MB.....\$449	8MB RAM.....CALL
C.LTD AMIGA Hand Scanner.....\$399	SUPER GEN 2000S.....CALL	8up OK with 6MB.....CALL	SUPRA 2400 EXTERNAL.....\$115
FLICKER FIXER.....\$429	SUPERGEN SC.....CALL	Hardframe 2000.....\$239	SUPRA 2400zi
FRAME GRABBER.....\$469	MASTER 3-A 3.5"	PANASONIC WV-1410.....CALL	INTERNAL.....IN STOCK
LIVE! A-500.....\$339	DISK DRIVE.....\$115	VARIABLE 16mm	SUPRA RAM 500
LIVE! A-1000.....\$279	MASTER 5-A	LENS WITH IRIS.....CALL	512K Expander for A-500.....\$77
	5.25" Disk Drive.....\$189		Toolbox for A-500/A-1000.....\$239
			VIDEOTSCAN LOCK.....CALL

HARD DRIVES for AMIGA 500

SUPRA HARD DRIVES FOR A-500

20MB.....\$469
30MB.....\$569
40MB.....\$649
80MB.....\$839
A-1000 VERSIONS ADD \$80

TRUMP CARD 500 EXTERNAL CHASSIS ENABLES ANY SCSI HARD DRIVE TO
OPERATE WITH AMIGA 500 (EXPANDABLE TO 2MB).....\$229

TRUMPCARD PKGS. FOR A-500 HARD DRIVE PKGS. ARE PRICED
WITH TRUMP CARD 500 INCLUDED

Seagate

ST-138N (30MB).....\$519
ST-157N (49MB).....\$549

Quantum

40MB (19ms).....\$599
80MB (19ms).....\$839
105MB (19ms).....\$899

SAME PACKAGE AS ABOVE WITH XETEC FASTTRAK EXTERNAL
CHASSIS CAN BE EXPANDED TO 8MB RAM.....ADD \$110

HARD DRIVES for AMIGA 2000

SUPRA HARD DRIVES

40MB
(Quantum).....\$569
80MB
(Quantum).....\$849
105MB
(Quantum).....\$919

THESE HARD DRIVE PACKAGES INCLUDE YOUR
CHOICE OF XETEC OR TRUMPCARD HARD DRIVE
CONTROLLER CARDS

Seagate Quantum

ST-157N (49MB).....\$469
ST-277N (60MB).....\$549
ST-296N (80MB).....\$579

40MB (19ms).....\$519
80MB (19ms).....\$759
105MB (19ms).....\$799



Certified check, bank check, money orders, approved P.O.'s, Visa, Mastercard, Diner's Club, Am-Ex, Optima, Cart Blanche, C.O.D.'s & wire transfers accepted. Please
call before submitting P.O.'s. No additional surcharge for credit card orders. Non-certified checks must wait 4-6 weeks for clearance. Prices and availability subject
to change without notice. Not responsible for typographical errors. Return of defective merchandise must have prior return authorization number, or returns will
not be accepted. Please add 5% shipping & handling (min. \$6). Orders over \$1200 are discounted to 8% shipping & handling. Orders over \$3000 are discounted to
2% (Canadian orders please call for shipping rates). APO/FPO orders please add 10% shipping & handling. All APO/FPO orders are shipped first class priority air.
All orders can be shipped Air Express-call for details. D.C.A. #600233. Amiga is a registered trademark of Commodore-Amiga Inc.



Get Your Amiga Programs Published and Make Money!

Amiga Resource's Author's Guide for Programmers

Every issue of *Amiga Resource* offers an optional disk packed with top-quality original software. This disk provides a unique opportunity for Amiga programmers to distribute their work, have their name printed in the magazine, and make money! It's a refreshing (and more profitable) alternative to releasing your programs through shareware or the public domain. If you'd like to see your programs published in our On Disk section, here are the details.

What You Do

Send us your program on disk (source code and executable file) along with a printed copy of the program's documentation. Don't worry about your grammar or writing style; we're more interested in your programming abilities than in your literary skills.

Programs can be written in any language—BASIC, C, machine language, Modula-2, Pascal—as long as the compiled object code can be run by readers who do not own a copy of the language in which the program was written. Because there are several quality BASIC compilers that create stand-alone programs from your BASIC listings, BASIC programs are perfectly acceptable. We also accept programs that require runtime libraries as long as those libraries can be placed on our disk without licensing fees.

Be sure to include a cover letter that explains in as few words as possible what your program does and what it requires, if anything, to be run. Also, include the date, your name, address, and daytime phone number. When you've put everything together, mail your program to

Amiga Submissions Reviewer
P.O. Box 5406
Greensboro, NC 27403

When you send us a program, it still belongs to you. We will not use or distribute your program in any way unless you give us written permission to do so. We respect the rights of our authors and are careful to protect them.

What Happens Next

Approximately every two weeks we sit down and evaluate all of the programs that have come in. We rate programs by their usefulness (if it's a utility or productivity program), entertainment value (if it's a game), features, appeal, professionalism, programming difficulty, and so on. Then we decide whether the program suits our needs and our standards.

If we accept your program, we'll send you a contract stating how much we'll pay for it. Payments typically range from \$400 for short utilities and interesting programming examples to \$2,000 for full-blown games or applications, but we'll exceed this range for special cases. If you agree with the terms, simply sign and return the contract. We encourage authors to call us and

ask about the contract if they have any questions or comments.

Rejected programs are returned to authors who provide a self-addressed, stamped envelope (SASE). All authors of rejected programs, regardless of whether they provide an SASE, receive some form of rejection notice.

Once we receive a signed contract, we'll cut you a check and mail it to your address. Then, in a few months, your program (along with your name) will appear in the magazine and on our disk.

It Must Be Original

Submitted programs must be your original work. We do not accept shareware, public domain software, or any other program that has been previously distributed. In other words, if your program can be purchased elsewhere, or if it can be downloaded from a bulletin board or telecommunications service, we can't accept it.

We'll consider upgraded versions of shareware or public domain programs as long as they've been significantly enhanced. You must send us a copy of both the old and the new versions so we can determine whether the program has been improved enough to warrant special treatment.

When you sell us a program, you sell us exclusive rights to distribute that program. That means you cannot redistribute it through shareware or the public domain, nor can you offer it to any other publication or software company. (To be fair to our readers, we don't sell programs that can be downloaded elsewhere for free.)

Hints and Tips

Above all, we're looking for quality work, especially if it offers something new and unique. In fact, how much we pay for a program is determined in part by its originality.

Generally, we prefer complete, ready-to-run utilities, games, and application programs over small hacks and programming examples. We also like spectacular sound and graphics demos, especially if they're accompanied by an explanation as to how the program's effects were created.

If your program uses or requires certain files, such as an IFF picture file or a special data file, provide those files on your disk. And, if you can, include a short demonstration program that shows off your program's capabilities.

Be sure your program is guru-free. Here are a couple things that you should check for: Does the program return all of the memory that it allocates? Does it trash low memory? To determine the latter, you should run your program using the Software Distillery's public domain program *MemWatch*. (It's amazing how easy it is to destroy the Amiga's low memory with one uninitialized pointer variable.)

Most importantly, don't hesitate. You'll never know if your program has what it takes unless you send it in.

AMIGA RESOURCE

DevWare now offers you the **Best** selection of Public Domain programs for every Amiga application



Public Domain

By
DevWare

Only
\$5.95
each

We have been the Official Public Domain library of Amiga World, we are the official library of Antic Amiga Plus, and now we are also available through Computer! Amiga Resource. Find out why these magazines choose us! Unlike our competitors, each of our disk is typically filled with 90% of only the best programs available. Check it out, byte per byte - we are the least expensive! The first two letters on each disk indicate the orientation of the disk; DD# Intermediate to advanced - often contains source, WB# general interest - most programs can be run from the workbench, and FD# games and entertainment. Order our disk based catalog and receive a coupon for a **FREE** volume on your next purchase.

FD5: Tactical Games - BattleForce(3.0): A game that simulates combat between two or more giant, robot-like machines. Simple words can't begin to give you the feel of piloting a 30 - 40 foot tall, fire breathing, earth shaking colossus that obeys your every whim. BullRun - a Civil War battle game, Metro - you play the role of a city planner. Build wisely and your system will be a success, but poor planning will lead to disaster and financial ruin. Very good Amiga version of Kingdom, Golden Empire, Etc. Very very habit forming.

FD6: GAMES! - This disk is chocked full of games including: Checkers, Clue, Gold - A new slide the pieces puzzle, Jeopard - An enhanced version of Risk, RushHour - Surprisingly addicting, and SpaceWar - Best described as a cross between Combat-Tanks and asteroids.

FD7: PACMAN - This disk contains several pacman type games including: PacMan87, MazMan and Zonix, also Connect 4. A checker type game, CRobots - ("see-robots") is a game based on computer programming (excellent). Tiles - A very good solitaire game played with three layers of picture (difficult).

FD8: Games! - This disk is full of games, game hints and a few game editors (cheat programs) including: Antepunt - The best PD Ultima type game, GameEditors: Crystal Hammer, BardsTale, TV Sports Football, and FaeryTale, GameHints - These are: Zak McKracken, Shadow Gate, FaeryTale, Space Quest II, Dragon's Lair, and others.

FD9: Moria - a very well done port of an UNIX based character adventure game. This has great graphic controls, multiple spells, similar to Larn and Hack. Takes up the whole disk. Play time several days!

FD10: Hack - A dungeon adventure game. Considered a must have classic. This is the second release of this game on the Amiga. Originally a UNIX game. Great Amiga graphic interface. Fills the whole disk. Play time several weeks!

FD11: Las Vegas and Card Games - Las Vegas Craps - The best Las Vegas Craps simulation every written for any computer. Contains extensive HELP features, Thirty-One - The object of the game is to collect three cards of the same suit, with a point total of 31 points. This is done using rummy-style turns, Calc. Sea - Two interesting solitary card games, and VideoPoker - This game simulates the electronic poker machines found in Las Vegas casinos, but with an important added feature; it provides guidance on proper playing strategy.

FD12A, FD12B: Star Trek, The Game - This is by far the best Star Trek game ever written for any computer. It features complete movie control, good graphics, digitized sound effects and great gameplay. Counts as two disks 1Mb and two drives (or hd).

FD13: Board Games - contains multiplayer Monopoly, Dominoes, Paranoias, and others.

FD14: Dungeon Master Hints and Arcade Games - DM maps, spells, item location, and hints and more, also on this disk, Hball - an arknoid/break out type game, Trix - a Qix type clone, and others.

FD15: RayTracing #2 - Learn about raytracing the inexpensive way, with DKBTrace and DBW_uRAY (micro raytracer). This disk requires knowledge of the CLI. Source code included.

FD16: Strategy Games - Includes Diplomacy and Empros, both great conquer and rule multiplayer games similar in concept to Simcity and Populus. Also includes blackbox, hearts, and others.

FD17: Educational Games - This disk includes several games for the younger members including geography, math, science, and word games, also includes Wheel of Fortune.

FD18: Arcade Games - Includes Bally a qix type clone, Billard a pool game, Paccers, a pacman game with screen editor, also Eji, a lunar lander type clone, and others.

FD19: Arcade Games - Raiders a space raiders clone that can be 3d compatible, Franny a shark nightmarer, VollyBall a good implementation, and Jar impossible to describe but fun game.

FD20: Tactical Games - MechForce(3.65): A game that simulates combat between two or more giant, robot-like machines. Simple words can't begin to give you the feel of piloting a 30 - 40 foot tall, fire breathing, earth shaking colossus that obeys your every whim. This game is the full featured update to BattleForce(3.0) on FD5.

FD21: Arcade Games - This disk contains Trek - startrek shoot em up, Blood Money Demo - normally we don't include demos in this case we made an exception. This is the first level of this great arcade game, very playable demo. If you can beat this demo, buy the commercial version! Boomrang - two player shoot em up, Crystal - arcade adventure game, and push.

FD22: Arcade Games - This disk has MoonBase - The best lunar lander game we have seen in a long time, very challenging. Also BoingGame - a maze type donkey kong type game.

FD23: Text Adventure Games - This disk is loaded with three great game, Adventure - this is the version of the first game ever written on a computer! This version is greatly enhanced, THE true classic even the genera was named after this game, JackLand - In the words of the author "This is a text adventure, set in the COMPLETELY FICTIONAL Atrashi Computer Company, owned by the COMPLETELY FICTIONAL gack Trammeller and run by assorted members of this COMPLETELY FICTIONAL family. (P.S.: Did I mention that this story is COMPLETELY FICTIONAL?). Also World and a adventure graphing/mapping program.

WB1: GRAPHICS and PLOTTING - Several neat graphic and mathematical plotting routines are included; Plot - a three dimensional mathematical function plotter. Can plot any user defined function, all aspects controllable. Scenery - This generates fractal landscapes. The pictures it generates might remind you of somewhere you've been even though they are entirely random. Surf - BezSurf is a program for producing bezier surfaces of revolution. It produces awesome pictures of objects one could turn on a lathe. Can also map if image files onto any surface that it can draw. And others.

WB2: General Interest - contains, Galaxy a program that represents the collision of two galaxies, long an adventure/action game - similar in concept to rogue or hack, but with a much different

feel. Try it, you'll like it!, StarChart - a program that lets you display and identify about 600 stars, galaxies and nebulae visible in the Northern hemisphere.

WB3: General - This disk is crammed full of programs, including: FastDisk - optimizes the chaotic disk structure, Introducer - 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, and ARP 1.3 with Ash.

WB4: Telecommunication - This disk contains several excellent pd communication programs: Access (1.42) - A very nice ANSI term program based on Comm v1.34, but with the addition of transfer protocols, Comm (1.34) - Last version of one of the best public domain communications programs ever made on the Amiga, Handshake (2.12a) - Handshake is a Full featured VT52/100/102/220 terminal emulator, and JRCComm (0.94a) another great full featured com.

WB5: Fonts #1 - Several fonts (35) for the Amiga, also included are five PageStream fonts, and ShowFont - a font display program.

WB6: Fonts #2 - ShowFont(4.0) This program allows you to quickly and painlessly view all 256 characters in a typical font. AmigaDOS fonts (some up to 56pts)

WB7: Clip Art - This disk is loaded with black and white clip art. Art includes, trees, watches, tools, women, computers, etc.

WB8: File Management - Great disk. UtilMaster - From your workbench move, copy, delete, read, show, edit, arc, run any command, and much much more! Atree - similar to UtilMaster but hierarchical tree displayed. Also MachII - a must have mouse and keyboard enhancer, and Go - an ancient chinese game.

WB9: Icons - Truly a multitude of various types and kinds. Also includes IconMaster, IconLab, and others great utilities to help generate icons.

WB10: Virus Killers - The latest and best VirusX(4.0), Kv(2.1), and ZeroVirus(1.3).

WB11: Business - Clerk(4.0), finally a full featured business accounting PD program for the small to medium company. Includes receivables, payables, and of month and much much more. This version comes with the full user doc!

WB12: Disk Utilities - This great disk is loaded with wonderful utilities for everything including making disk labels, disk cataloging, disk optimizing, disk and file recovery archive and organizing, and all sorts of file manipulation. A real must have!

WB13: Printer Drivers and Generator - over 70 different drivers, and if these don't do it, PrtDrvGen an easy to use program to make your own.

WB14: Video and Anim Utilities - on this disk are several utilities to manipulate anims including cutting, pasting, and combining and more. For the video enthusiast we have included multiple slates, video titling and other useful utilities. Also on this disk is a full featured video cataloging program.

WB15: Business - This disk contains a spreadsheet, a database, a project/time management program and financial analysis (stocks) utilities.

WB16: Business - This disk contains an inventory manager, a loan analysis program, a great calendar/scheduler, a rolodex program, and pennywise a good "Cash Book" accounting program for home or office.

WB17: General Utilities - Includes several interesting programs, DiskX - Great disk sector editor, Snap - Cut and paste text between different windows, Clean - defragment memory, also on this disk - calendar generator, diet program, workbench scrolling text, scale converter, and many more.

WB18: Word/Text Processors - This disk contains the best editors that we could find. Includes, WordWright(v6.2) a full featured word processor with mail merge and outlining capacity, Dme(v1.35) a great programmers editor with strong macro features, and TextED(v2.8) an enhanced Emacs type editor.

WB19: Artificial Intelligence - This disk will be of interest to old hands and new in AI both programming and concepts, contains Eliza - an AI personal psychologist, a true classic, Critters! - a bug gone smart AI experiment, and lots of articles on the subject. This disk submitted directly to us by Arthur T. Murray.

DD4: ARP and DiskSalv - On this disk you will find the complete ARPRelease3.0 This is the official AmigaDOS Resource Project (ARP) release 1.3. ARP makes many improvements to AmigaDOS and makes your system easier to use from the CLI (see also dd45), and DiskSalv - 3 - By far the best disk and file recovery program available. And others.

DD45: AREXX PROGRAMS - This disk contains several useful arexx programs and examples including, AllZoo, EMake McC(2.0), SpeechToy, StarTrek, TxEd-SpeechToy, TxEdref, Txref

Txref2, and the complete RextxArpLib2.3. Also included, SoundUtil - C source code routines for using the audio device, by Robert Peck, IconMaster - great icon generating program, PopCL14 - The latest of a must have utility, ArpUserDocs3.1 - Finally, the documentation for the 3.1 release of Arp which replaces most 1.3 AmigaDOS commands (see dd44).

DD46: JazzyWorkBench - Several well done utilities to jazz up and improve your Amiga Workbench environment made for those of you who hate CLI. Includes, JazzBench, MyMenu, SimGen, Tapestry.

DD47: Pascal - This disk contains everything needed to program in pascal. Includes, A68k (1.2) 68000 assembler, Blink linking software and PCQ (1.0) a modest Pascal sub-set compiler.

DD48: Programming Languages - Includes AmigaLisp a high-level programming language with extensive facilities for processing strings and lists, and XLISP(2.0) An experimental programming language combining some of the features of Common Lisp with an object-oriented extension capability.

DD49: C Compiler - contains zcc(1.0) fully K&R, zcc(1.0) front end, A68k(1.2) assembler, Blink linker.

DD50: AREXX #2 - a must have set of tutorials on AREXX and several useful examples and utilities for AREXX development.

DD52: Scientific - This disk contains several great programs and C source routines for the scientist and science student. Includes Elements - an incredibly well done periodic table program with source, Scientific plotting - over 600k of Lattice C source routines that can be included in your own programs, and FFT - fft C source.

DD53: Programming - This disk contains a complete forth implementation for the amiga. Also on this disk is DevKit - a collection of C and Arexx routines to aid in your software development.

DD54: Compression - This disk is loaded with ALL of the best file compression programs and aids for the Amiga. Many of the programs can be used by the new user. Includes Arc(2.3), Lharc(1.0), Lhwarp(1.03), Pkax(1.0), PowerPacker(2.3a), a must have by all, Zip(1.0), Warp(2.04), and Zoo(2.0). Also IFFcrunch an excellent compression for IFF files.



Anti-Virus

Now Only \$19.95

Four Stars, Info Sep 89
Four Checks, Compute!AR Oct89

Anyone with an Amiga can have virus or trojan horse infections and not know about it.. Anti-Virus from DevWare will stop them ALL Satisfaction guaranteed or your money back.

Anti-Virus(c) is not Public Domain

Please send me the following:
Enter disk id (Ex. DD17, FD5, WB3 ...)

<input type="checkbox"/> Payment Enclosed	_____	_____	_____
<input type="checkbox"/> Please charge my	_____	_____	_____
<input type="checkbox"/> Visa	_____	_____	_____
<input type="checkbox"/> Master charge	_____	_____	_____
Account #	_____	Exp	_____
Signature	_____	Total disks	x \$5.95 each \$
Name	_____	Disk based catalog (add \$2.50)	\$
Address	_____	Anti-Virus (add \$19.95)	\$
City	_____	CA residents add 6.5% sales tax	\$
ST	_____	Zip	_____
_____	_____	Total Due	\$

Following day shipping in most cases. Orders outside of North America add \$5.00 per disk for air mail delivery. Payment in US funds. A minimum of \$20.00 required on credit card orders.

DevWare, Inc., Po Box 215-C5, La Jolla, CA 92038
Orders 800 879-0759 Support 619 673-0759

Circle Reader Service Number 104

COS

Nothing is faster!



ALF 2

Amiga Loads Faster

Increased speed, safety, & efficiency on the Amiga.

- Amiga 500, 1000 and 2000 autoboot hard disk controller system with software.
- MFM, RLL or SCSI coding. Uses any IBM-compatible hard disk with ST 506 Bus.
- Needs very little RAM (30 K).
- Faster with FastFileSystem.
- Safer with CheckDrive, FrameBackup.
- Easy to install, even MS-DOS Partition.
- New: FileRunner <TM> the ALF2 based complete hard disk system is formatted and comes with the WB 1.3 installed. It also has a capacity up to 180 meg.
- Special: now autoboot with the A 2090 !!!

PRE'SPECT Technics Inc.
P.O.Box 670
Station H
Montreal, Quebec, H3G 2M6
Phone: <514> 954-1483 Fax: <514> 876-2869

Circle Reader Service Number 139

TRY BEFORE YOU BUY!

Best selling games,
utilities and classics,
plus new releases!

- 100's of titles
- Low prices
- Same day shipping
- FREE brochure

YES, WE ACCEPT:



RENT-A-DISC

Frederick Building #217
Huntington, WV 25701
(304) 529-3232

Circle Reader Service Number 140

COLOR RIBBONS & PAPER

RIBBONS: Red, Blue, Grn., Brwn., Purple, Yel.

Ribbons	Price Each	Black	Color	Heat Transfer
Brother M1109	4.95	5.95	7.00	
C. Itoh Prowriter Jr.	7.00	9.00		
Citizen 120D/180D	5.00	6.00	7.95	
Commodore MPS 801	4.50	5.25	5.75	
- MPS 802/1526	6.25	7.25		
- MPS 803	4.95	5.95	7.00	
- MPS 1000	3.95	4.95	6.75	
- MPS 1200/1250	5.00	6.00	7.95	
- 1525	6.50	8.00		
Epson MX80/LX800	3.75	4.25	6.75	
Okidata 82/92	1.75	2.25	4.50	
Okidata 182/192	6.50	7.50	6.00	
Panasonic K-XP 1080	6.75	7.75		
Seikosha SP 800/1000	5.25	6.50	7.95	
Star SG10	1.75	2.25	4.50	
Star NX10/NL10	5.00	6.00	7.95	
Star NX1000	4.50	5.50	6.75	
Star NX1000C - 4C		8.75		

T-SHIRT RIBBONS (Heat Transfer) - Red, Blue, Grn., Brwn., Purple, Yel., Blk. Call For Price & Availability.

COLOR PAPER

BRIGHT PACK-200 Sheets/50 each color: Red, Blue, Green, Yellow. 9 1/2 x 11 - \$11.90/pk.
PASTEL PACK-200 Sheets/50 each color: Pink, Yellow, Blue, Ivory. 9 1/2 x 11 - \$11.90/pk.

COLOR BANNER BAND PAPER - 45 ft./roll - \$9.95/ea.

For ribbons & paper not listed above, call for price & avail. Price & spec. subject to change w/o notice. Min. order \$25.00. Min. S&H \$3.50 min. Visa, MC, COD.

RAMCO COMPUTER SUPPLIES

P.O. Box 475, Manteno, IL 60950 U.S.A.
(US) 800-522-6922 • (Canada) 800-621-5444
815-468-8081

Circle Reader Service Number 187

CALLING ALL AMIGA PROGRAMMERS!

COMPUTE! Is Looking For More Than A Few Good Programs!

COMPUTE! is on the lookout for outstanding games, utilities, music, graphics, and applications programs that can be published for the Amiga! Best of all, we pay for the programs we publish.

So put your talents to work, and feel free to use any programming language you prefer. For more details on how to submit your work, write our submissions reviewer for a copy of COMPUTE!'s Author's Guide.

(And if your talent lies elsewhere, don't despair—we're also interested in purchasing outstanding examples of Amiga artwork and animation!)

Write to:

Amiga Submissions Reviewer
COMPUTE! Publications
P.O. Box 5406
Greensboro, NC 27403

WE STOCK CONNECTORS

D-SUBS

9-15-19-23-25-37

DINS

3-4-5-6-7-8-13-14

MINI DINS

3-4-5-6-7-8-9

Many other styles also in stock
Ready made and Custom cables
Switch boxes, Fans, Spray Chemicals
IC Sockets, Gender Changers, & more...

CALL OR WRITE FOR FULL CATALOG

BENETECH ELECTRONIC SUPPLY

P.O. BOX 400085

EULESS, TX 76040

TX 1-800/580-6860

US 1-800/866-6860

Circle Reader Service Number 135



The Best in Shareware &
Public Domain Software!

WE HAVE FRED FISH DISKS
THRU 320!

Order Fred Fish disks for \$3.99 each.
We have the entire Fred Fish Catalog
on disk for only \$2.99. Simply specify
the FRED FISH disk number as FF#.

Use this coupon and get a
discount of \$1 off per disk.

Paradise Software • 3111 S. Valley View
Blvd., #B105 • Las Vegas, NV 89102-8317 •
We accept VISA/MC • (702) 253-1677 Fax
Please include \$4 for Shipping/Handling

Circle Reader Service Number 131

Use the handy
Reader Service Card
in the back of the
magazine to receive
additional information
on our advertisers.



REPLACEMENT CHIPS, PARTS & UPGRADES



AMIGA UPGRADE #1 \$95.85—New 1 MEGABYTE "FATTER" Agnus (#8372) Hi-Res chip allows users more "chip" memory for use in GRAPHICS, MUSIC OR VIDEO. This "plug in" upgrade is an absolute must for present Amiga owners. With simple, step-by-step 10-min. instructions and CHIP EXTRACTOR.

AMIGA UPGRADE #2 A501/801. 512K RAM board/clock for A500. \$99.50/instructions.

AMIGA UPGRADE #3 NEW 1.3 KICKSTART ROM upgrade \$27.95/instructions.

AMIGA UPGRADE #4 68020/33—\$139.50; 68881/16—\$76.95; 68881/20—\$104.95; 68882/16—\$105.00; 256 × 4/100—\$10.50; and ALL MEMORIES.

— WE STOCK ALL AMIGA (AND COMMODORE) CHIPS @ SUPER LOW PRICES —

SEND FOR CATALOG OF EXCLUSIVE PRODUCTS

THE GRAPEVINE GROUP, INC.

35 CHARLOTTE DRIVE

WESLEY HILLS, NY 10977

(914) 354-4448

1-800-292-7445

Prices subject to change

FAX (914) 354-6696

Dealer pricing available

Circle Reader Service Number 116

BAKER'S DOZEN SPECIAL: FOR EVERY 12 FISH DISKS THAT YOU ORDER, GET ONE

ABSOLUTELY FREE!

YOUR CHOICE OF OVER 300 FISH DISKS AT THE ALREADY LOW PRICE OF ONLY \$1.99 EACH! CATALOG-ON-DISK, INCLUDING A GREAT GAME, SAMPLE OF OUR UNIQUE PUZZLE CONTESTS! WIN HUGE CASH PRIZES! ALL FOR ONLY \$3 OR FREE WITH YOUR FIRST DOZEN FISH DISKS! PLUS THOUSANDS MORE EASY, FUN, SELF-BOOTING OR ICON DRIVEN PROGRAMS: GAMES, ANIMATIONS, GRAPHICS, MUSIC, FONTS, DEMOS, UTILITIES, ETC! NEW ADDITIONS DAILY! GLADSTONE, 249 S. HWY 101 #567K, SOLANA BEACH, CA 92075 HI-PERFORMANCE, LO-COST SOFTWARE! WE GIVE YOU LOTS MORE FOR YOUR MONEY! (CA RESIDENTS: 6.5% SALES TAX. S & H INCLUDED. NO CDD'S FOREIGN: ADD \$3 PER DOZEN)

Circle Reader Service Number 117



AMIGA DIAGNOSTICIAN



• Reference Aid #7 •

Just released—Finds faulty chips on Amiga 500 computers via the proven successful COMMODORE DIAGNOSTICIAN method (over 15,000 sold). Also included are basic Amiga theory, chip functions (including new "enhanced chip set"), schematic, interface drawings, and a lot more. \$9.95 plus \$1.00 postage.

THE GRAPEVINE GROUP, INC.

35 CHARLOTTE DRIVE

WESLEY HILLS, NY 10977

(914) 354-4448

TOLL FREE 800-292-7445

FAX (914) 354-6696

Circle Reader Service Number 115

LaserUp!™

Software

PostScript™ Tools & Utilities

PrintScript™ Compatible

Quality Amiga software for your PostScript printer.

LaserUp! PrintL2 - B/W halftones and 4-color

process separations of any IFF image \$89.95

LaserUp! Utilities Vol. 1.2 NEW! - Set type from

any text editor - Now with Intuition interface \$49.95

NEW - LaserUp! Draw 1.0 - PostScript drawing/illustration, EPS files, vector screen fonts, auto-trace, MORE! \$124.95

LaserUp! Fonts Vol. 1 - 3 downloadable PS fonts. Now

with screen versions, AFM, & ProPage metrics \$49.95

LaserUp! Plot - Aegis Draw/Draw Plus to PostScript

plotter/file converter \$49.95

NEW - LaserUp! Draw 1.0 - PostScript drawing/illustration, EPS files, vector screen fonts, auto-trace, MORE! \$124.95

889 DeHaro St. / San Francisco / CA / 94107 / (415) 826-6193

Circle Reader Service Number 110



• IMPORTANT ANNOUNCEMENT •



The AMIGA 1000 EXPANSION BOARD is now available with the following features:

- Utilizes the new Fatter (Super) Agnus, 1.3/1.4 Kickstart ROM and the new "Super" Denise chip
- One meg of chip RAM "on board"
- Simple, solderless installation
- 100% compatibility with other products/software
- Upgrades your investment to latest model
- Complete "Info-Pak" available now
- Clock/battery back-up
- Sold in various configurations to fit everyone's needs



THE GRAPEVINE GROUP, INC.

35 Charlotte Drive

Wesley Hills, NY 10977

(914) 354-4448

FAX (914) 354-6696

1-800-292-7445

Circle Reader Service Number 114

AMIGA RESOURCE MARKETPLACE

Pictures in 4096 Colors

For: DTP, DTV, Artists or just plain FUN! IFF-HAM Pictures in full color - or B&W Pics for the Graphic Arts in all subjects from Ocean Sailing to Art Nudes these disks work in any Amiga - Each has an Easy-Viewer and they will work in all HAM paint programs. Send for our FREE Catalog today!

SPECIAL! Art Models \$35
(A Two Disk Set)
Disk Catalog \$10

The DigitalPub/257
Dept. R
1033 Peachtree St. NE - Atlanta, GA 30309

Circle Reader Service Number 118



Exciting New Game
of
Legal Affairs

Courtroom

- Act as Prosecutor or Defense Attorney
- Play against the Computer or Another Person
- Choose from Liberal or Conservative Judges
- Select Criminal Cases from the Court Docket
- Question Witnesses, Raise Objections
- Convince the Jury and Win the Case

only from...
FairBrother & SoeparMann
\$49.95 5054 S. 22nd Street
Arlington, Virginia 22206
(703) 820-1954

Shipping UPS ground. COD/UPS 2-day air, add \$3.

SOFTWARE CLOSEOUTS FOR AMIGA:

Final Assault, by EPYX \$ 9.50
Mindroll, by EPYX \$ 7.50
Crimson Crown, by Polarware \$ 9.50
Little Computer People, by Activision . \$12.50
Button & Badge Maker, by Intracorp . \$19.50
Bumper Sticker Maker, by Intracorp . \$19.50

INFOCOM SPECIALS ... YOUR CHOICE

Starcross, Sorcerer, Witness, Spell-
breaker, Suspended & Wishbringer .. \$ 9.50

FREE CATALOG UPON REQUEST!!

Many Other Types of Software Available...
IBM, C64/128, MAC, Apple, CP/M, Atari etc.

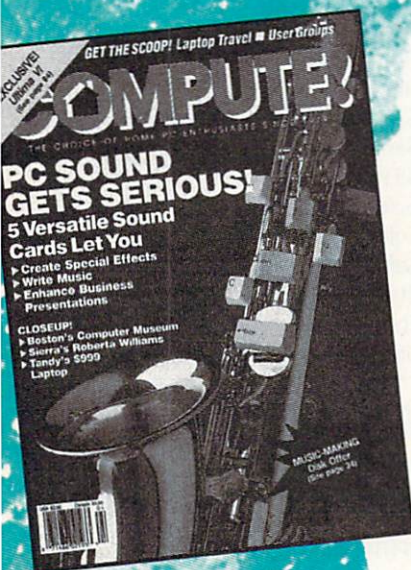
TO ORDER, SEND CHECK OR MONEY ORDER TO:

COMPSULT

P.O. BOX 3233, SAN LUIS OBISPO, CA 93403-3233
Include \$4.00 for Shipping & Handling. CA Residents Must
Include 6.25% Sales Tax. Questions?? Call 805-544-6616.

Circle Reader Service Number 103

THE #1 HOME COMPUTER MAGAZINE! COMPUTE! COVERS IT ALL!



When you're looking for the *complete* story on the state of home computing, turn to *COMPUTE!* magazine. Celebrating its second decade of publication, *COMPUTE!* has always spoken for and to the home computer user. Not to the high-powered business user, but to everyone who wants a computer in the home or who wants to get more out of the machine already there.

COMPUTE! is your one-stop resource to the latest in

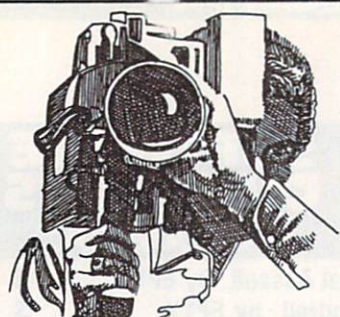
- Home computer entertainment
- Home computer learning
- Home computer productivity

In-depth and focused features, news on the home computer industry, product reviews, persuasive columns, thoughtful analysis—it's all here in the one magazine that no home computer user can afford to ignore.

Subscribe Today to *COMPUTE!*

Only \$9.97 for 12 issues—one full year! Call 1-800-727-6937

Or write: **COMPUTE!**
P.O. Box 3244
Harlan, IA 51593-0424



Desktop Video! videos

from the publishers of
Desktop Video! Newsletter

"Videos designed to show you how to set up your own low-cost desktop video system... produced by real people using desktop video in the real world."
- Video Marketing Letter

DTV #4 - Desktop Video & the Amiga. A hands-on guide to setting up your own desktop video system using the Amiga computer. Covers equipment selection & hookup, reviews and demonstrations of the best software, studio design, and lots of practical advice on getting the most for your money while avoiding costly mistakes. 120 minutes. VHS. \$30.00.

DTV #5 - Desktop Video for Profit. A 'guerilla' video that shows you how to earn thousands from your DTV productions. Includes what type of videos to produce, how to find clients, how to research a project, where to sell your videos, how much to charge, setting up a duplicating system, much more. 120 minutes. VHS. \$30.00.

Order both these videos and save \$10.00 plus receive 6 months of the Video Marketing Letter **FREE!!!**

Do You Have questions about Desktop Video? Call our FREE DTV technical Hotline for answers. 1-501-321-1429 weekdays 9-4 CST.

Call for more information and your free sample of the **Video Marketing Letter**. We offer a **money back guarantee**, and accept Visa, MC, personal checks, UPS COD. Next day Air available.

Group M Productions

100 Bridge St., #27
Hot Springs, AR, 71901
1-501-321-1845

Circle Reader Service Number 181

Hypertext

for AMIGA

"...stunning capabilities...simple to operate... superbly crafted..."

Gary Gehman, Amiga Sentry 6/89

"Will certainly whet a lot of HyperAppetites"

Neil Randall,
Amigaworld 1/90

"This is one program that I will use often. For \$80, it is a real steal."

Robert Klimaszewski,
Amazing V5.1



THINKER

Write, design, plan. Multimedia Idea Processor with HyperText!

\$80 Version 2
with ARexx

Poor Person Software
3721 Starr King Circle, Dept 4
Palo Alto, CA 94306
(415)-493-7234

Circle Reader Service Number 194

MAIL TO:

COMPUTE!'s Amiga Resource SUBSCRIBER SERVICE

P.O. Box 3253, Harlan, IA 51593-2433

Change of Address: Please advise as early as possible. Attach label with your old address and write in new address below.

New Subscriber: Fill in your name and address below. Use separate sheet for gift orders.

PLACE LABEL HERE

Renewal: Attach label.

____ One year (6 issues) \$9.97
____ With disk \$39.95

(Foreign subscribers please add \$6.00 per year for postage)

NAME _____

STREET _____

CITY/STATE/ZIP _____

____ Please bill me ____ Payment enclosed

For other subscription questions or problems, please write a note and send entire form to the above address. OR CALL TOLL-FREE:

1-(800) 727-6937

Advertisers Index

Reader Service Number/Advertiser	Page
197 AmiTech Computers	41
135 Benetech Electronics Supply	86
Brantford Educational Services	65
120 Briwall	10-11
119 California Freeware	47
121 Central Coast Software	8
103 Compsult	87
133 Comp-U-Save	2
132 ComputAbility	77
122 Computer Games +	15
158 Delphi Noetic Systems, Inc.	41
104 DevWare	83
118 The Digital Pub/257	87
149 Digital Dynamics	59
109 Elkon Enterprises	64
170 Entertainment-On-Line	59
FairBrother & SoeparMann	87
108 Free Spirit Software	IFC
134 Gemini Marketing, Inc.	27
117 Gladstone	86
114 The Grapevine Group	86
115 The Grapevine Group	86
116 The Grapevine Group	86
181 Group M Productions	88
106 InterComputing, Inc.	37
126 Kara Computer Graphics	49
110 Laser Up!	86
157 MJ Systems	13
191 Mad Scientist Software	61
125 MicroMiga	65
143 Migraph	39
Montgomery Grant	81
131 Paradise Software	86
194 Poor Person Software	88
139 Pre'spect Technics Inc.	84
127 Pro-Tronic Systems Ltd.	61
187 Ramco Computer Supplies	84
140 Rent-A-Disc	84
105 RIO/Datel Computers	IBC
142 Safe Harbor Software & Peripherals	13
141 SaxMan Systems	63
145 SIERRA	BC
189 Software Advantage Consulting Corp.	63
180 Software Excitement!	93
153 Software Support International	85
128 Star Games	1
123 The Sterling Connection	65
137 Utilities Unlimited of Oregon, Inc.	20
Amiga Programmers	84
COMPUTE!'s Amiga Resource	
Author's Guide	82
COMPUTE!'s Amiga Resource	
Back Issues and Disks	89
COMPUTE!'s Amiga Resource	
Disk	66
COMPUTE!'s Amiga Resource	
Readership Survey Results	80
COMPUTE! Books	79, 90
COMPUTE! Subscription	87
Reader Research Panel	16

BACK ISSUES AND DISKS

Note:

- OCTOBER 1989—NOW BIMONTHLY!**

IN THE MAGAZINE

ON DISK

APRIL 1990

IN THE MAGAZINE

ON DISK

SPRING 1989—PREMIERE ISSUE!

IN THE MAGAZINE

ON DISK

DECEMBER 1989

IN THE MAGAZINE

ON DISK

SUMMER 1989

IN THE MAGAZINE

SOLD OUT!

ON DISK

FALL 1989

IN THE MAGAZINE

SOLD OUT!

ON DISK

FEBRUARY 1990

IN THE MAGAZINE

ON DISK

Please clip or photocopy, and mail completed coupon and check to

Amiga Resource
Single-Copy Sales
P.O. Box 5188
Greensboro, NC 27403

Name: _____
Street: _____
City: _____
State/Province: _____ ZIP/Postal Code: _____
VISA/Mastercard #: _____
Signature: _____ Exp. Date _____

[illegible]

SUBTOTAL:

Sales Tax*:

Shipping:

TOTAL :

Do not send cash. Checks must be made in U.S. dollars drawn on a U.S. bank. VISA and Mastercard are accepted for orders totalling \$20 or more.

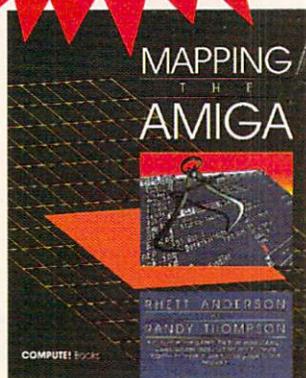
* New York, North Carolina, and Pennsylvania residents must add appropriate sales tax.

† Shipping and handling charges included in listed prices for U.S. and Canadian residents. Others add \$3 for surface mail, \$5 for air mail.

Allow 4-6 weeks for delivery

MAXIMIZE Your Amiga Power

**NEW
RELEASE!**
From the
Associate Editors
of Amiga Resource



Mapping the Amiga
Rhett Anderson and Randy Thompson
Assoc. Editors of *Amiga Resource*
\$22.95 416pp
Written by the editors of *Amiga Resource*, *Mapping the Amiga* brings together the most vital information for programmers. This comprehensive reference guide includes a list of every hardware register, a discussion of libraries, and alphabetical lists of the system functions and system structures with C, machine language, and Modula-2 syntax. Sample programs show you how to use such things as the Blitter and Copper.

AmigaDOS Reference Guide, Third Edition
Sheldon Leemon and Arlan Levitan
\$21.95 288 pp
This best-selling reference to AmigaDOS has been completely rewritten and revised to cover AmigaDOS version 1.3. An easy-to-understand tutorial and comprehensive reference guide, this book presents each AmigaDOS command and details its purpose, format, and parameter. Thoroughly illustrated with practical examples, the Third Edition takes the reader step-by-step through the intricacies of AmigaDOS. Perfect for both experienced Amiga users and those just starting out.

Amiga Machine Language Programming Guide
Daniel Wolf and Douglas Leavitt, Jr.
\$21.95 415pp
A complete introductory guide to the Amiga's native language, 68000 machine language. Topics include the CLI, function calling, intuition windows, floating-point math, and programming techniques such as macros, branches, and loops.

Advanced Amiga BASIC
Tom R. Halfhill and Charles Brannon
\$18.95 464pp
A comprehensive reference guide to applications programming: designing graphic applications, generating sound and music, using the built-in speech synthesizer, creating a user interface, programming peripherals, and advanced BASIC commands.

Amiga Desktop Video
Steven Anzovin
\$19.95 288pp
The only book that covers the fundamentals of art preparation on the Amiga. Step-by-step instructions for both beginning and advanced artists to create their own desktop videos. A thorough description of how video and computer graphics work together. Emphasizes basic technical information and production techniques. Eight pages of full-color illustrations and an up-to-date list of manufacturers and products.

Turn and Burn: The Authoritative Guide to Falcon
Howard Bornstein
\$12.95 256pp
Written in close consultation with the developers of *Falcon*, *Turn and Burn* is the guide to flying and mastering *Falcon*, the F-16 fighter simulation from Spectrum HoloByte. All of the important components of *Falcon* are included—takeoff, basic flight maneuvers, air combat maneuvers, weapon systems, electronic countermeasures, navigation, and strategy—plus special information known only to the developers. It covers each of the 12 *Falcon* missions, giving tips on navigation strategies, weapons deployment, and enemy tactics. The book contains a foreword by Gilman Louie, creator and designer of *Falcon*, and includes inside information, comments, and stories from real F-16 pilots.

**Programming
Video
Flying Falcon**

Order Today!

**To order these Amiga titles, complete the coupon below and mail it to
COMPUTE!'s Bookshelf, P.O. Box 5188, Greensboro, NC 27403.**

YES! Please send me the books checked below. I've enclosed \$2.00 shipping and handling for each book.

- ☐ Mapping the Amiga (1951) \$22.95
- ☐ Advanced Amiga BASIC (0459) \$18.95
- ☐ Amiga Desktop Video (1714) \$19.95
- ☐ AmigaDOS Reference Guide, Third Edition (1943) \$21.95
- ☐ Amiga Machine Language Programming Guide (1285) \$21.95
- ☐ Turn and Burn: The Authoritative Guide to *Falcon* (1978) \$12.95

- ☐ Subtotal
- ☐ Sales Tax (Residents of NC, NY, and PA add appropriate sales tax for your area)
- ☐ Shipping and handling (\$2 U.S. and Canada, \$5 foreign per book)
- ☐ Total Enclosed **All books ship via UPS**

☐ Check or money order ☐ MasterCard ☐ VISA

Signature _____ (Required)

Acct. No. _____ Exp. Date _____

Name _____

Street Address _____ (No P.O. Boxes please)

City _____ State _____ ZIP _____

This offer expires June 30, 1990. All orders must be paid in U.S. funds drawn on a U.S. bank. Orders will be shipped UPS Ground Service. Please allow 4-6 weeks for delivery.

MAIL TO: COMPUTE!'s Bookshelf
P.O. Box 5188
Greensboro, NC 27403

BEST OF THE BOARDS

Sheldon Leemon

IconMaster



If there is ever a contest for Worst Program on the Workbench Disk, I'd probably cast my ballot for IconEd (though Edit or Ed would be a close second).

This program is among the few that haven't been upgraded at all since Workbench 1.0. As an icon-manipulation tool, IconEd is better than nothing, but not much. It restricts the size of an icon's image to 80×42 pixels. It doesn't let you create or edit icons that use an alternate image for highlighting (a user-hostile kluge called *AltIcon* was introduced to remedy that problem). It won't let you load an icon's image from a standard IFF graphic file. The program doesn't even use a file requester to let you select the names of icon files to load or save. Worst of all, there is no easy way to specify the type of file or directory that the icon will represent. As IconEd's online instructions put it, "The icons that are now loaded represent tools. If you wish to edit another type of icon, you must load an icon of that type."

For most beginners (and quite a few Amiga veterans as well), they might just as well have said, "You pick'um heap big icon him type you want'um, him velly, velly good."

Because of IconEd's shortcomings, a lot of programmers have tried their hands at building a better icon editor. Among their efforts are shareware programs like *IconLab* and *IconMeister*, and commercial ones like *IconMagic* and *IconPaint*. Of all of these programs, however, the one that I like best is John Scheib's *IconMaster*.

IconMaster is the only program I've found that provides tools for editing both the icon's imagery and the nongraphic icon file information such as icon type, Tool-Types, and Default Tool (all of which usually have to be edited from the Workbench's Info screen). It even lets you edit the file attributes of nonicon files, including file notes and protection flags.

IconMaster corrects all of IconEd's problems. It uses Amiga niceties like keyboard equivalents and file requesters. It allows you to edit icons up to 314×98 pixels in size (about one-fourth of the normal Workbench screen). It lets you create an alternate image that will be shown when the icon is selected. It not only allows you to load an icon's image from an IFF picture file, it also allows you to save just the picture part of an existing icon as an IFF file. And, unlike IconEd, *IconMaster* provides a menu from which you may select the icon type.

The program makes it easy to either edit existing icons or create new ones from scratch. To create a new icon, you can start the program either by double-clicking on its icon or by typing its name from the CLI prompt. To edit an existing icon, you can start the program by clicking on its icon, holding down the Shift key, and double-clicking on the icon that you want to edit (or you can just start the program and load the icon with the Open menu item).

If you load an existing icon, the icon type is set to that of the icon you loaded. If you create a new icon, however, the icon type defaults to Tool, and you'll have to select the proper type from the Icon Type menu.

It's important to select the proper icon type, because different types of icons perform different tasks. A Tool icon can only be used with a program file such as a word processor or a paint program, which contains a series of machine instructions. When you double-click on such an icon, the program is loaded and run. A Project icon represents a data file. This type of file contains information that's created by a program and can only be used in conjunction with a program that understands what to do with that data. If you double-click on this type of icon, the program specified as its Default Tool is loaded and run and is instructed in turn to load the information in this data file.

IconMaster provides a string gadget into which you may enter the pathname for this Default Tool. A Drawer icon represents a subdirectory or drawer, which contains a discrete list of filenames. When you double-click on such an icon, a window opens and displays all the files and subdirectories contained on its list for which there are icon files. A Trash icon is just a special kind of drawer icon. A Disk icon represents the top or root directory of a device that contains files.

Since each icon type has a specific function, the most likely result of creating the wrong type of icon for an object is that nothing will happen when you double-click on it (except for an error message flashing in the Workbench screen's title bar).

Once you're sure you have the right icon type selected, you're ready to edit the icon's graphic image. *IconMaster* provides three different ways to attach a picture to your icon. You can load the image from another icon, load an image from an IFF (Interchange File Format) file that was created with a program like a paint package, or you can use *IconMaster's* own image editor by selecting one of the Edit

IconMaster makes it
easy to edit existing
icons and create
new ones.

Image items from the Images menu.

The program's image editing is not only versatile, but also downright convenient to use. Almost all of its functions have keyboard equivalents, and a full list of these equivalents is displayed when you press the Help key.

IconMaster's editing screen provides you with almost as many tools as a paint package. Using a single-pixel brush, you can draw with a Point tool, a Freehand tool, a Line tool, a Box tool, or a Circle tool. Circles and boxes can be filled or unfilled, and you can draw either in a normal-sized window or a window in which the image is magnified to nine times its normal size.

The drawing tools can be used with any of ten drawing pens. Colors 0-3 are the normal Workbench solid colors: blue, white, black, and orange. Pens 4-9, however, are actually dither patterns containing alternating dots of two different colors. Using this technique, *IconMaster* allows you to create additional color combinations such as yellow (orange and white), gray (black and white), and brown (orange and black).

In addition to the regular drawing tools, there are some specialized tools. These include a Fill tool, which lets you fill an area with a solid color or pattern of colors; a Clear tool, which erases everything; a Brush tool, which lets you copy a rectangular part of the icon and stamp down copies of it; and a Text tool that lets you insert a line of text characters using any font. A special menu item lets you exchange any two colors, turning everything that's blue to orange, for example, and vice versa. If you make a mistake, an Undo tool lets you restore the image to the way it looked before your last operation.

IconMaster has a number of unique tools for manipulating your icon's size and position. The icon window has a size gadget that allows you to manually size the window. In addition, there is the Auto-Resize gadget that automatically shrinks the window down to the smallest size that will contain the entire image.

To position your imagery, you may use arrow gadgets (or the arrow keys) to move the picture up, down, right, or left. You may also use the Auto Center gadget to move the picture to the center of the window or Auto TopLeft to automatically shift it as far as possible to the top and left. The combination of Auto TopLeft followed by Auto Resize automatically makes your icon as small as possible.

Once you've finished editing the icon's image, you use the Done gadget to exit and preserve your changes, or the Close Window gadget to exit and cancel your changes.

By default, *IconMaster* creates icons that use a second image for highlighting. If you should decide to keep this type of highlighting, be sure you remember to edit the

secondary image as well as the primary one.

If you want your icon to be highlighted by changing colors, though, you must use the Delete Secondary Image item from the Images menu. When you delete a secondary image, you may find that the image editor doesn't let you shrink the primary icon below a certain size. It may look like it gets smaller, but if you call up the editor again, you'll see that the icon frame is the same size as before.

The reason for this is that *IconMaster* tries to make sure that the primary image is no smaller than the secondary image. Even if you've deleted the secondary image, the program retains the size of that image as the minimum size for the primary image.

In order to work around this problem, be sure to edit the secondary image and reduce it to the minimum size before you delete it. Once you're satisfied with the image and highlighting method, you can use the Save menu item in the Project menu to save your changed icon under the same name, or use Save As to give it a new name.

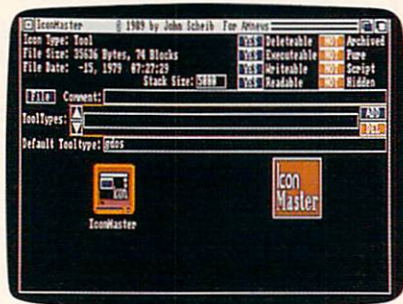
In addition to its main function of creating and editing icons, *IconMaster* has a couple of auxiliary uses as well. Its Save Image as Brush function lets you convert an icon's picture to an IFF file. This lets you import a nice picture of a disk, for example, into a paint program and use it in one of your drawings.

The program's flag gadgets allow you to change any file's protection flags (not just an icon file's) a lot more easily than using the CLI Protect command and to save the results without generating an icon by using the Save Flags Only option.

You can find *IconMaster* in the BestofBoards folder on the Resource Disk. Just double-click on the program's icon to get started.

To read the document file, double-click on IM_ReadMe. The file will be displayed by our new file reader, *Rd* (see this issue's On Disk section for more information about *Rd*). You can start *IconMaster* from the CLI by typing RUN ICONMASTER. Type RD IM_README to read the document file (or substitute the name of your own file reader; for example, MORE IM_README).

This program may not be the ultimate icon editor, but if you're still using IconEd, you have no excuse not to replace it with *IconMaster*. If you find this program as handy as I think you will, remember to send John Scheib a shareware donation. For \$25, he'll send you version 2 of the program, which supports 8- and 16-color icons. That version is perfect for *Colorbench*, which you'll find in the C directory of each and every Resource Disk. And it also might come in handy for the new Workbench screen modes that are supported by version 1.4 of the operating system. ▲



You can dither colors
together to create
colorful icons.

The BEST AMIGA DISKS

Quality User Supported Software works with all Amiga systems

\$7 Each
Buy 1-4 Disks

\$6 Each
Buy 5-14 Disks

\$5 Each
Buy 15 or more Disks

So easy to Use

- ▼ No Computer Experience Necessary
- ▼ TOTALLY User-Friendly!
- ▼ FREE Phone Support

So Easy to Order

- ▼ FREE Membership ▼ FREE 800-# for Orders
- ▼ Same-day Shipping
- ▼ UPS 2nd Day Air Service when you need it Now!
- ▼ FREE Catalog ▼ Your Satisfaction Guaranteed

THE TOP 10

- #131 **PacMan '87** - Great sound and graphics. Adds new elements to PacMan. Saves Top 10.
- #127 **Wheel of Fortune** - A great computer version for multiple players. It even talks.
- #37 **Business Programs** - Includes address book, amortization program, label printer, and talking mail list manager.
- #27 **Amoeba Invaders** - A better Space Invaders!
- #140 **Virus Killer** - Everyone needs this! Makes it easy to detect and eliminate known viruses.
- #115 **Word Processor** - Lots of features.
- #134 **Applications** - Label maker/printer, grocery listmaker, and AMIGazer - a star viewing program.
- #142 **Q-Bert** - Like the popular arcade version.
- #139 **Bull Run** - Great Civil War strategy board game, with impressive graphics and sound.
- #200 **SMS Tutor** - Great educational disk for the whole family! Includes spelling, math, and states/capitals.

1-800-444-5457 for Orders

THE BEST OF THE REST

503-664-5953 - Foreign Orders

BUSINESS/HOME

- #116 **Business II** - VC-Spreadsheet, HP-10c calculator, and several diversions for when the boss isn't looking!
- #117 **Business III** - DataBase, a bunch of great new fonts, RSLClock-great clock utility, AmigaSpell.
- #152 **Mail Manager** - Best mail list manager for the Amiga.
- #164 **Bank'n** - Keep your bank account in perfect balance.
- #168 **Grocery List** - A grocery list maker and database.
- #169 **Ledger** - Complete G/L package. Prints statements.

TELECOMMUNICATIONS

- #235 **Access 1.4** - A complete modem communications package. The disk includes file compression utilities.

UTILITIES/APPLICATIONS

- #80 **AmigaBasic** - Two programs that are truly of commercial quality. Cell-Animate and Graphit. Some Deluxe Paint picture files are also included.
- #87 **Tutorial Disk 1** - A disk full of information and programs to instruct Amiga programmers and users. Several C & ASM source files are included.
- #92 **Tutorial Disk 2** - More of the best of Amiga information.
- #129 **Amiga Utilities II** - A hard disk backup; Target-sounds a gunshot whenever the left mouse button is pressed; Dpaint Tutor; WinSize-change window size from CLI easily; and lots more.
- #132 **Videomaker Utilities** - This disk is packed with utilities to make your desktop videos easier to produce and more professional looking.
- #133 **DOS Helper** - A program designed to help you with the AmigaDOS commands. Can be activated from icon of the CLI. Supports multitasking so that you can refer to it when you need it. As usual there are other good programs included on the disk.
- #135 **Applications II** - LongMovie-plays several IFF pictures in fast succession, creating animation. QuickBase-a mail manager DBase Persmail + a DataBase for keeping records of friends, family, associates, customers or employees. MORE.
- #146 **Calendar** - A very good personal calendar for birthdays, holidays, meetings, bills and other events. Excellent graphics. Calendar program also has a diary. Other programs include some graphics and Checkbook.

SOUND/MUSIC

- #18 **Future Sound Demo** - Another great sound demo of digitized sound. Includes the wicked witch of OZ, breaking dishes, sea gulls, car crash, ducks, others.

- #30 **Super Sounds** - Great digitized sounds from movies like Star Trek, 2001, James Bond movies, Star Wars, and Starman. Is it real or is it the Amiga?!!
- #77 **Instruments** - Turn your keyboard into 25 different musical instruments.
- #206 **Sonix #1** - Plays great popular songs like "Let the Music Play," "Maniac," and more.
- #207 **Sonix #2** - More excellent digitized songs like "Grapevine" and "Thriller".

SLIDESHOWS/GRAPHICS

- #1 **Norman Rockwell** - 17 beautiful digitized Rockwell paintings in this self-running slideshow presentation. You've got to see these!
- #67 **DPSlide8** - Over 30 slides of all sorts on this self-running slideshow.
- #94 **Diga-View** - This one shows the digitizing process in stages. Several good pictures are included. Other programs also included.
- #95 **DigaSlide 11** - Another in the great series of slideshows with great artwork. Self-running with over 25 pictures.
- #108B **Juggler** - Famous demo that shows the beautiful graphics of the Amiga and just how powerful this program is. It is easier to run than 108A, but only has the one demo on it.

GAMES

- #38 **Basic GrabBag2** - Around 25 programs of various types. Many of these are must-haves. At less than \$20 each, you can't go wrong!
- #44 **Games3** - More great games including Life, Vegas Slot Machine, Reversi, others.
- #52 **Basic Games** - Tons of ABasic games - discover some treasures!
- #61 **ABasic GrabBag1** - Only about 100 of all types!!!!
- #102 **Sinking Island** - Return to Sinking Island is an excellent adventure game. Well worth the price - hours of enjoyment!!!!
- #114 **Potpourri X** - Othello, A key-shortcut program for AmigaDOS. Various new tools, automatic printer-driver generator, much more.
- #118 **Great Graphic Games** - Includes Missie Command, 2-D Triclops, Cosmo-asteroids clone, BrakeOut, Yatzee, Hack and more.
- #121 **Backgammon** - A great game from David Addison.
- #122 **Solitaire** - Two versions by David Addison.
- #123 **Cribbage** - Take on the computer or a friend.
- #124 **Milestone** - A great computer version of Miles Bournes by the author of Monopoly for the Amiga, David Addison.

- #125 **Othello** - A great 3-D version of this popular game.
- #128 **Space Games** - Cosmoroids (like asteroids) and Gravity Wars highlight this disk just full of games.
- #137 **Blackjack** - A full-featured game which allows pair-splitting, double-down, etc. Bandit-play the slot machines without going to Vegas!!! More.
- #141 **Dominoes** - Dominoes game with great graphics. Also Tic Tac Toe, Drawing and Molecules programs.
- #147 **Jackland/Graphics** - Adventure clue game. Also some great pictures (graphics), a useful utility called Quickbase, and a fun program called Things which you will enjoy!!!
- #148 **Boulder Dash** - Very popular game with excellent graphics and has several challenging levels. This disk is full - It has Othello, Life3 and many useful utilities.
- #151 **4 in a Row** - A fun, but challenging game you play against the computer. There is an excellent Demo "MandFXP-D3", a utility or 2 and the fun TARGET - A weirdo thingy.
- #158,159 **Sinking Island II** - Fantastic text adventure with graphics. See if you can find the treasure and escape the island before it sinks into the sea! (2 Disks).
- #161 **Sorry!** - One of the all-time favorite board games.
- #162 **Video Poker** - Like the popular casino five-card draw poker games. Also includes Hearts and Stud Poker.
- #165 **Wheel of Fortune with Vanna** - Play a great computer version of the popular TV show against computer opponents.
- #182 **Six Pac** - Six 2-player games including Word Boggle, Word Scramble, Match-up, Numbers, Tic-Tac-Toe, and Hangman. Fun for the whole family!
- #195 **Tiles** - Match the tiles and clear the screen. A fun game that is very habit forming.
- #210 **Game Time** - Includes 3-D Orbit, Blackbox, and more.
- #216 **Chinese Checks** - For 1-6 human or computer players.
- #240 **Chess** - See if you can beat your computer at chess.

MISCELLANEOUS

- #88 **Amiga Basic Programs** - Over 50 Games, utilities, applications, entertainment, and finance. Also included is a program that allows you to use IFF files in your Amiga Basic programs.
- #119 **mCAD** - A full-featured computer-aided design program.
- #136 **Graphics2** - Border Set-useful for desktop publishing and video, making cards, coupons or menus, and your own artwork. Xicon-allows you to run AmigaDOS commands or programs from Icon.
- #144 **Christmas Animations** - 10 beautiful scenes and graphics with sound. Great scenes include: Lit Candle, Elves, The Christmas Tree, The Manger, Season's Greetings, Holly Wreath, Chimney Smoke, Church Bells, and Walking Home.
- #145 **Animations 3** - More Great Animations. 3 very good demos plus 3 workbench pictures and Blobs.

Name _____

Address _____

City _____ State _____ Zip _____

Phone (____) _____

Visa/MC _____

Sig. _____

Exp. Date _____

☐ Send Catalog

Disks Ordered _____ x _____ \$ _____

☐ SHIPPING U.S. - \$3.00
Canada - \$5.00 Foreign - \$7.00

☐ COD
(add \$4 if you require COD)

☐ U.P.S. 2nd Day Air (Add \$3) \$ _____

TOTAL \$ _____

☐ Check/MO ☐ Visa/MC ☐ CAM 6/90

Software Excitement!

P.O. Box 3072 • Central Point, OR 97502

VISA ORDER TODAY MasterCard

1-800-444-5457



Roses

Glenn B. Stevens

Melbourne, FL

"*Roses* originated with a slide from my extensive collection of photographs. I was intrigued by the possibilities for digital manipulation. Digi-View was used to transfer the subject matter to the computer and to alter some of the values. *Digi-Paint* was the medium for creativity. Scissors, tint, blend, and shading all played a part in arriving at the end result."

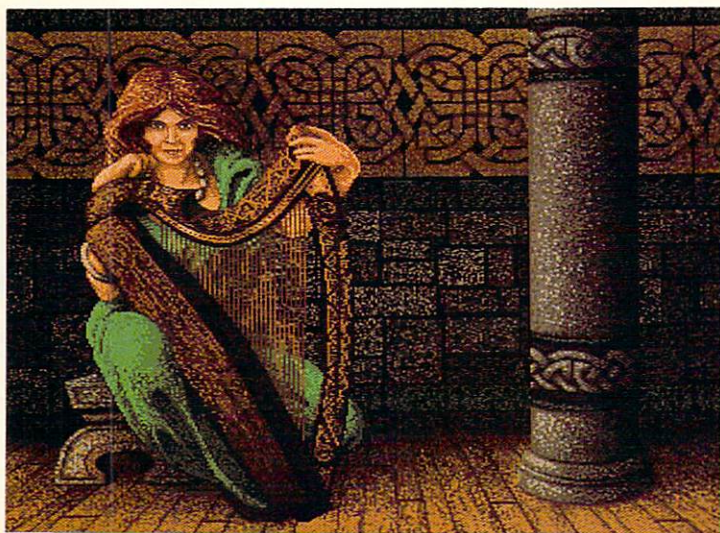
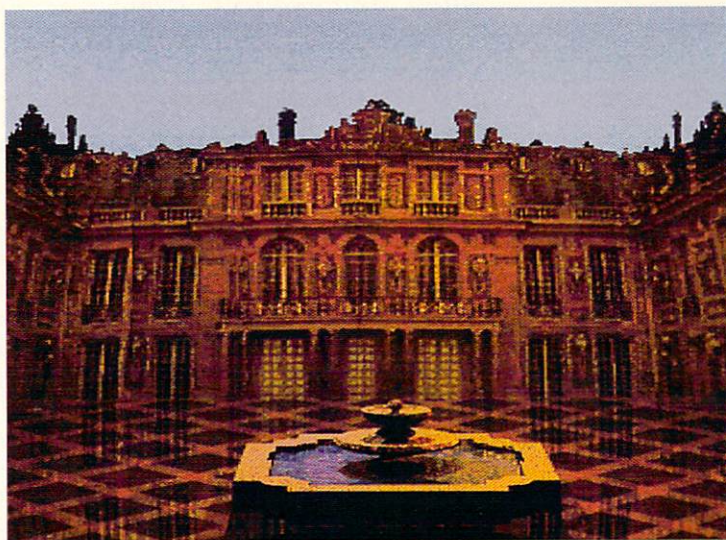
Welcome to "Amiga Art Gallery." On these pages, in each and every issue of *Amiga Resource*, you'll find the best Amiga artwork around. The pictures in this issue may also be found on the magazine's accompanying disk.

Versailles

Richard Nichol

Lewisville, TX

This ray-traced image was generated with *Turbo Silver 3.0* and touched up with *Deluxe PhotoLab*. Artist Richard Nichol describes the picture as "an unusual combination of digitized picture and ray-traced reflection depicting the Palace of Versailles in France."



Lady Otway

Brad Schenck

Thousand Oaks, CA

Brad Schenck, the focus of this issue's "Profile" feature, has developed his own unique style on the Amiga. *Lady Otway* is just one fine example of his Amiga-produced art. A portion of this drawing was used for the cover of the June 1988 issue of *AmigaWorld*.

If you'd like to see your art in these pages, send it to us on disk at the address below. We pay \$100 for each piece of art we accept. Rejected submissions are returned only to artists who enclose a self-addressed, stamped envelope.

Amiga Art Gallery
P.O. Box 5406
Greensboro, NC 27403

TAKING SIDES

Rhett Anderson vs. Randy Thompson

Hacking the Hardware

FEAR NOT! Remember the myth of Icarus? Given wax wings by his father, Daedalus, Icarus flies too close to the sun in exultation and perishes. The same myth lives on today in the Amiga programmer community: Don't program the hardware, that's too close to the heart of the machine. Stick with the abstract. Follow the rules. Program at the highest level and you will be rewarded when all the unbelievers crash and burn at the introduction of the next operating system.

The zealots who would feed you this line need to take a bath in the waters of reality. Contrary to popular belief, it's such blind devotion to following the rules that leads to buggy, sloppy, bulky code.

The problem is that the rules often get in the way. For instance, try reading the joystick through the Gameport device—that's the legal way. Then read the joystick by reading the values straight from the hardware. You've got two programs. Take a good, hard, honest look at them. The

legal one is larger than the illegal one. It runs more slowly. That's not good for the user of your program. The first one was harder to write and debug than the second one. That's bad because it gives you less time to write and debug the rest of your code.

The Amiga has great system software, but that doesn't mean it always has the solution to your problems. The system code is

general-purpose, which means it may be more difficult to use than just working from scratch. For instance, take the system's animation facilities—please. Bobs and VSprites just don't cut it. Guess how many animation programs use them. None. If you make the mistake of using them, you're in for headache after headache, and your code will be big and slow. That's bad for you and bad for the Amiga.

What the Amiga needs now is bold, innovative programming. If you want to be an Amiga programmer, please learn the hardware *before* you learn the system code. Then you'll know when it's appropriate to hack the hardware.

Looking over at Mr. Thompson's side, we find a hypocrite on the scale of Jim Bakker. Mr. Hypocrite, has it occurred to you that your clever sound routines in this very issue's *Break Down* program go right to the hardware?

And Mr. Hypocrite, I've noticed that your *X-Ray* program fails under the new operating system while my illegal programs don't. So who's the "real" programmer?

Don't try to scare us. Commodore's not going to move the hardware locations. Doing so would break too much software. Get real, Mr. Hypocrite.

WARNING! Commodore is releasing a new-model Amiga. With it comes faster hardware and an improved custom chip set. This shouldn't be too surprising; as computer technology continues to advance, so will the Amiga.

What also shouldn't be too surprising is that new and different hardware means new and different hardware registers (memory-mapped locations used to control the computer's chips). It also means that programs that access these registers directly may break on newer computers.

If a programmer wants to use one of the Amiga's functions, he or she should go through the operating system. After all, that's what it's there for. Exec, the core of the Amiga's multitasking operating system, doesn't maintain a list of input events just so rebel programmers can break the rules and read the keyboard via the CIA-A chip's SDR register. Such practices may be fun for programmers, but it's no fun for the users who discover that their favorite software refuses to run on their new computer because some hacker decided to cut a few corners. The only thing that should change with the hardware is the operating system, not your software.

Upward compatibility isn't the only thing at risk here. On a multitasking computer such as the Amiga, programs have the responsibility to share the system. When someone decides to bypass the operating system and blatantly manipulate hardware registers, problems occur. You can imagine what would happen when two programs try to access the audio and/or graphics hardware without consulting each other first. The effect is often spectacular but rarely desirable.

Hacking the hardware may be great for flash-in-the-pan arcade games that take complete control of the machine. *Real* programmers, however, take the time to do it right. Believe me, it's worth the effort.

Looking over at Mr. Anderson's side, I see a hacker whose programs begin with `Forbid()` and end with `Permit()`. In other words, very few of his programs have what it takes to multitask. Apparently their wings melt when they are run too closely with other software.

As for myths, try reading your first paragraph again, Mr. Anderson. No conscious human believes that a new operating system is going to break hardware-dependent software—it's new *hardware*, as in a new-and-improved Amiga. So if you think that it's too difficult to program properly, maybe you should try another hobby... say, tower jumping? Hold on to your toga—it's a long drop. ▲



COMPUTE!'s AMIGA RESOURCE

FREE Reader Information Service

Use these cards to request FREE information about the products advertised in this issue. Clearly print or type your full name and address. Only one card should be used per person. Circle the numbers that correspond to the key number appearing in the advertisers index.

Send in the card and the advertisers will receive your inquiry. Although every effort is made to insure that only advertisers wishing to provide product information have reader service numbers, COMPUTE!'s AMIGA RESOURCE cannot be responsible if advertisers do not provide literature to readers.

Please use these cards *only* for subscribing or for requesting product information. Editorial and customer service inquiries should be addressed to: COMPUTE!'s AMIGA RESOURCE, P.O. Box 3253, HARLAN, IOWA 51593. Check the expiration date on the card to insure proper handling.

Use these cards and this address only for COMPUTE!'s AMIGA RESOURCE Reader Information Service. Do not send with payment in any form.

COMPUTE!'s AMIGA RESOURCE.

Name _____

Address _____

City _____ State/Province _____ Zip _____

Country _____ Phone _____

- Do you own an Amiga ☐ 500, ☐ 1000, ☐ 2000/2500
251 252 253
- Do you use it primarily for ☐ entertainment, ☐ art/animation, ☐ desktop video,
254 255 256
☐ music/midi, ☐ word processing, ☐ education, ☐ business applications,
257 258 259 260
☐ programming, ☐ other _____
261 262
- Do you use your Amiga at ☐ home, ☐ home business, ☐ business, ☐ school
263 264 265 266
- Do you also own ☐ hard disk, ☐ genlock, ☐ midi interface,
267 268 269
☐ memory expansion, ☐ other _____
270 271
- Do you subscribe to ☐ COMPUTE!®, ☐ Compute!'s Gazette, ☐ Amiga World
272 273 274
- What is your total household income? ☐ >\$30,000, ☐ >\$40,000, ☐ >\$50,000, ☐ >\$75,000
275 276 277 278
- How long have you owned your Amiga? _____ yrs _____ mos
279 280
- How much will you spend for software this year? _____
281
- How much did you pay for your TOTAL Amiga System? _____
282

101	102	103	104	105
106	107	108	109	110
111	112	113	114	115
116	117	118	119	120
121	122	123	124	125
126	127	128	129	130
131	132	133	134	135
136	137	138	139	140
141	142	143	144	145
146	147	148	149	150
151	152	153	154	155
156	157	158	159	160
161	162	163	164	165
166	167	168	169	170
171	172	173	174	175
176	177	178	179	180
181	182	183	184	185
186	187	188	189	190
191	192	193	194	195
196	197	198	199	200
201	202	203	204	205
206	207	208	209	210
211	212	213	214	215
216	217	218	219	220
221	222	223	224	225
226	227	228	229	230
231	232	233	234	235

Expiration Date 8/31/90N

Circle 101 for a one year new U.S. subscription to COMPUTE!'s AMIGA RESOURCE: you will be billed for \$9.97.

THE DEFINITIVE GUIDE TO AMIGA COMPUTING

AMIGA RESOURCE

Become a subscriber today and start getting the absolute most from your Amiga computer!

- ☐ Send me 6 big issues of AMIGA RESOURCE for just \$9.97. I save 58% off the cover price.
- ☐ Send me AMIGA RESOURCE—complete with the optional disk containing at least 5 exciting new programs per disk. I'll pay just \$39.95 for 6 issues, each with disk—a savings of 49% off the cover price.

☐ Payment Enclosed

☐ Bill Me

Mr./Mrs./Ms. (circle one)

Address _____

City _____

State _____

Zip _____

FOR FASTER SERVICE, CALL TOLL-FREE 1-800-727-6937

Outside U.S. add \$6 per year for postage. Excluding Canada, all foreign orders must be in U.S. currency. Price subject to change.
Annual basic rate: \$15 magazine only; \$59.95 for AMIGA RESOURCE with disk.

JA6N90

SAVE
58%

Place
Stamp
Here

AMIGA RESOURCE

Reader Service

P.O. Box 2141

Radnor, PA 19089



BUSINESS REPLY MAIL

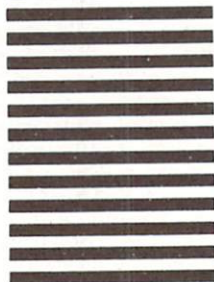
FIRST CLASS

PERMIT NO. 115

HARLAN, IA

POSTAGE WILL BE PAID BY ADDRESSEE

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



AMIGA RESOURCE

P.O. Box 3253

Harlan, Iowa 51593-2433



AMIGA RESOURCE

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

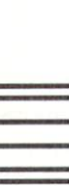
BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 115 HARLAN, IA

POSTAGE WILL BE PAID BY ADDRESSEE

AMIGA RESOURCE

P.O. Box 3253
Harlan, Iowa 51593-2433



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 115 HARLAN, IA

POSTAGE WILL BE PAID BY ADDRESSEE

AMIGA RESOURCE

P.O. Box 3253
Harlan, Iowa 51593-2433



RIO

DATTEL

COMPUTERS

800-782-9110

*ORDERS ONLY

MON-SAT 8AM-6PM (PACIFIC TIME)

CUST SERVICE
TECH SUPPORT

702-454-7700
TU-SA 10AM-6PM

QUALITY PRODUCTS AT REALISTIC PRICES

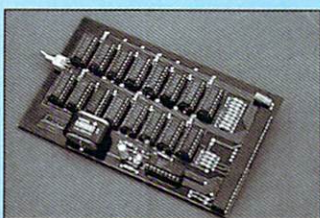
COMPLETE LINE OF HARDWARE & SOFTWARE IN STOCK

FAX: 702-454-7700



GENISCAN GS4000AM HANDY SCANNER

*Easy to handle Scanner featuring 4 1/8" scanning width & 400dpi resolution enables you to reproduce graphics & text on your computer screen *Powerful partner to Desk Top Publishing *Unmatched range of edit/capture facilities not offered by other scanners at this unbeatable price *Adjustable switches for brightness & contrast *Cut & paste editing of images *Save images in suitable format for most leading software packages - **ONLY \$299.95**



*Available with or without the clock/cal option *Simply plugs internally into A500 slot *Installs in seconds - no soldering required *Switch memory in/out with onboard switch provided - no need to remove board *With clock/cal option date/time automatically booted

ONLY - \$99.95
WITH CLOCK/CAL - \$129.95

ROBOTARM

*Human like dexterity so versatile it can manipulate small objects with amazing ability *Controlled using 2 joysticks or connect to your Amiga with the interface & software supplied to give computer robotic control *Comes with 2 joysticks finger jaws, shovel scoop & magnetic attachment - **ONLY \$89.95**



ACCESSORIES



AB Switchbox	24.95
ABCD Switchbox	39.95
Printer Cables, 6 ft.	9.95
Modem Cables, 6 ft.	9.95
Serial Cables, 6 ft.	9.95
Parallel Cables, 6 ft.	9.95
Gender Changer, M/M, F/F	4.95
Null Modem Adaptor	4.95
RS232 Surge Protector	9.95
RS232 Wiring Box	14.95
Diskette Holder, 3.5", 50 disk capacity	6.95
6 Outlet Surge Protector, Wall Mount	9.95
Bulk 3.5" Disks, 50 Pack	39.50
Printer Ribbons, (Star, Panasonic)	4.95
3.5" Head Cleaning Kit	4.95

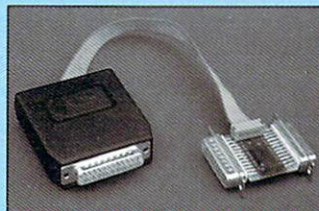
MIDIMASTER



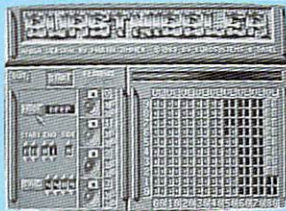
*Standard MIDI interface *Fully opto isolated *MIDI In - MIDI Out X3 - MIDI Thru *Compatible with all leading MIDI software - **ONLY \$59.95**

MIDI MUSIC MANAGER
*8 realtime tracks *Adjustable track length *Full dubbing - Listen to one track while recording another
ONLY \$39.95

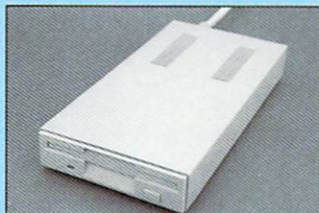
SPECIAL - BOTH ONLY \$89.95



TACH 25 & DEEP SCAN BURST NIBBLER
MOST ADVANCED COPY SYSTEM AVAILABLE FOR THE AMIGA
*Superfast disk copier *Works with 1 to four drives *Copy 1 or 2 sides up to 81 tracks *Full verify option *Easy to use mouse & icon driven program *Adjustable parameters for non standard formats *Copies non Amiga formats such as Atari ST and MS DOS *USE OF TACH 25 HARDWARE REQUIRES ONE EXTERNAL DRIVE
Complete Package Hardware & Software **ONLY \$89.95**
Software Alone **ONLY \$34.95**



3.5" SLIMLINE DRIVE



*Slimline extra low profile unit *Top quality drive mechanism *Fully compatible - 1 meg unformatted capacity *Throughput allows daisy chaining to other drives *26" cable for convenient positioning on your desk *Superbly styled case finished in Amiga colors
ONLY \$139.95

GENIUS MOUSE



*High quality direct replacement for mouse on the Amiga *Teflon glides for smoother movement *Rubber coated ball for minimum slip *Softer more positive button clicking *Extra long 6 foot connecting cord *Highest quality mechanical parts for longer life and consistent positioning
ONLY \$49.95

REALTIME VIDEO DIGITIZER



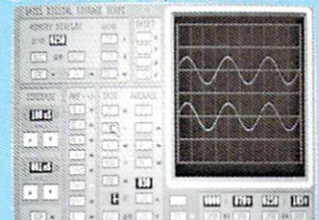
*Realtime frame grab in 1/60 sec *16 grey levels *320 X 256 screen display *Screen update at 1 per second *Takes standard composite video from camera or recorder *Edit pictures with cut, copy, paste & undo *Special effects: reverse, negative, mirror, compress etc. *Load & save files in IFF format *Connects to parallel port
ONLY \$139.95

STEREO SOUND SAMPLER + JAMMER

*Realtime frequency display and level meters *HiRes sample editing *Files in IFF format *Adjustable MAN/AUTO trigger levels *Variable sample & playback speed *Mic & line inputs
JAMMER FEATURES: *5 octave keyboard *4 track sequencer up to 9999 events *Tempo & Beat controls *Mixer controls *Works on standard IFF files
ONLY \$99.95



DATA ACQUISITION UNIT



*Sample and display events from hours to microseconds with amplitudes from millivolts to 50 volts *2 input channels *Timebase: 500ms/div to 20 us/div *6 bit flash A/D converter samples at 5 million samples/sec *Adjustable trigger *5X zoom *Waveform averaging *Plotter display is 1 sec to 10 hrs per plot for long term events
ONLY \$179.95

MANY OTHER ITEMS IN STOCK - IF YOU DON'T SEE WHAT YOU WANT CALL FOR LOW, LOW PRICES

RIO / DATTEL

3430 E. TROPICANA AVE. #67
LAS VEGAS, NV 89121

*Add \$4.00 shipping/handling in the continental U.S.: \$7.00 - PR, AK, HI, FPO, APO: \$10.00 - Canada/Mex: C.O.D. orders add \$3.00 to above charges: SPECIFY COMPUTER MODEL WITH ORDER: VISA/MC/Checks/Money Orders/C.O.D. Accepted: Please call for return authorization number - returns subject to a 20% restocking fee: We reserve the right to substitute products of different appearance but equal quality and function for items pictured above: Prices subject to change without notice.

800-782-9110

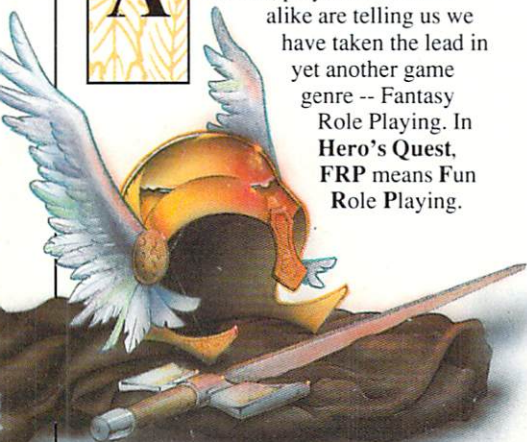
702-454-7700
IN NEVADA

SIERRA TAKES A NOT-SO-SERIOUS STAB AT FANTASY ROLE-PLAYING...

SIERRA PRESENTS: THE ROLE-PLAYING ADVENTURE



fter years of leading the field in 3-D Animated Adventure Games, players and critics alike are telling us we have taken the lead in yet another game genre -- Fantasy Role Playing. In **Hero's Quest**, FRP means Fun Role Playing.



THREE GAMES IN ONE!

Play the game as your Hero-of-Choice. Will you become the Fighter? The Magic User? The Wily Thief? In **Hero's Quest** the choice is yours...and **Hero's Quest** can be played over and over again using different skills and different solutions to game puzzles.

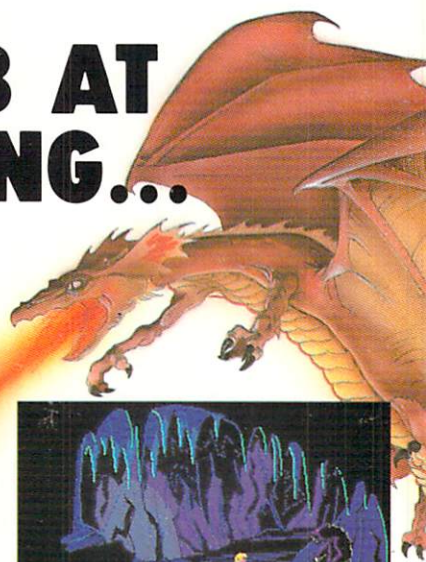
THIS IS FRP SIERRA STYLE...

As a recent graduate of the *Famous Adventurers' Correspondence School for Heroes*, you're more than qualified to battle brigands, massacre monsters and rescue royalty. If you're eager to exercise your new credentials, you've come to the right place. The barony of Spielberg is in dire need of a champion, and you just might fit the bill!

Life's not easy for a wanna-be hero, but for every grueling battle, for every hour of work, for every day of adventuring you can only get stronger, swifter and more skillful -- not to mention rich! Soon even the most powerful monsters will be no



Choose from three Hero types: Fearless Fighter, Inscrutable Magic User or Wily Thief.



Even the most intrepid Hero knows when to ignore a 'Do Not Feed the Animals' sign.

match for you. When you've purged the land of evil, choose a new role and play the game again! But remember Adventuring Rule #1: When in doubt, run away! So you want to be a hero? Well, here's your chance -- **Hero's Quest I--So You Want To Be A Hero...** FRP has never been this much fun!

Hero's Quest players tell us how it is...

'Just got HQ yesterday and am very pleased...some of the humor is priceless.'

'...this one has more humor than most CRPG's I've played!'

'The fairies were a riot! Great characterizations in this game, better even than Space Quest III, and that's going some.'

'...much of the humor is a great deal more subtle...the sub thing brought me right out of my chair.'

'I like that ending a lot!!! I want to go back and replay...SOON!'

'...one of the best of all of Sierra Games...I play the game every chance I get. I highly recommend it to anyone who likes games by Sierra.'

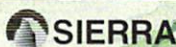
'We can't wait to play HQ II!!! Sierra is getting too good at this stuff. It's getting to the darn point where no other computer games are worth buying. Keep it up...just make MORE games.'

MS-DOS • AMIGA • ATARI ST
1-800-326-6654
or call your local Software Dealer

FREE

★ PRODIGY
Interactive Personal Service

Start-up Kit and one month of service
(a \$50 value)
See details in selected Sierra products



SIERRA ON-LINE, INC. • COARSEGOLD, CA 93614

Circle Reader Service Number 145

