

AMIGA

W O R L D

June 1989
U.S.A. \$3.95
Canada \$4.50
UK £2.50
An IDGC/I
Publication

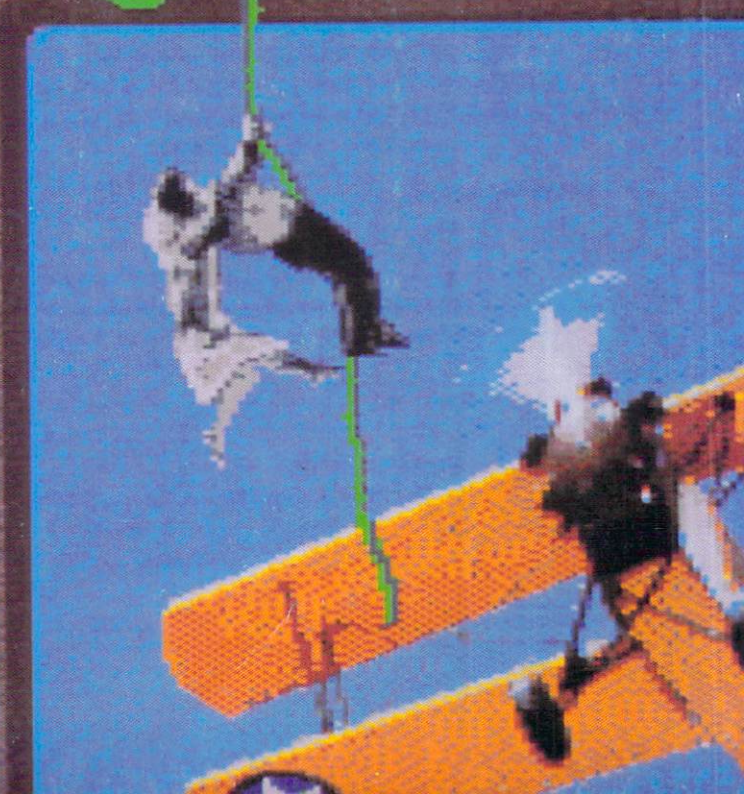
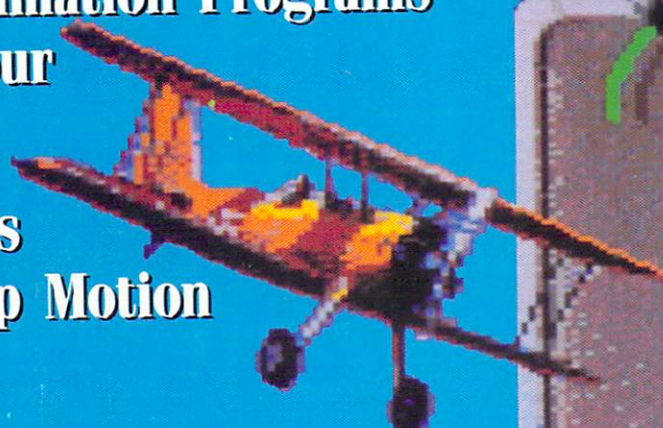
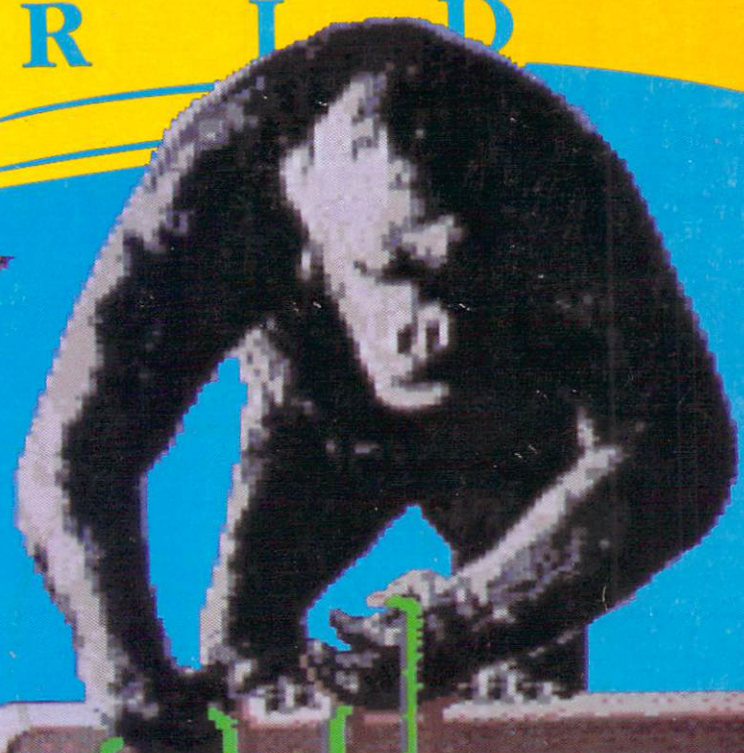
KING OF ANIMATION!

12 Animation Programs
For Your
Amiga

Secrets
of Stop Motion

Plus!

- ▶ FreezeFrame
Film Recorder
- ▶ Accent on Graphics
- ▶ Amiga Basic
- ▶ 1.3's "Extras"
- ▶ Reviews & Games

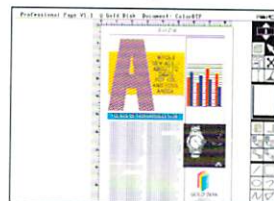


Gold Disk has the answers.

For the Professional

Is there a serious desktop publishing program for the Amiga?

Definitely. The gold standard is Gold Disk's Professional Page. It's got features that have made it the choice of pros across the globe. Like built-in kerning, leading, and tracking.



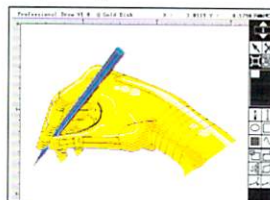
A wide variety of resizable PostScript fonts. The ability to handle IFF bit-mapped graphics and structured graphics. Built-in text and graphics editing. Even the ability to output color separations for color publishing. Professional Page is US\$395. 1 MB required.

How come my desktop publications just don't have that professional "slickness"?

Why not let a pro do some of the work for you? Gold Disk's Professional Page Templates package gives you over 50 classic layouts for ads, newsletters and brochures prepared by a top New York designer. All the type specs are built right into the pre-defined boxes, so you can just flow your copy right in. And the documentation is more than just a manual - it's a crash course in graphic design. The Templates package is US\$59.95.

How can I create smooth, professional-looking graphics for my desktop published documents?

You need Gold Disk's Professional Draw, the first serious illustration program for the Amiga. It uses *structured* graphics, so curves don't have jagged edges when they're enlarged. Shrink or expand your illustrations, and they'll still look great. It has a user-



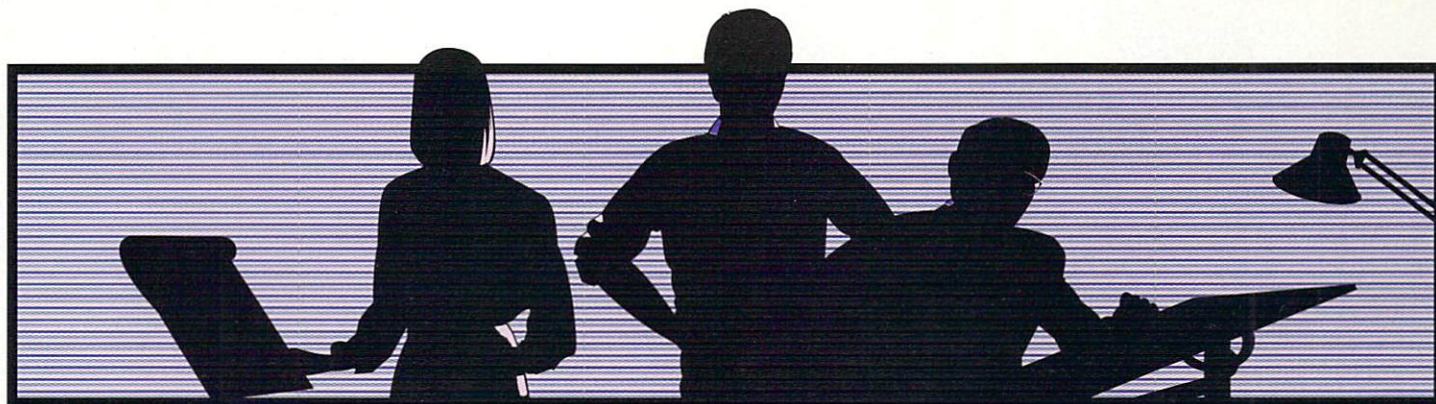
definable palette of millions of colors, supports PostScript, and works with the latest update of Professional Page. There's also an optional disk of pre-drawn structured clip art. Professional Draw is US\$199.95. 1 MB required. Structured Clip Art is US\$59.95.

Is there a quick and painless way to digitize drawings and photos for use in desktop published documents?

There is now. Gold Disk has developed a hardware/software interface for the Canon IX12 black and white scanner. It saves IFF pictures at 300, 200, 150, and 75 DPI. Simply feed a page into the scanner and about 15 seconds later, the job is done. It's that easy. Scanner and interface US\$1095.



Hire a team of professionals.



Put Gold Disk's Professional Page, Professional Draw and ProScan IX12 scanner to work for you.

Gold Disk has the products to make the Amiga a serious tool for design and publishing. Compare *Professional Page* feature for feature with page layout programs on any computer. Its exceptional typographic control, flexible PostScript implementation, and color handling make it a clear winner. It outputs 4-color separations. Word processing functions and drawing tools are built in. Access hundreds of the highest-quality fonts. Import IFF



Professional Page puts it all together.

bitmapped graphics and structured graphics.

But where do you *get* graphics that meet the standards of this kind of publishing? The jagged curves and diagonals that often accompany bitmapped graphics are unacceptable to the true professional. Structured drawing is the way to go, and nothing does it on the Amiga like *Professional Draw*. The smoothness and precision of the images you create with it are limited only by the printer's resolution. There's a powerful assortment of geometric and freehand drawing tools. Unlimited color. Enter type (fonts are included) and then stretch, twist, re-draw, or color it.



At 300 dpi, the ProScan IX12 captures the finest detail.

Quickly magnify any area to check detail. Print or color separate your work on numerous printers, or bring it into *Professional Page*.

We're not only bringing the Amiga into the real world, we're bringing the real world into the Amiga. Gold Disk's new hardware/software interface for the Canon IX12 B&W, 300dpi scanner makes it easier than ever to capture images for desktop publishing or illustration. Sketches, photos, logos – feed them into the scanner and in about 15 seconds you've got an image you can use with any Amiga program supporting the IFF standard. Use them in your *Professional Page* layouts, color them in a paint program, or import them into *Professional Draw* to be traced and made into structured graphics, as we did with the illustration above.

Are these tools strictly for the pro? Not at all. Gold Disk offers a package of easy-to-use templates for *Professional Page*. Designed by a top art director, these layouts have the type specs built in – just flow in your copy. And there's a disk of structured clip art for use in *Professional Page* or *Professional Draw*.

Call us now at 1-800-387-8192. If you take desktop publishing seriously, we're the ones to work with.



GOLD DISK

P. O. Box 789, Streetsville,
Mississauga, Ontario, CANADA, L5M 2C2
416-828-0913

This ad was produced and color separated using Professional Page and output as 4-color negatives on a 1270 dpi laser imagesetter. The illustration was created in Professional Draw, based on various photos that were scanned with the ProScan IX12.

INTRODUCING

A-Max™

The Macintosh® emulator for your Amiga™

ReadySoft would like to welcome you to the Macintosh®.

Until now, the Macintosh® was a distant world filled with high quality productivity software, inaccessible to the Amiga owner.

But ReadySoft has changed all that.

Now, with the introduction of A-Max, you will be able to take advantage of the Macintosh® software being used in offices around the world without giving up your Amiga software.

A-Max is a hardware and software combination that runs most of the productivity software that has made the Mac® a success. All you have to supply are Macintosh® 64K (Mac®) or 128K (Mac Plus®) ROMs. Once the ROMs are installed, Macintosh® software will run at full Mac® speed on your Amiga. The A-Max cartridge plugs into the Amiga's external disk drive port and has connectors for an Apple® external drive and additional Amiga drives. If an Apple® 800K external disk drive is connected,

Mac® format disks may be used directly during Mac® emulation. Without an Apple® drive connected, the included transfer software allows you to convert Mac® disks to A-Max format which may then be used with standard Amiga drives (this option requires access to a Macintosh®).

A-Max features include:

- Compatible with the A500, A1000, and A2000
- Supports the use of the Amiga mouse, keyboard, 3.5" drives, serial and parallel ports during Mac® emulation
- Reads Magic Sac™ and Spectre™ disk formats (Atari ST® Mac® emulators)
- Supported video modes include: 640x400 (interlaced), 640 x200 (with scrolling), 512x342 (Mac® standard size, interlaced) and 1008x800 with the A2024 or Monitorm Viking monitor
- Uses all available Amiga RAM during Mac® emulation
- Built-in Apple® Imagewriter® emulation for 9 and 24 pin Epson® compatible printers
- Transfer software to convert files from AmigaDOS to and from A-Max and Mac® disk formats (Mac® external drive required to transfer to Mac® format)
- 68020 support with 128K ROMs
- Runs HyperCard® (requires 1Mb and 128K ROMs), MultiFinder™ (requires 128K ROMs), Microsoft® Excel™ and Word™, MacPaint®, MacWrite®, MacDraw® (1 & 2), PageMaker® (1.2), MacTerminal®, all system disk versions (some system disks require 128K ROMs) and most other productivity software. A-Max may not run all games and Midi software. Amiga hard drives cannot be used during Macintosh® emulation.



ONLY
\$199.95

A-Max is a trademark of ReadySoft; Apple and the Apple logo, HyperCard, Imagewriter, Mac, Macintosh, MacPaint, MacWrite, MacDraw, MacTerminal are registered trademarks and MultiFinder is a trademark of Apple Computer Inc.; Atari and ST are registered trademarks of Atari US, Corp.; Epson is a registered trademark of Seiko Epson Corporation; Magic Sac is a trademark of Data Pacific; Spectre is a trademark of Gadgets by Small; Amiga is a registered trademark of Commodore-Amiga Inc.; Microsoft is a registered trademark and Excel and Word are trademarks of Microsoft Corporation; PageMaker is a registered trademark of Aldus Corporation.

Yes please rush me A-Max: \$199.95 U.S. \$249.95 CDN	
Payment by <input type="checkbox"/> Check <input type="checkbox"/> Money Order <input type="checkbox"/> Visa <input type="checkbox"/> Mastercard	
Card #	Expiry Date Signature
Please add \$5.00 for shipping and handling; Ont. residents add 8% PST. No C.O.D. please	
Name	Send to:
Address	ReadySoft Inc.
City/Town	30 Wertheim Crt., Unit 2
State	Richmond Hill, Ont.
Zip	Canada L4B 1B9
Country	Tel. (416) 731-4175
	Fax (416) 764-8867



Available soon from ReadySoft or your local Amiga dealer.

Circle 87 on Reader Service card

♦ C ♦ O ♦ N ♦ T ♦ E ♦ N ♦ T ♦ S ♦

FEATURES

ANIMATION ODYSSEY *By Gene Brawn* . . . 25

With so many different kinds of animation programs for the Amiga, finding the one that's right for you is no easy task. To help you on your journey, a leading Amiga animator will be your Homer to guide you in this critical survey of a dozen animation offerings.

GUMBY MEETS GODZILLA

By Gene Brawn 34

Stop-motion animation—the old movie-making technique through which such Hollywood classics as King Kong, Godzilla, and Sinbad were created—has found new life on the Amiga. And this hands-on guide will help fuel your imagination to conjure up your own classic animated productions.

ARTICLES

OKAY, YOU GUYS, FREEZE!

By D.L. Richardson 44

Polaroid's new film recorder, the FreezeFrame, provides an ingenious way to transfer a combination of live video and Amiga graphics to film.

ACCENT ON GRAPHICS *By Joel Hagen* . . . 50

In keeping with June's focus on animation, this month's installment of our Amiga graphics tips-and-techniques series offers some valuable pointers on producing page-flipping animations with a trio of handy Amiga programs.

COLUMNS

ZEITGEIST. 6

What's in a number? The editor perks up when the number is one million and the category is Amigas sold.

BASIC BY THE NUMBERS

By Bob Ryan 20

The fourth and final part of Bob's data-manipulation tutorial (with complete program listing) closes out our series on Amiga Basic.

INFO.PHILE *By Mark L. Van Name and Bill Catchings* 52

Concluding their mini-series on additions and improvements to the 1.3 Workbench, our AmigaDOS columnists show you how to use a host of new features and tools on 1.3's Extras disk.



No, what you see above is not a still from a movie that's been playing recently at your local theater. But it is part of an animation created on the Amiga—and a lot of those have been showing in recent competitions, shorts, and amateur productions all over the country. This month, we'll be casting a critical eye on animation packages for the Amiga. We'll also give you a hands-on tutorial on how to create animations based on an old-fashioned movie-making technique: stop-motion photography.

DEPARTMENTS

REPARTEE. 8

Drop a piece of your mind in an envelope and send it to us!

NOTEPAD 12

On the news beat this month: a record-breaking crowd at AmiExpo; new Commodore announcements from Germany; and Amiga arts and crafts.

WHAT'S NEW? 94

New hardware, software, and games hot off the New Products shelf.

HORS D'OEUVRES. 102

Tips and techniques provided by fellow *AmigaWorld* readers.

HELP KEY 106

If you've been listening to "Looking for Help in All the Wrong Places," then switch your dial over to Station WLOU.

REVIEWS

VIKING I (*Moniterm*) 14

A high-resolution monitor for the A2000.

4004 GENLOCKABLE VIDEO GRAPHICS ENCODER (*Magni Systems*) 16

A genlock-and-encoder board plus a video-interface card make this a double-barreled threat for video pros.

PROFESSIONAL DRAW (*Gold Disk*) . . . 72

First step towards a serious object-oriented illustration program for the Amiga?

ZOETROPE (*Antic*) 74

A graphics combo incorporating paint, image-processing, video-titling, and animation features.

X-CAD (*Taurus / Haitex*) 76

An ambitious and demanding CAD program from Great Britain.

FANCY 3D FONTS (*Access Technologies*) 78

3-D text-font sets for users of Sculpt-Animate and Turbo Silver.

TOSHIBA P341SL (*Toshiba*) 82

High-quality output from a 24-pin dot-matrix printer.

MASTERING CLI 2.0 (*Graphic Expressions*) 84

A disk-based tutorial for mastering the intricacies of the Amiga.

ANTI-VIRUS (*DevWare*) 88

A battery of utilities on a search-and-destroy mission against Amiga viruses.

GAMES

THE GAME PRESERVE

By B.G. Hunter 58

B.G. has racked up a lot of mileage this month to give you the inside track on a slew of car racing games for the Amiga. Other game reviews follow his column:

FALCON (*Spectrum Holobyte*) 62

Realistic fighter action in a complex simulation program.

DISTANT ARMIES (*Eagle Tree*) 64

A hands-on history of chess offering 10 different variations of the game.

THE UNIVERSAL MILITARY SIMULATOR (*Rainbird*) 64

Do-it-yourself battle creations in a 3-D military strategy game.

CRASH GARRETT (*Infogames / Terrific Software*) 67

Help a hard-boiled, 1930s-era aviator in his pursuit of nefarious Nazi infiltrators.

REACH FOR THE STARS (*Strategic Studies*) 68

Interplanetary competition in a race to conquer the galaxy.

THE ULTIMATE FONTS: THE NEXT GENERATION.



**NOW ... THERE ARE 3 EXCITING,
PROFESSIONAL, COLORFONT PACKAGES
TO FILL YOUR TITLING NEEDS.**

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

NEW

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

NEW

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 2 plane shiny font.
EMBOSSSED: Raised or sunken letters on a surface.
2 DISK SET - Suggested Retail \$ 69.95

1 MEG RAM REQUIRED / TWO DISK DRIVES RECOMMENDED.

KARA COMPUTER GRAPHICS

6365 Green Valley Circle, Suite 317, Culver City, Calif. 90230 (213)670-0493

STEPHEN ROBBINS, *Publisher*

GUY WRIGHT, *Editor-In-Chief*

DAN SULLIVAN, *Executive Editor*

SHAWN LAFLAMME, *Managing Editor*

LINDA J. BARRETT, *Acquisitions Editor*

BARBARA GEVERT TYSON, *Review Editor*

JAN JACKSON, *New Products Editor*

TIM WALSH, *Technical Editor*

BILL CATCHINGS, DAVID T. MCCLELLAN,

MARK L. VAN NAME, LOU WALLACE, *Contributing Editors*

HOWARD G. HAPP, *Art Director*

ROGER GOODE, *Assistant Art Director*

ANNE DILLON, *Designer*

LAURA JOHNSON, *Designer*

RICHARD BRAYSHAW, *Production*

KENNETH BLAKEMAN, *National Advertising Sales Manager*

MICHAEL MCGOLDRICK, *Sales Representative*

BARBARA HOY, *Sales Representative*

HEATHER PAQUETTE, *Pull Down Menu Sales, 1-800-441-4403*

LINDA M. BUSSIERE, *Advertising Coordinator*

GIORGIO SALUTI, *Associate Publisher, West Coast Sales 1-415-328-3470*

3350 W. Bayshore Road, Suite 201 Palo Alto, CA 94303

SHELLEY HARMON, *Sales Associate, West Coast*

WENDIE HAINES-MARRO, *Marketing Manager*

LAURA LIVINGSTON, *Marketing Coordinator*

MARGOT L. SWANSON, *Secretary*

SUSAN MAIZEL, *Customer Service Representative*



MICHAEL S. PERLIS, *President/CEO*

ROGER MURPHY, *Vice-President/General Manager*

STEPHEN TWOMBLY, *Vice President*

DENNIS CHRISTENSEN, *Corporate Production Director*

LINDA PALMISANO, *Typesetting Manager*

DEBRA A. DAVIES, *Typographer*

SUSAN GROSS, *Corporate Production Manager*

LYNN LAGASSE, *Manufacturing Manager*

FRANK S. SMITH, *Corporate Circulation Director*

LINDA RUTH, *Single Copy Sales Manager*

MIKE CARROLL, *Direct Sales Manager 800-343-0728*

DEBBIE WALSH, *Newsstand Promotion Manager*

PAUL RUESS, *Circulation Director 800-365-1364*

PAM WILDER, *Assistant Circulation Manager*

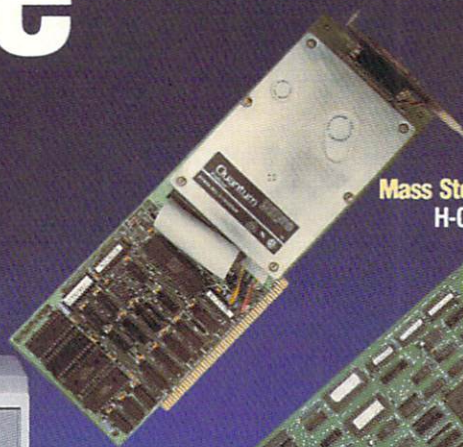
WILLIAM M. BOYER, *Director of Credit Sales & Collections*

AmigaWorld (ISSN 0883-2390) is an independent journal not connected with Commodore Business Machines, Inc. *AmigaWorld* is published monthly by IDG Communications/Peterborough, Inc., 80 Elm St., Peterborough, NH 03458. U.S. subscription rate is \$29.97, one year; \$46.00, two years; \$64.00, three years. Canada \$38.97 (U.S. funds), one year only. Mexico \$38.97, Foreign Surface \$49.97, Foreign Airmail \$84.97 (prepayment is required on Foreign Surface and Airmail subscriptions in U.S. funds drawn on U.S. bank). All rates are one-year only. Second class postage paid at Peterborough, NH, and at additional mailing offices. Phone: 603-924-9471. Entire contents copyright 1988 by IDG Communications/Peterborough, Inc. No part of this publication may be printed or otherwise reproduced without written permission from the publisher. **Postmaster:** Send address changes to *AmigaWorld*, Subscription Services, PO Box 58804, Boulder, CO 80322-8804. Nationally distributed by International Circulation Distributors. *AmigaWorld* makes every effort to assure the accuracy of articles, listings and circuits published in the magazine. *AmigaWorld* assumes no responsibility for damages due to errors or omissions.

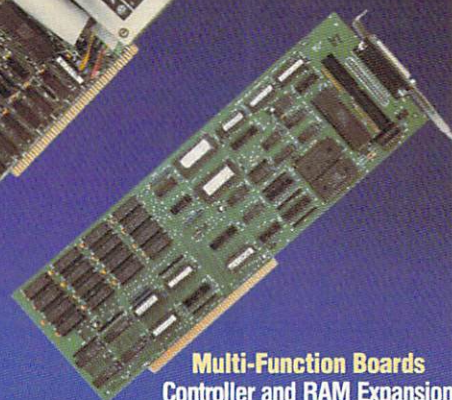
The Power of Choice



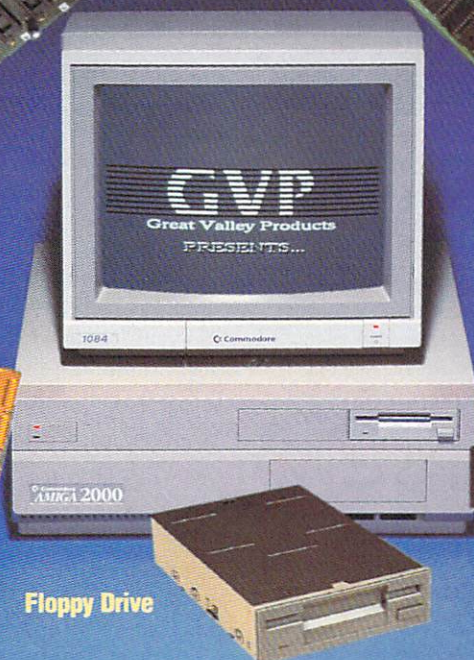
25Mhz 68030 Accelerator



**Mass Storage Solutions
H-Card Series**



**Multi-Function Boards
Controller and RAM Expansion**



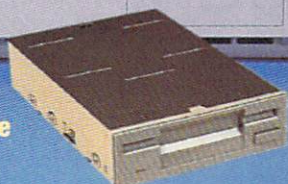
8MB 32-bit Wide RAM Expansion



Hard Disk Drives
20, 30, 40, 43, 45, 80, 100MB



Removable Hard Disk
44MB Removable Storage



Floppy Drive

25Mhz 68030 Accelerator IMPACT A2000-030/882/25

- 25Mhz 32-bit Motorola 68030 offers A3000 power today!
- Up to 33Mhz 68882 floating point math co-processor.
- 8MB state-of-the-art nibble mode DRAM design takes full advantage of the 68030 burst mode, effectively providing a zero wait-state DRAM access at 25Mhz.
- Built-in autobooting hard disk controller.

Mass Storage Solutions IMPACT H-Card Series

- Combines SCSI controller and a 3.5" hard drive on a single A2000 expansion card.
- Available with 30, 40, 43, 80, or 100MB 3.5" hard drive, with 11ms average access time on 40, 80 and 100MB hard disks.
- Autoboot feature comes standard.

Multi-Function Boards IMPACT SCSI/RAM Controller

- Combines SCSI controller and 2MB fast RAM expansion on a single board.
- 16-bit DMA data transfers to on-board 16K disk buffer, providing high-performance not affected by any other Amiga DMA activities.
- Autoboot feature comes standard.

Removable Hard Drive IMPACT SQ44

- Removable cartridge media with 25ms average access time.
- 44MB (formatted) storage capacity per cartridge and unlimited off-line storage.
- Industry standard half-height 5 1/4" form factor.

One-year factory warranty on all products.



GREAT VALLEY PRODUCTS INC.

For more information, or for your nearest GVP dealer, call today (215) 889-9411 or FAX (215) 889-9416.

Amiga is a registered trademark of Commodore-Amiga, Inc. IMPACT and GVP are trademarks of Great Valley Products, Inc.

Dealers Circle 245 on Reader Service card.

Consumers Circle 127 on Reader Service card.

ZEITGEIST

How many is a million?

MAX TOY, President of Commodore, told JAUG (Jersey Amiga Users Group) at their March 17th meeting that Commodore will have shipped their one millionth Amiga by the time you read this. I have many varied reactions to that news.

1. Great! People are buying the Amiga. Lots of people are buying the Amiga! They have seen them, liked what they can do, and have decided that the Amiga is the best computer to own. Software and hardware solutions are out there. Third-party developers are profiting from their Amiga products, and now even more companies will be looking at developing for the Amiga.

2. Well. . . lots of people, including Commodore, think that one million is some sort of magic number, and that the moment the heavyweights (read: IBM business software and hardware developers) hear that one million figure, they will automatically start flooding the Amiga market with products. I think this is only half right. I think the heavyweights will act slowly. I don't think we will see a dozen new spreadsheets for the Amiga released in the next three months. I don't think that the one million number alone is going to convince companies. It might convince people who were on the fence before, and I'm sure that a

number of the not-so-heavyweights will give the Amiga market a chance now.

If you take a step back and look at the products that are available for the Amiga now and then look at the "heavy-weight" products for other machines, there aren't a lot of gaping holes. Yes, we could use some more serious business software, particularly business graphics and business presentation tools. And there is still room for more music, CAD, and educational software. Networking, mass-storage and flicker-free display hardware could be (and is now being) improved. But over all, the Amiga already has products that match or outshine the MS-DOS heavy-weight equivalents.

You might also consider that some of those heavyweights got to be on top because they developed programs that let you do things with a PC that the Amiga does straight out of the box. Windowing software isn't a big deal for an Amiga. Integrated packages are great when you need to bounce around without closing one program to get to another, but with multitasking, we can already integrate almost any software from assorted companies. There are lots of DOS utilities out there to make things easier, but Amigas already have Workbench. (OK, it would be nice to have a Norton Utilities for the Amiga.) I don't think that too

many graphics board people are going to be swarming over to the Amiga, and video hardware and software for other computers is far behind what we have right now.

It is always nice to see new companies and products joining the Amiga group, and I think the magic million will bring in some new players, but it will still take some time.

3. Relief. There have been times when the success of the Amiga was in question. The one million mark takes the Amiga out of the "lets see how they sell" category. But I think that Commodore's attitude in the past year, more than the number of units sold, has "legitimized" the Amiga. Commodore has shown a real effort to support the Amiga. While we sometimes feel that they aren't moving quickly enough or in the right direction, I think they have improved a hell of a lot.

4. Satisfaction. Now, when people ask "What is an Amiga?" or "How is the Amiga doing these days?" we have an answer that means something to just about everyone.

5. Regret. Like seeing your child grow up. Or a pioneer seeing a village turn into a city. It was fun going through the early days of the Amiga, bad and good. If you owned an Amiga, you were part of a small, elite group of free

thinkers, not afraid to be the only person on your block or even in your city to own this special computer. To go out and sell this product yourself if no one else would. The group isn't so small anymore, but we are still elite.

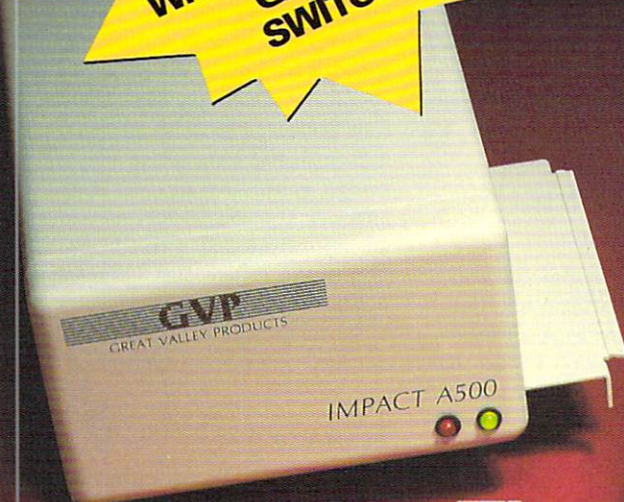
6. So? What's the big deal? We always knew the Amiga was going to succeed. There was never any question in my mind. Of course they would sell a million Amigas! The Amiga is good enough to survive and thrive as long as they continue to make them. There was never a doubt about selling a million Amigas, only how long it would take. One million in three and a half years isn't bad (Apple said that they sold their one millionth Mac only last year), but I think the two million mark will be reached a lot faster.

7. Pride. I think we all helped the Amiga to succeed. All the developers, owners, magazines, public-domain collectors, user groups, artists, programmers, Commodore, engineers, show sponsors, and of course, the Amiga itself. One million is a nice milestone and there should be many others to come.



Amiga 500 Users

**NEW
FEATURE
NOW SHIPPING
With AUTOBOOT/
GAME
SWITCH**

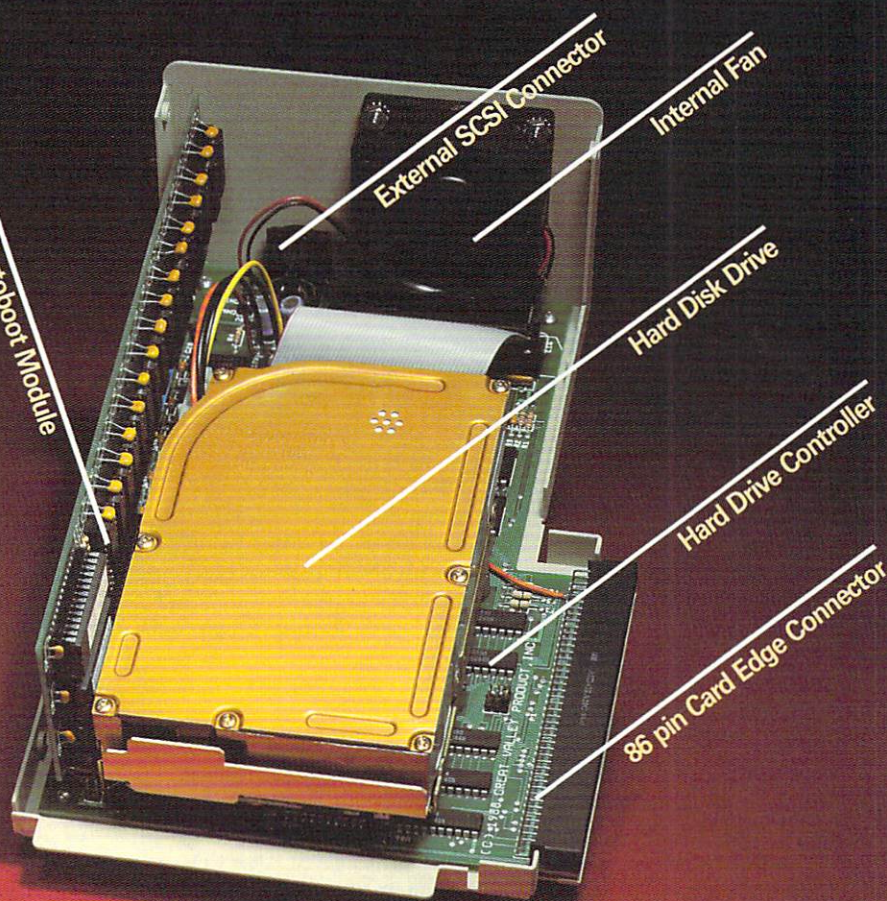


The Ultimate Expansion Tool!

**Incredible Value at Incredible Prices
Starting As Low As \$599.00
with Introductory Offer**

ACT NOW and get up to \$150.00 Factory
Discount with purchase of the Impact A500
(And coupon below)

RAM Expansion & Autoboot Module
(Optional)



External SCSI Connector

Internal Fan

Hard Disk Drive

Hard Drive Controller

86 pin Card Edge Connector

Hard Disk Drive SCSI 3½" Hard Disk Drive, available from 20 to 102MB, capable of storing up to 118 diskettes

Hard Drive Controller DMA, Direct to onboard 16kb Buffer, provides Amiga 2000 Performance.

86 pin Card Edge Connector This compact snap-on unit connects directly to Amiga bus ensuring the highest possible performance and reliability.

RAM Expansion & Autoboot Module Internal Zero wait-state 2MB FAST RAM expansion plus boot directly from the Hard Drive. (Optional)

External SCSI Connector Connects up to 6 additional SCSI devices.

Internal Fan Keeps you cool.

ACT TODAY!

Call or Write

GREAT VALLEY PRODUCTS INC.
225 Plank Ave., Paoli, Pa. 19301
Tel: 215-889-9411
Fax: 215-889-9416



Includes detailed manual and installation software.
One year Factory Warranty.

Introductory Offer! \$150.00 OFF with this completed coupon

IMPACT A500-HD • 20M • 30 • 43M • 40Q • 80Q • 100Q



Name _____

Address _____

City _____ Zip _____

Phone _____

Consumers Circle 62 on Reader Service card.

Dealers Circle 145 on Reader Service card.



GREAT VALLEY PRODUCTS INC.

REPARTEE

Comments, complaints, and concerns

from AmigaWorld readers.

BOW TO THE EAST

I WAS VERY interested in the sad tale of woe by Miles A. Price ["The Five Days of Christmas," Repartee, April '89, p. 8]. As for the IBM PC and compatibles not being subject to the same type of sabotage, I too have both PCs and Macs where I work, on two separate local networks. Since the first of this year, both have been infected by viruses; one of them was a "time bomb" that waited for an extended period before becoming active. By that time, virtually every user on the net was infected, and many of them still may not realize it. So far, it is questionable whether we have cleaned it up. We have been reinfected on at least one occasion, but we have put a "vaccine" into the machines to correct it. No machine is immune, and if Mr. Price has not had a problem with his MS-DOS machines, he should bow to the East rather than condemn the Amiga!

*William H. Hicks, Jr.
Melbourne, FL*

SHE LOVES 'EM BOTH

I ENJOYED THE item about Amigas being used at Ohio State University ["Science Quizzes," Notepad, April '89,

p. 11]. I'd like to see more articles like that about serious uses for the Amiga.

I bought my A1000 for use as an artist's tool. I plan to purchase an A2500 and a Macintosh II, plus a laser printer for the Mac. I don't get involved in those petty arguments between Amiga and Mac users because I love both computers.

*Vivian E.A. McAlexander
Sparks, NV*

THE EXPANDABLE 500

I RECENTLY SCANNED through your Hardware Buyer's Guide [March '89, p. 32]. I was pleasantly surprised by the amount of expansion devices available for the Amiga 500. The A2000 is generally considered to be the most expandable Amiga, and I tend to agree, but the A500 has more hardware options.

First, there is a lot of third-party hardware designed specifically for the 500. Secondly, with an expansion chassis from a company such as Pacific Peripherals or Phoenix Electronics, the A500 can use virtually all A2000 cards (excluding, of course, cards designed for the A2000's processor and video slots).

I'll be the first to admit that the 500 takes up a lot of desk space and that its power supply is limited. But, with a third-party power supply and ample desk space, the A500

can rival any high-end personal computer on the market, and at a bargain price as well.

*Paul Hamm
Brooklyn, NY*

SATURDAY NIGHT AMIGA

I HAD A moderately serious Amiga streak within me, but my enthusiasm took a nose-dive recently when I read that the Toys-R-Us chain would soon be selling Amiga 500s. I do not hold this action, or the desire for profits, against anyone at Commodore.

However, I have tried to be a non-frivolous user of my own A500, and I have been stung by software that didn't live up to the promises of its own packaging. If (and when) the Amiga goes the way of Barbie dolls and G.I. Joes, I can only imagine that the explosion of software will overshadow any truly "serious" packages.

Magazines are already including game sections and game reviews. I've owned the Commodore 64 for years and had noticed many times how the quick-buck programming artists have flooded the software gates.

Someone once said that John Travolta single-handedly

killed the disco and the country western recording markets with his overnight movie success some years ago. Has he now gotten hold of an Amiga 500? I would hate to see the Amiga go the way of the C-64 and the Atari ST. I, for one, am not impressed with the notion of the Amiga 500 "going public."

*Mr. Grove
Chicago, IL*

ERRATA

IN THE PRODUCT Information section of "How to Succeed in Business Presentations" (April '89, p. 28), the telephone number listed for Electronic Arts is incorrect. The correct number is 415/571-7171.

Also, in the same section (p. 30), the zip code given for Digital Creations' Rancho Cordova, CA office is incorrect. The correct zip code is 95742.

—Editors

Send your letters to: Repartee, *AmigaWorld* Editorial, 80 Elm St., Peterborough, NH 03458. Letters may be edited for space and clarity. ■

The Power to Create

HiSoft BASIC Professional is a fully-integrated compiler and editor that makes it easy to convert all your AmigaBASIC programs into fast-running machine code; in fact, it is so simple and quick to use that you will soon find that you no longer need the AmigaBASIC interpreter, you can do everything you want with **HiSoft BASIC Professional**.

Full support of the Amiga is included as standard, with extensive window, screen and graphics commands. Amiga libraries can also be accessed as if they were built-in statements allowing complete machine access.

HiSoft BASIC Professional includes full MENU support, with event trapping and powerful sprite routines, using the OBJECT keywords.

Compiled programs can execute in their own window(s) or use the CLI window for minimum size.

For larger programs and for those with strong editor preferences we also supply an editor-less compiler for traditional disk-to-disk compilation methods.

HiSoft BASIC Professional is a no-limits language: string variables may be up to 16Mbytes in length and there are no limits on array sizes either (subject to available memory). Code generated is fully 68010/020/030 compatible.

Compiled programs have no run-time overhead. Compiled programs multi-task, of course, but as they all share the same library, memory usage and disk space is kept to a minimum. There is also an option to produce com-

pletely stand-alone programs which include only as much of the library as they need.

Features include:

✓ Compatible with Microsoft QuickBASIC 3 on the PC, Atari ST BASIC, AmigaBASIC and most other BASICs.

✓ Full structured programming.

✓ Optional line numbers, lots of compiler and run-time options allowing tremendous flexibility both at compile & execution time.

✓ Full recursion in sub-programs and functions plus local and global variables, arrays as parameters.

HiSoft BASIC Professional - now BASIC programming on the Amiga has come of age.

Order your Copy Today at \$159.95, and take a look at Devpac Amiga, the best Assembler available for the Amiga. Together they make an unbeatable programming team!

DevPac Amiga: The Assembler of choice

HiSoft Devpac Amiga Version 2 is the latest version of the acclaimed assembly language development tool for the Commodore Amiga. It combines a full 68000 macro assembler coupled with a full screen editor, **GenAm**, and a powerful disassembler and debugger, **MonAm**. Devpac is designed to give you maximum power and flexibility, while remaining easy to use.

GenAm includes a full screen editor, running under *Intuition* and using the window- and mouse-oriented environment. The editor features a file requester, dynamic block handling (including delete, copy, save and insert from disc) a comprehensive range of Search and Replace commands and edit-time tab handling. It has a powerful, fast 68000 macro assembler that can assemble source code at a maximum speed of 75,000 lines per minute (on a standard A500). A stand-alone version of the assembler is supplied for users with strong editor preferences or who use batch files.

MonAm is a comprehensive, highly advanced symbolic monitor, disassembler, and debugger. It is multi-tasking, and you can set breakpoints in your code while it executes and stop runaway programs.

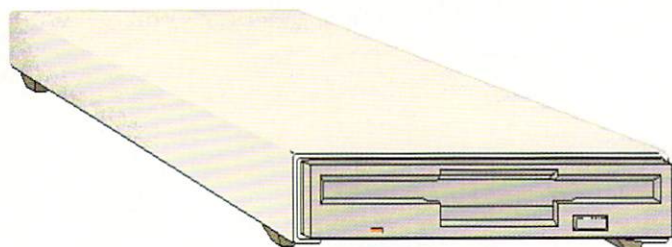
To make program development fast and easy, both the assembler and the debugger are available instantly from within the editor.

Order today, and pay just \$99.95 for the best Assembler/Debugger for the Amiga!

	HiSoft Professional™	AC BASIC™
SIEVE		
Compile time (secs)	7	20
File size (bytes)	868	2228
Run time (secs)	1.0	2.7
CALC		
Run time	1.6	4.9
BSPREAD		
Compile time	55	80
File Size	35816	56036

**MichTron**
576 S. Telegraph, Pontiac, MI 48053
Orders and Information (313) 334-5700

CSI 3200 SilentDrive



Low Price!

This drive is so silent, you almost won't hear it run!

*Assuming the other drives are used in their standard configuration, i.e. without B.A.D. software.

Up to 5 times faster than all other drives with the included B.A.D. software.*

Features:

- Does not click when you take the disk out.
- Small compact design
- Metal case
- Compatible with all Amigas
- Low power consumption

Also available, the CSI2200 Internal drive for the Amiga 2000.

OSWALD \$39.95

A fast-paced action strategy game with an entertaining sense of humor. You're Oswald, a cold, hungry blue bear, challenged by a variety of obstacles and adversaries.

- Fast paced action strategy game.
- Large detailed graphics.
- Digitized sound.
- A variety of interesting and humorous encounters.

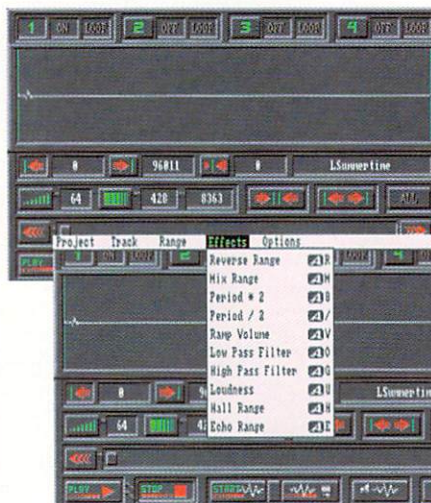
The cutest, most fun to play game for the Amiga!

World Atlas



A foremost educational utility comes to the Amiga. Allowing direct speedy access to details of information on over 150 countries of the world, World Atlas, allows the student, educator, business executive or traveler access to an incredible resource of information and history.

QUASAR SOUND



The ultimate stereo sampling/sound editing system! The QuasarSound advanced editing software gives you the best way to sample sound on the Amiga! Save real-world sounds in IFF format for use in any music program that supports IFF or 8SVX sounds, such as Deluxe Music, Sonix, Soundscape, Dr. T's KCS 1.6A, Dynamic Drums, and many more!

- High and Low Pass filter operations
- Offers loop control
- Can play and record up to 4 tracks in memory
- Easy-to-use user interface with visual editing
- Powerful editing feature, including cut and paste operations.



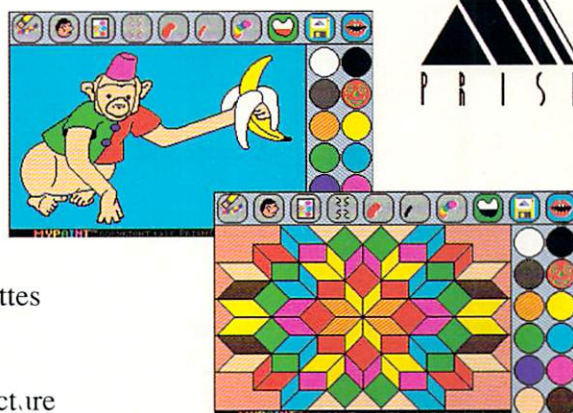
Centaur Software, Inc. 14040 Tahiti Way, Ste. 528. Marina Del Rey, CA 90292 (213) 821-5995

Consumers Circle 200 on Reader Service card.

Dealers Circle 239 on Reader Service card.

MyPaint™

Educational Paint Program & Coloring Book



- Easy to Understand
- Animated icon menus
- Fill Mode
- Various brush modes
- Color cycle effects
- No reading skills required
- 28 Drawings included
- Kids can draw their own pictures
- More "coloring book" diskettes available
- Educator approved
- Sampled sounds for each picture mode

\$49.95 retail

Make Your Disks Fly with.....

B.A.D.

Centaur Software Inc.

14040 Tahiti Way, suite 528
Marina Del Rey
CA 90292

- The Ultimate Disk Optimizer
- Decrease Disk Access Time Up To 500%
- Restore Smooth Disk Operation
- Designed For Use On Floppies AND HardDrives
- Supports Multiple Partitions
- FAST CLI Directory Access
- Incredible Workbench[tm] Performance
- 100% AmigaDOS Compatible
- Works with FAST FILING SYSTEM

B.A.D. analyzes, restructures, and processes ANY AmigaDOS disk such that permanent speed increases will be realized. This is NOT a RAM cache based system!

\$49.95 retail

M.V. Micro

Pro-Net

- Menu driven.
- Complete set of powerful schematic capture commands.
- Variable logic template size that follows MIL-STD-860
- Provides automatic device and section number assignment with Zone control.
- Automatic page reference generation and insertion through post processing.
- Weight assignments which can be hidden.
- Dot Matrix, Laser Printer, Plotter and Gerber Plotter support.

Pro-Board

- PCB Library part accuracy to 0.001 inch.
- 0.025 PCB grid.
- Supports 1, 2, or 4 layer PCB with Silk Screen.
- Single line auto route, 12 mil trace, 13 mil spacing.
- Provides wide traces.
- Component placement done by positioning DIP, SIP, 2-PADS and Library parts.
- Complete set of powerful PCB layout features accessible through IFK's.



Centaur Software, Inc. 14040 Tahiti Way, Ste. 528. Marina Del Rey, CA 90292 (213) 821-5995

NOTE PAD

Compiled by Linda Barrett

Show-Off Biz

BACK IN NEW York City for a return engagement in March, AmiExpo drew a record crowd—the largest yet for an Amiga show. The show's playbill, packed with details on lectures, seminars, and workshops, set the stage for excitement.

AmiExpo's cast of exhibitors included some new names in addition to many familiar ones. GRAFX Computing made its first show appearance demonstrating *X-Shell*, an interface to help you work more productively with Taurus' X-CAD. Another AmiExpo debutant, Micro Momentum, introduced *The Journeyman*, a portable Amiga, as well as some software utilities.

Video Toaster groupies stormed the NewTek booth to see the effects generator and *Digi-Paint III* in action,

while ASDG and Gold Disk had the ears of desktop publishers. Their announcement of *ASDG-RESEP*, a utility capable of inserting 24-bit color images scanned by Professional ScanLab (ASDG's interface to Sharp scanners) into PostScript color separations generated in Gold Disk's Professional Page drew raves.

Among the others vying to steal the show were Mindware International's *PageSync*, which lets you create timed interaction between Amiga graphics and professional-quality audio, and Elan Design's *Elan Performer*, a multi-format presentation program.

Syndesis' latest starlet, *TSSnet*, is an Amiga software implementation of the Digital Network Architecture (DEC-

net). Syndesis also announced two new modules—Gold Disk's Professional Page and Impulse's Turbo Silver 3.0—in supporting roles for the company's InterChange and InterFont packages.

From the orchestra pit, Impulse sent out *Harmony*, a package that turns your script lines into music.

Brown-Wagh put many names in lights, among them *Project Master*, a professional project-management tool, and the *Easy Ledgers* integrated accounting system.

Manx Software Systems announced that *Aztec C Express*, the latest version of the company's software-development environment, is waiting in the wings.

Great Valley Products played a key

part with the *Impact A2000-HardCardQ* combination Quantum Pro-Drive hard-disk/SCSI controller, and the 16 and 25MHz *Impact A2000-030* asynchronous-design 68030 coprocessor accelerators. Also starring in the GVP booth was the *Impact A2000-SQ44* hard drive with a 44MB removable cartridge Winchester hard disk. From Progressive Peripherals came news of *FrameGrabber 256*, a real-time 256 gray-scale digitizer.

Long before the curtain came down, the Amiga—this show's leading lady—got standing ovations from attendees, manufacturers, and retailers alike. The next stop on the AmiExpo tour will be Chicago for a July 28–30 engagement. For more information, call 800/32-AMIGA. —BGT

All Together Now . . .

IN ADDITION TO being the world's largest technology exposition, the CeBIT show in Hannover, West Germany is a showcase for Commodore Germany's latest brainstorm. Having been criticized in the past for launching a multitude of disparate hardware products, Commodore focused on integrated solution packages for the Amiga at last March's show.

One display, aimed at the desktop-video market, combined an Amiga 500 with the new A590 Hard Drive Plus (20MB storage, DMA controller, SCSI interface, and sockets for up to two megabytes of RAM expansion) and the VideoBox, which includes a Diamond Scan digitizer, RGB splitter, and genlock. Four software packages drive the system: the Diamond paint program for digitizing and image processing, Quick Silver for 3D design and animation, Effects for special video effects, and Video-Titler for on-screen text.

Desktop publishers were drawn to the A2000 display. The desktop-publishing system featured a three-meg A2000 with a 40MB hard disk, a hi-res AOC color monitor (connected by a non-interlaced color adapter and the ASDG-IEEE interface card), a Sharp JX 300 color scanner, and an NEC LC 890 PostScript laser printer. For software the system offers Professional Page, Professional Draw (both from Gold Disk), and Professional ScanLab (ASDG).

Activity was also heavy on the business front. The Amiga 2500 UX drew crowds of UNIX enthusiasts,

while IBM PC/AT lovers examined the A2286D AT Bridgeboard and enhanced Janus libraries for the A2000. To brighten up your printed documents, the company debuted the MPS 1224 C, a 24-pin color printer promising speeds up to 220 characters per second (cps) in draft mode and 72 cps in near-letter-quality mode.

For German Amiga owners Commodore was showing off their Btx Software Decoder that allows people to access the Bildschirmtext, the interactive videotext service of the German Federal Post authority.

Commodore must foresee a profitable future for its new Amiga products. If show gossip was correct, the company will double the size of its booth next year. —GW

The Stitch Niche

IF THE WORDS knitting, weaving, and needlepoint bring to mind little blue-haired grannies, then you're way behind the times. During the first meeting of the Textile Computer Users Group at Computer Showcase in San Francisco last March, a savvy professional group expertly threaded their textile jargon with computerese.

Margaret Copeland, a textile designer and production weaver, chaired the meeting. A former business programmer, she wrote Chromaweaver, a color-weave design program for the Amiga, and hopes to eventually add full-spectrum 3D-shaded thread images that accurately coordinate to commercial dyes. Her ambitious plans include creating a disk library of weave patterns, and developing a "pick-out" scanning system to analyze the structure of fabric previously woven.

Margaret initiated the gathering with another Amiga user, Susan Lazear, out of the shared desire to encourage wider use of computers in the textile arts. Susan is the founder of Coch-

enille Computer Knit Products Inc. of Orinda, CA, developers of the first Amiga/IBM interface for the Brother 930/Knitting automated knitting machine. She is also a textile and knitwear designer for leading California sportswear manufacturers and a virtuoso on the Amiga with DeluxePaint II (Electronic Arts).

Susan mesmerized the gathering, which included several Master Weavers visiting from Germany. Taking a colorful sample design from Margaret's Chomaweaver program into DeluxePaint II, she rescaled it as a fill, and with the stencil function, laid it into a sweater body she designed on the spot. Susan prepares all her specification sheets and graphic samples for clients on the Amiga, printing them in luscious color with a Xerox 4020 ink-jet printer.

Demonstrations of Digi-View (NewTek) and various color printers sparked excited discussion of specialized applications. There were reports of surface designers adhering silk to a paper backing and running



Susan Lazear's Fairisle sweater pattern a la Amiga.

unhemmed scarves directly through their printers, and experiments with food dyes in ink-jet printers.

Handwork also benefits from Amiga technology. Across the Golden Gate, Kathleen Rake creates and teaches needlepoint and needlework design at the College of Marin. All her lessons are prepared completely on the Amiga. Stitch patterns are diagrammed with instructional text and printed using PageSetter (Gold Disk), Scribble (Micro-Systems Software), and DeluxePaint II.

The volatile fashion business demands innovative garment and textile design, while the mushrooming hobbyist market is hungry for novelty. The Amiga offers powerful and affordable design tools with possibilities for interfacing to computer-automated looms, knitters, and sewing machines. Users are asking for adaptable or modular programs built with an understanding of their craft. A paint program with a few technical tucks and ruffles would send some eagerly back to their knitting. —Sue Albert

Wanted: Fine Art

THE ABACI GALLERY of Computer Art, in association with Machlan Enterprises, is compiling a book of Amiga computer artwork. Artists interested in submitting their work should send duplicate slides (no originals); each slide should include a title, artist's name, and copyright. All artwork should be original, preferably hand-drawn, designed and created using the Amiga by the artist(s) submitting the work. Deadline for submissions is June 30, 1989. Send your submissions to ABACI Gallery of Computer Art, 312 NW 10th, Portland, OR 97209 (Attn.: Daria Barclay). For more information, contact Daria at 503/228-8642 or Richard Machlan at 503/639-4631. —SL

REVIEWS

Viking 1

See your big ideas life size.

By Bob Ryan

MUCH OF WHAT makes the Amiga great is contained in the custom chips that control graphics, animation, sound, DMA (Direct Memory Access), and more. These custom chips and the libraries that support them, however, also define the limits of the Amiga system. This has been a source of some frustration as newer computers have leapfrogged the Amiga in terms of display resolution. The Viking 1 monitor from Moniterm is an ingenious solution to the problem of expanding the Amiga's resolution. Before you rush out and remortgage the house, though, you may want to wait for Commodore's Enhanced Chip Set to be released.

Viking 1 is Moniterm's implementation of the Commodore A2024 monitor. Like the yet-unreleased A2024, the Viking 1 is based upon the hardware design of Hedley Davis and the software engineering of Dale Luck, the author of the Amiga graphics library. It can display standard Workbench applications at a resolution of 1008 horizontal pixels by 800 vertical pixels in four shades of gray. Unlike the A2024, however, which attaches to the Amiga RGB port and contains the circuitry needed to create the enhanced display, the 19-inch Viking 1 is an Amiga 2000-only product. It comes with an interface board that creates the display, and enough memory to buffer the display before it is output to the

monitor. Until AmigaDOS 1.4 ships, the Viking 1 will also come with a special Jumpstart disk.

Installing the Viking 1 hardware is easy and takes no longer than ten minutes. Remove the cover from your Amiga 2000 and nudge the interface board into the video slot at the right-rear of the machine. Then close up your machine, place the monitor on top of your Amiga, and connect the monitor to the interface card using the supplied cable.

LEAPIN' LIBRARIES

To operate the Viking 1 your machine must have the Exec, graphics, and Intuition libraries from Kickstart 1.4. Because Kickstart 1.4 is not yet available as a replacement ROM chip, it comes to Viking 1 owners on disk. This disk contains the Jumpstart program, which loads the 1.4 libraries into RAM and then patches your system software so that your Amiga uses these libraries instead of the ones in ROM. Then, the Jumpstart program reboots your system using the 1.4 libraries.

Once you have rebooted with the 1.4 libraries, run the SetMonitor program to indicate that you will be using the Viking 1. Now, you can activate the enhanced resolution mode by running Preferences and selecting an appropriate mode switch, and then loading the ResetWB program, which puts you into 1008×800 display mode.

Although the software installation is uncommon, the entire process, with the exception of ResetWB, can be done automatically using script files supplied on the Jumpstart disk.

APPLIED INGENUITY

Although it can be extended a bit with software overscanning, the Amiga's high-resolution limitation of 640×400 is fun-

damental to the Amiga's design. To increase resolution by normal methods, you would have to put an entirely new display system on an expansion board and write new libraries to support it. If you did that, however, the new display hardware would likely be incompatible with current software.

The Viking 1 avoids such problems by creating its large display from multiple standard Amiga displays. The software sets up four or six (depending upon the option you choose from Preferences) linked Amiga displays in chip memory, and sends each to the Viking interface 10 or 15 times per second (depending on the display mode you select). The interface board assembles these frames in its buffer and then outputs the result to the monitor.

Both of the Viking 1's extended display modes—10 Hz and 15 Hz—produce a 1008×800 display. The difference is that the 10 Hz display is jerkier while the 15 Hz mode uses Chip RAM DMA and can cause bus contention (i.e., as the custom chips access chip memory to create the display, they steal cycles from the 68000, thereby slowing program processing). Although the display does not scroll as smoothly in either mode as does a standard Amiga screen, I consider this a small price to pay for the huge, crisp, steady display that the Viking 1 provides. I've often gone home with sore, burning eyes after working with a standard Amiga monitor for six or eight hours. I encountered no such problems with the Viking monitor.

In addition to the extended modes,

the Viking supports standard Amiga low-, medium-, interlaced-, and high-resolution modes. As a bonus, it removes flicker from interlaced and hi-res displays as effectively as MicroWay's flickerFixer.

WATCH YOUR TWOS AND FOURS

The Viking 1 converts all displays into four shades of gray, and because it supports just one sprite—the pointer sprite—it is not suitable for arcade games. Still, the Viking 1 will run any software in extended mode that uses a two- or four-color Workbench screen and follows Commodore's programming guidelines.

Because the monitor is designed with a few specific applications in mind, I tested a number of leading word-processing, CAD, and desktop-publishing programs with the monitor and came up with mixed results. Although the current level of support is good, I believe that the release of AmigaDOS 1.4 will spur more developers to insure that, if appropriate, their software supports the extended mode.

Software that does not employ a standard Workbench screen cannot access the Viking 1's extended modes. That eliminates programs that use custom screens. ProWrite (New Horizons), for instance, uses an eight-color proprietary display. While excellence! (Micro-Systems Software) also normally opens a custom

screen, you can force it into Workbench by using the CLI's -w option. (Entering your program disk's name followed by -w on the command line prompts any program supporting this option to open into the Workbench screen.) When run this way, excellence! performed beautifully in extended mode.

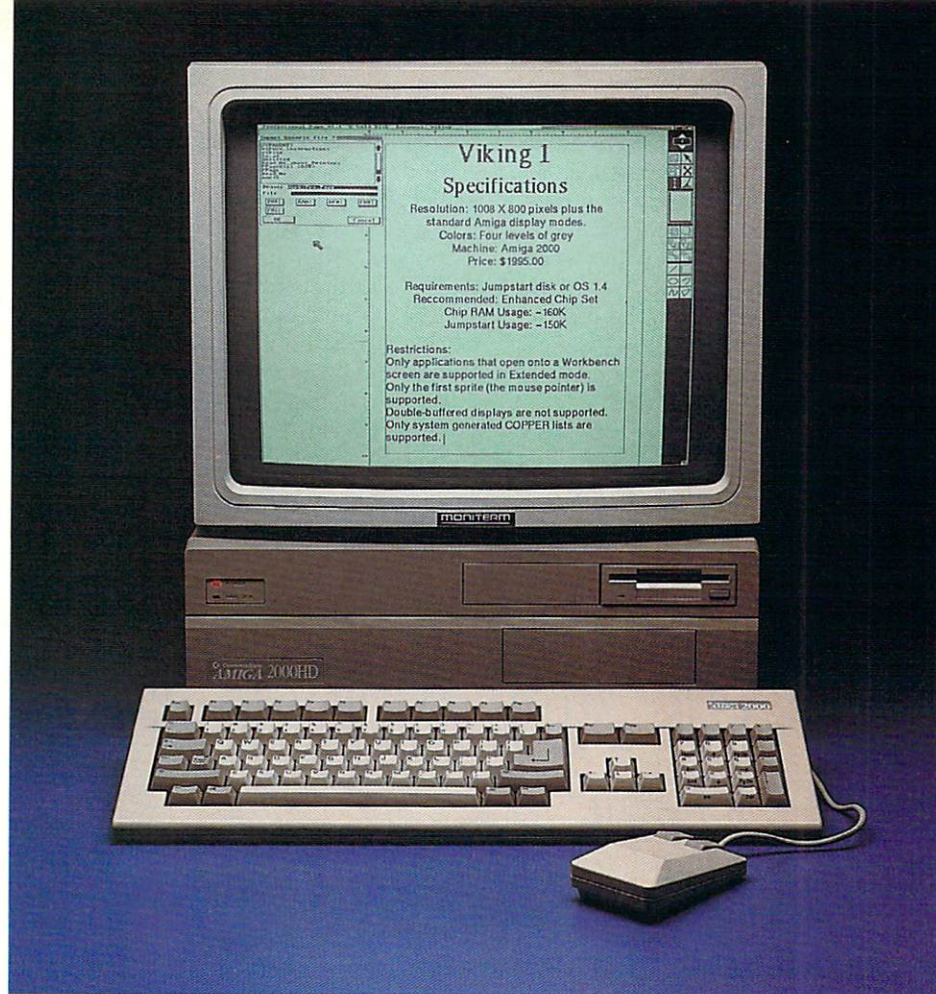
Not so WordPerfect (WordPerfect Corp.). Using the -s option from the command line I was able to open a larger-than-normal window on the extended screen, but this window did not occupy the whole display. I also encountered problems operating the program in extended mode.

Because most CAD programs use custom screens, not many can take advantage of the Viking 1. One that does, Aegis Draw 2000, lets you choose to open into Workbench.

The test I was most interested in involved running Professional Page (Gold Disk) and PageStream (Soft Logik), the two Amiga desktop-publishing heavy-

weights. Although Pro Page normally uses a custom screen, it does support the -w option. When I ran the program using this option, however, a requester informed me that I had insufficient Chip RAM. I didn't have a prototype of the new Fatter Agnus chip that provides one meg of Chip RAM, so I tried running the program with a two-color Workbench, rather than in four-color mode (an option made possible by Jumpstart's Preferences). Pro Page worked fine on the two-color Workbench, although it was unable to display inactive boxes, the grid, column outlines, and other things that use the upper two colors of the usual four-color Workbench. The fact that I can get an entire $8\frac{1}{2} \times 11$ page on screen at 100% magnification will make up for the invisible lines until I get a Fatter Agnus chip.

PageStream was another story. Once ►



The Viking 1 lets you see an entire full-size $8\frac{1}{2} \times 11$ sheet on screen.

again, I used the -w option to open the program onto a Workbench screen. I was encouraged by the fact that PageStream loaded, opened its tools window in the upper left of the extended screen, and laid its menu across the top. When I tried to create a document, however, the program crashed. I never got PageStream to work in extended mode.

PLAYING CATCH-UP

The Viking 1 is just a little ahead of its

time. Until the Enhanced Chip Set and AmigaDOS 1.4 hit the market, the monitor will be harder to use and will work with less software than it should. If you think a beautiful 19-inch four-gray-level display is just what you need for your desktop-publishing, word-processing, or CAD application, put \$1995 into the bank until Commodore releases the new chips and operating system. Then, use the original \$1995 to buy the Viking 1 and the accumulated interest to buy the

the Enhanced Chip Set and 1.4. You will not be disappointed.

Viking 1

Moniterm Corp.

5740 Green Circle Dr.
Minnetonka, MN 55343
612/935-4151
\$1995

No special requirements.

Presenting...

Abacus' AmigaDOS® Toolbox

**A collection of
essential, powerful,
and easy-to-use tools
for your Amiga.**

**Also included
at no
additional cost
(\$14.95 value)**



\$59.95

Here's a new software package that every Amiga owner can use. Abacus' AmigaDOS Toolbox has the tools you need to make your Amiga computing easier and more productive. Whether you are a beginner or an advanced Amiga user you'll find the AmigaDOS Toolbox to be just what you've been looking for.

To order call Toll Free 1-800-451-4319

Abacus 

Dept. L5, 5370 52nd Street S.E.
Grand Rapids, MI 49508
Phone: (616) 698-0330

Some of our best tools included are:

- DeepCopy- one of the fastest FULL disk copiers; copies many different formats.
- Speeder- a data speedup utility (more than 300%) -not a disk cache.
- BTSnap- a screen grabber deluxe.
- Diskmon- a full-featured disk editing tool.
- Fonts- eleven new originals you can use in your Amiga text. ...and many additional tools that every Amiga owner can use. Bought individually, equivalent software could cost up to \$200.

Amiga and AmigaDOS are registered trademarks of Commodore-Amiga Inc.

4004 GENLOCKABLE VIDEO GRAPHICS ENCODER

The bucks top here.

By Joel Tessler

FROM THE MOMENT it was introduced, the Amiga has been touted as a serious video-graphics tool. Despite its outstanding abilities, however, the A1000's composite video signal is inferior. Commodore responded to criticism of the A1000's built-in encoder by doing away with it on the A500 and A2000, in hopes that third-party manufacturers could do a better job. Magni Systems, a company known to video insiders for its fine test equipment, has met this challenge—but at a price that excludes all but professional users.

EXPERTO CREDE

With the 4004 Genlockable Video Graphics Encoder for the Amiga 2000, Magni Systems demonstrates its knowledge of NTSC intricacies. (Model 4005 is the PAL version.) The 4004 consists of two cards: a 100-pin genlock-and-encoder board that fits into an IBM slot, and a video-interface board that plugs into the Amiga's video slot. Two flat cables link the genlock/encoder board with the video interface. A nine-pin breakout cable, which extends from the rear of the encoder board, lets you attach an external video reference in, external key in, reference black out, and video out. Using the video interface's eight DIP switches, you can configure the 4004 to one of four genlock modes: sync and burst lock, burst lock only, sync lock only, and internal reference.

The 4004 is shipped with two disks: a self-running demo and the Magni 4000 ►

Got The Picture...Get The Works!

PLATINUM EDITION™

Picture this: all the productivity applications you need in one easy to use "Starter Kit". Give your Amiga power times five. Give it **The Works! Platinum Edition**.

✓ **WORD PROCESSOR** • The Works! Platinum Edition word processor is powerpacked with features that help the serious writer excel, in an easy-to-use environment that makes beginners instantly productive. The 104,000+ word dictionary with Scientific and Technical supplements keeps your spelling picture-perfect. The 470,000+ word thesaurus with definitions keeps your word-images precise. Mail Merge eliminates repetitive typing. All this, the ability to print IFF graphics, and more! It may be all the word processor you'll ever need.

✓ **SPREADSHEET** • The Works! Platinum Edition spreadsheet is lightning fast — in fact, the fastest Amiga spreadsheet. And it supports the 68881 co-processor for even more blinding speed. The more than 40 built-in functions do sophisti-

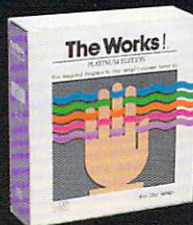
cated calculations. Picture your numbers in any of eight graph types and displayed in eight vibrant colors. Its complete Macro language automates complex operations.

✓ **TELECOMMUNICATIONS** • The Works! Platinum Edition is a sophisticated telecommunications program. It is a special part of the outstanding whole. Its multiple terminal emulations and *ten* transfer protocols are the hallmark of flexibility. The script language offers untended operation and the user defined Macro-Keys reduce complex commands to a single key-stroke. Ask about Sadie.

✓ **DATABASE** • The Works! Platinum Edition is a flat file manager with power. The extensive mathematical functions make reports much more than a simple list of data.

✓ **SIDEWAYS** • The fifth power module in The Works! Platinum Edition, stands your print-outs on end. Print ASCII text files and IFF Graphics rotated 90-degrees.

The Works! Platinum Edition is true *integration* from the Micro-Systems Software Development Team; pioneers in Amiga productivity products. Experience full Clipboard compatibility, a common interface, and one user friendly manual. You owe yourself the Platinum experience! Check out **The Works! Platinum Edition** at a dealer near you.



Committed to excellence since 1978



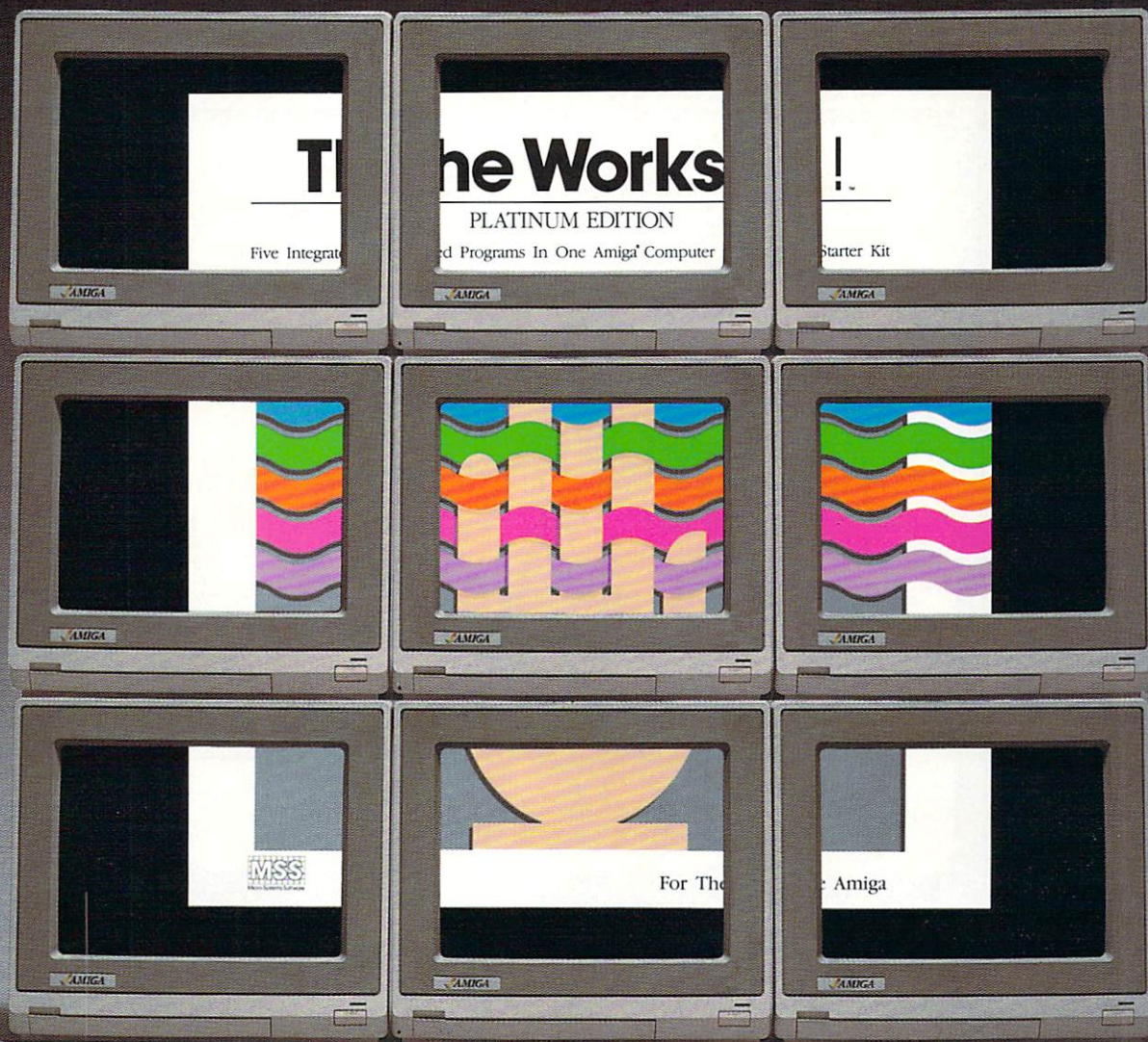
12798 Forest Hill Blvd., Suite 202
West Palm Beach, Florida 33414
407-790-0770 Fax 407-790-1341

Dealers and Distributors Call 1-800-327-8724

See your local dealer for a demonstration.

We use KAO Disks.

The Works! Platinum Edition is a trademark of Micro-Systems Software, Inc. All brand and product names are trademarks of registered trademarks of their respective companies.



Series Control Software, which allows full mouse or keyboard control of the genlock. The demo runs flawlessly, but attempting to use the control software right out of the box is frustrating. Clicking on the program's icon yields no response. Only loading from the CLI offers a clue—the error message “Cannot establish communication with video hardware.”

Upon close inspection of the manual, I discovered that the factory configuration of the DIP switches is sync and burst lock. For the software to be enabled, you must reset three of the switches to a fifth mode. Once I set the switches properly, the software ran fine as both a foreground and background task. I had no trouble using the program with various combinations of graphics packages. The control software allows you to reset the genlock mode, turn keying on or off, invert keying, choose between color 0 or luminance keying, adjust the key level, mix between video and graphics, cut between video and graphics, or set auto rates for these transitions. If you want to maintain this type of control over the genlock while using single-tasking pro-

grams (like JDK Images' Pro Video Plus or Video Effects 3D by InnoVision Technology), you must spring for the optional 4010 remote-control unit. (The 4010—an extra \$300 with the genlock or \$495 purchased separately—is similar in design to other genlock controllers. It hooks up to the back of the video interface via a 25-pin connector.)

Running the control software panel in the foreground, you can enable all functions via the mouse. When you use the genlock “live,” however, this setup is not necessarily desirable. For this type of application, you can transfer keyboard control to your graphics program by placing the Magni software in the background. At any time, you can override the dominant graphics software with the 4000-series program by pressing a key combination; then, the function keys trigger the various genlock modes. You can return authority to your graphics program at any time with another simple key combination.

SQUEAKY CLEAN

The Magni system delivers the cleanest video signal I have yet seen from the

Amiga. Using the 4004 in its factory-configured setting will give you graphics-only output in broadcast bandwidth while independently locking to external sync and burst. In the absence of an external reference, the sync oscillator will lock to its own internal timing. Therefore, you need only connect the video output cable to a properly terminated destination to obtain proper NTSC graphics. The auxiliary output can also be configured to provide blackburst out.

Using the public-domain program VTOT (Video Tools on Tap), I displayed SMPTE bars, full-field color bars, and a gray scale through the 4004, and measured the output on both a waveform monitor and a vectorscope. Several video engineers agreed that the signal easily conforms to broadcast tolerances. To the less trained eye, the stability of the graphics is obvious evidence that the 4004's signal is high quality. Dot crawl is almost non-existent and the NTSC colors closely approach the RGB originals.

Continued on p. 72

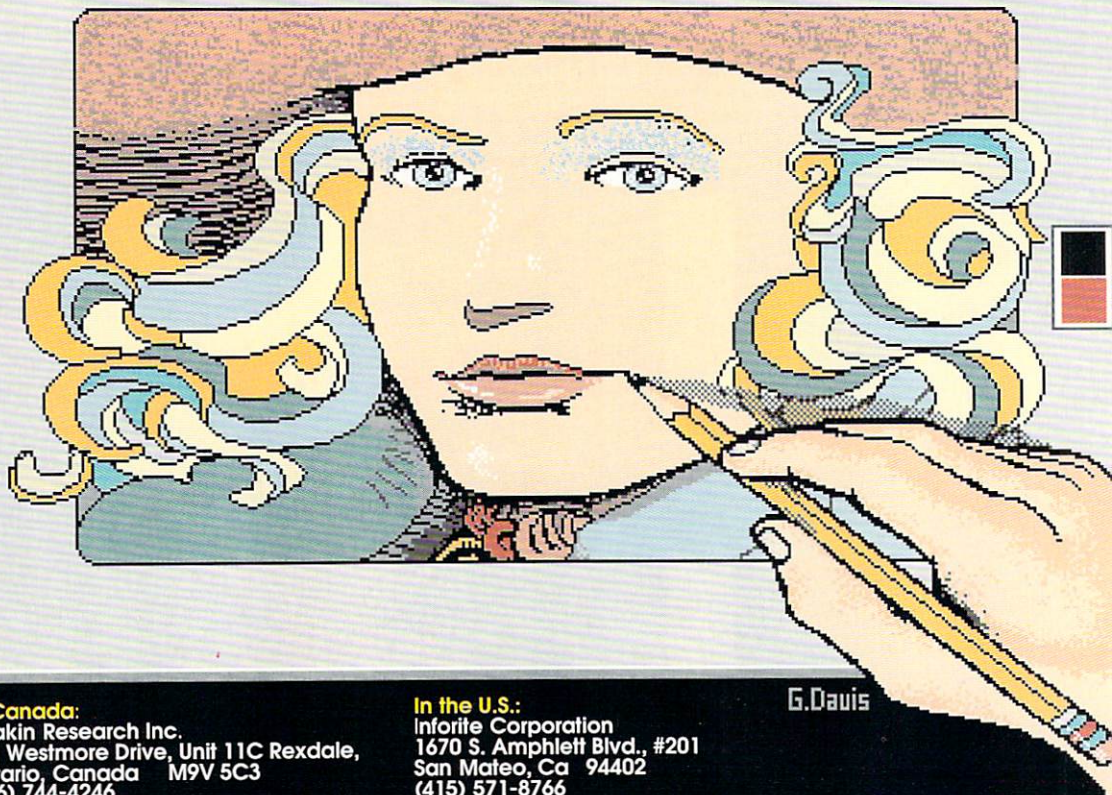
EASYL™

THE HUMAN TOUCH

The EASYL graphics tablet, a natural extension of your pen or pencil, is the simplest and most intuitive way to put your ideas into the Amiga. Whether you are an artist, animator, designer or engineer, EASYL quickly draws your attention to its' power, precision, ruggedness and ease of use.

Once installed in your Amiga 500, 1000, or 2000, EASYL is ready to work with Deluxe Paint, Draw Plus, Photon Paint, Express Paint, Professional Draw, plus many other popular graphics programs. No matter what the job, EASYL is just a pen stroke away. EASYL also leaves your mouse active and the mouse/joystick, serial, and parallel ports free for other uses. For a powerful way to express yourself on your Amiga, pick up the EASYL pressure sensitive graphics tablet. Chances are you won't put it down. Contact your Amiga dealer for a free demonstration, or contact one of the addresses below.

EASYL is also available for Commodore PC/XT/AT and compatible computers. EASYL technical support is available on BIX.



G. Davis

In Canada:
Anakin Research Inc.
100 Westmore Drive, Unit 11C Rexdale,
Ontario, Canada M9V 5C3
(416) 744-4246

In the U.S.:
Inforite Corporation
1670 S. Amphlett Blvd., #201
San Mateo, Ca 94402
(415) 571-8766

Easyl is a registered trademark of Anakin Research Inc., Deluxe Paint is a registered trademark of Electronic Arts, Professional Draw is a registered trademark of Gold Disk Inc., Photon Paint is a registered trademark of Microillusions, Draw Plus is a registered trademark of Aegis Development Inc., Express Paint is a registered trademark of P.A.R. Inc.

Circle 82 on Reader Service card.

Sculpt-Animate 4D Blows the Competition Away!

"I have two strikes against me in life. I'm a Canadian who can't play hockey and I know nothing about computers. If it weren't for Sculpt-Animate 4D, I'd be in big trouble. Thanks to this easy-to-use product, I now create animations that my friends, who struggle to use the other 3D packages, only dream about. They think I'm a hacker. So when they come around I say things like "RAM", "multi-sync" and "CPU" - for image. When they're gone, I turn on my Amiga, turn on SA4D and turn into a 3D pro. SA4D is fast, friendly . . . and doesn't require skates."

Bruce Granofsky
Professional Animator, Canadian



"Jammin Clerk" created by Bruce Granofsky with Sculpt-Animate 4D.

We don't want to toot our own horn, but Sculpt-Animate 4D has no competition. No other Amiga program could create the "Jammin Clerk" image. Sure, one could render the balls, another could build the sax. But, SA4D is the only 3D program that could build, render, *and* animate Clerk. Compare for yourself. Study the images and animations from the other 3D programs. Only SA4D brings your creations to life with haunting reality. Join with us in changing the course of 3D history. **Suggested retail price is \$499.95.**

Special Sculpt-Animate 4D upgrade pricing:

	U.S./Canada	Overseas
Sculpt 3D*	\$345	\$400
Sculpt-Animate 3D*	\$195	\$250

*Warranty cards and manual covers required to receive upgrade pricing.

3D Cookbook - An entertaining one hour video tape introducing Sculpt-Animate 4D. Easy, step-by-step demonstrations reveal powerful, time saving tips for creating 3D visuals. **Suggested retail price is \$24.95.**

Sculpt-Animate 4D Jr. 3D Animation - For the Rest of Us

Interested in making beautiful 3D visuals? Got the low budget blues? Sculpt-Animate 4D Jr. was composed specifically for you. Learn 3D design and animation skills with a minimum of effort. At low cost. Through an easy-to-use graphical user interface, SAJr. produces stunning wireframe and polygonally shaded 3D animations. On an Amiga 500 no less. SAJr., the only real competition to Sculpt-Animate 4D. **Suggested retail price is \$149.95.**

Contact your local dealer or Byte by Byte
at (512) 343-4357 for more information.
Educational site licenses are available.



BYTE by BYTE
CORPORATION

Direct U.S. and Canadian distributor inquiries
to Centaur Software, Inc. at (213) 821-5995.
International resellers contact Byte by Byte.

Arboretum Plaza II 9442 Capital of Texas Highway N. Suite 150 Austin, Texas 78759 (512) 343-4357

Sculpt-Animate 4D, SA4D, Sculpt-Animate 4D Jr., SAJr., and 3D Cookbook are trademarks of Byte by Byte Corporation. Amiga is a trademark of Commodore Business Machines, Inc.

Dealers Circle 260 on Reader Service Card.

Consumers Circle 59 on Reader Service Card.

BASIC by the Numbers

In his last hurrah, our intrepid BASIC seer actually tries to do something useful.

By Bob Ryan

75

THE MOD SQUAD

IN THE LAST three installments of "BASIC by the Numbers," I've discussed how to perform different types of text-data manipulation—specifically, how to access data files and how to sort and search data. This month, in the final appearance of this column, I put these pieces together with information from previous columns to create a nice address-book application. The whole program is printed here as Listing 1.

The Address Book program consists of a short main routine and lots of subroutines. This illustrates the concept of modular programming: break large programs into small pieces, then string them together to form finished applications. Look at the main routine of Address Book. It consists of 11 lines that initialize the array, set up the menus, turn on menu and error trapping, and then wait for you to make choices from the menus.

76

IN THE DRIVER'S SEAT

THE WORK OF the program is done in dedicated subroutines accessed by menus. The menus themselves are handled in four separate routines.

CheckMenu tests for the menu item selected and calls the proper routine to handle that choice. For example, if you choose List from the Print menu, CheckMenu calls the PrintRec routine that actually sends the contents of the address book to your printer.

The three other menu-handling routines, ActivProject, ActivAll, and ActivNone, make some menu items active or inactive, depending upon whether a data file has been opened or whether another routine, such as the search

routine or the show forms routine, is running. ActivProject activates the Project menu only and is called when you first start the program. ActivAll is called after a file has been opened, giving you access to all the menu items. ActivNone shuts down all the menus while the program is printing or waiting for keyboard input. These three routines insure that you cannot perform an action at an inappropriate time.

The use of multiple windows goes hand in hand with the use of menus. Every input and output action the program performs uses a dedicated window. This keeps the output display clean and uncluttered.

77

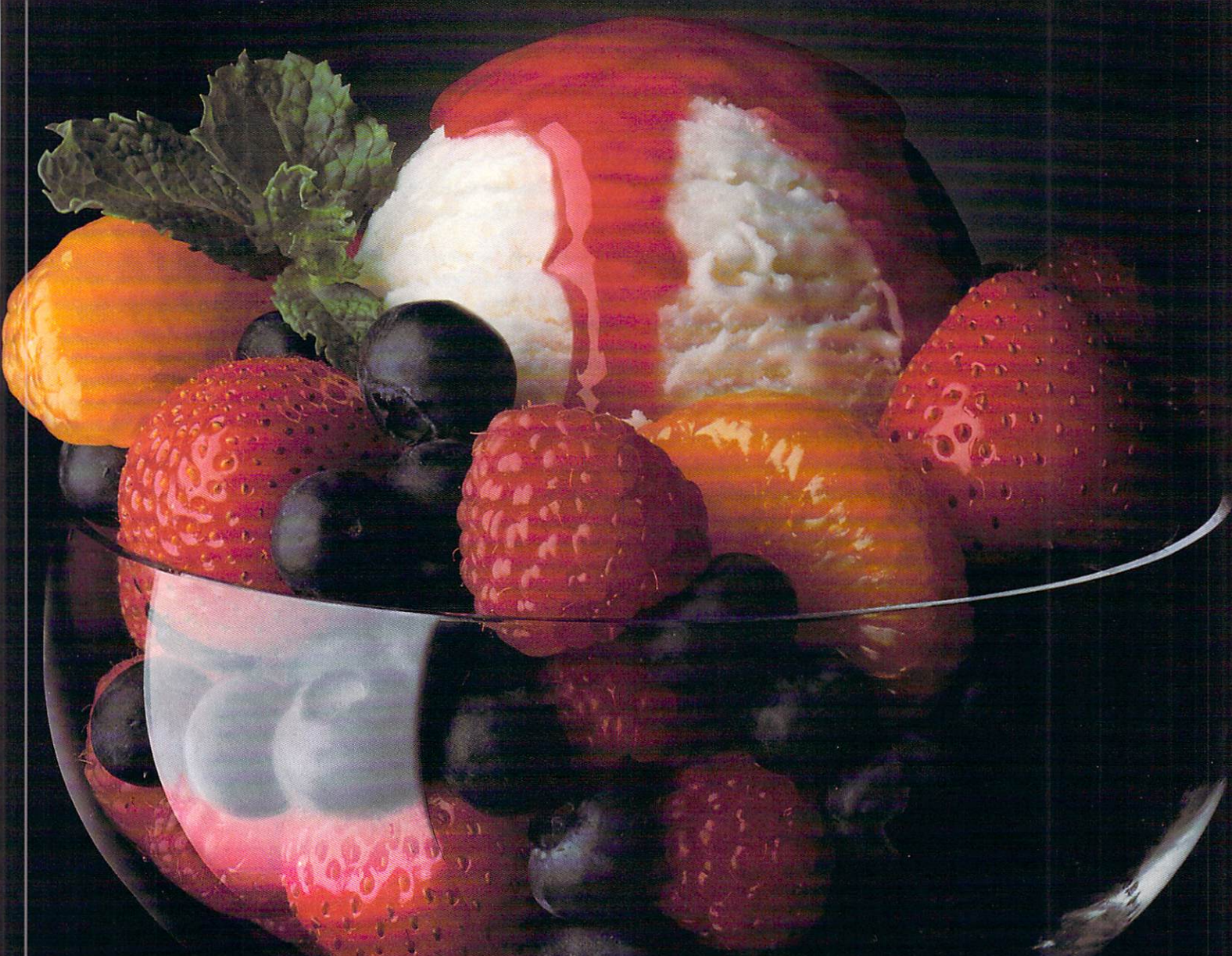
CHANGES

IF YOU HAVE followed my previous discussions on file handling, sorting, and searching, you will notice that I have pretty much used the same code; I have simply repackaged it into subroutines accessed by menus. For example, the file-opening routine (OpenF) now opens a small input window and asks you for the name of a file. It then reads in the data, sorts it with

a call to FSort, and activates all the menus before returning program control to the menu-trapping loop in the main routine. The sort routine itself is identical to the routine used in earlier installments.

The search routine RecSearch has undergone the greatest transformation. The

problem with the old routine is that it did not check to see whether there were multiple "hits"—whether more than one data item matched the search parameter. The CheckRec portion contains the logic to check for more than one match. It uses a recursive algorithm to check records adjacent to the matching record until all matches are found. ►



NOW FEED YOUR COMPUTER DELICIOUS COLORS, AT A PRICE THAT'S EASY TO SWALLOW.

Introducing the Sharp JX-300 letter size color scanner.

Our affordable, new JX-300 can scan the most appetizing color originals up to 8½" x 11". It also has a small footprint and fixed scanning bed to give you more usable desk space.

This new color scanner joins our larger, widely acclaimed JX-450, which handles originals up to 11" x 17". The JX-450 also scans 35mm slides and overhead transparencies with an optional mirror unit.

Both units scan at 300 d.p.i. resolution and 256 shades for

each element to give a range of 16.7 million colors. Not to mention 256 gray scales for monochrome systems. Both are compatible with the leading PC systems.

Sharp also offers the JX-730 color inkjet printer to give you plain paper color printouts that are faithful to your originals.

If you're looking into scanners—even black and white scanners—don't overlook the future. The future is mouth watering color. For information, call 1-800-BE-SHARP.



78

INFORMATION DISPLAYS

THE PROGRAM LETS you display data in two ways: as forms and as a list. The forms mode displays the information from one record and then waits for you to hit the Return key. The list mode displays ten records at once. Note that the ShowForm

routine is called by the search routine as well as by the Display Form menu item.

A new addition to the program is the ability to print records in a list or as mailing labels. The printer is treated like any other file; it must be

opened and output is directed to it by using its file number. The labels routine prints three lines of information and three blank lines. This assumes you are using standard one-inch mailing labels and setting your printer to six lines per inch.

79

THE NEXT STEP

ADDRESS BOOK IS a nice little program, but space limitations made it impossible for me to incorporate all the bells and whistles I wanted. Making a virtue out of a necessity (or a feature out of a bug), I'll leave it to you to incorporate some or all of the following improvements:

The program needs an Edit menu that will allow you to edit the information in the records and to delete entire records. The Record Add routine should also be a part of this menu.

The search routine should let you choose what field you want to search. It should also let you indicate a range such as "last names between F and H." You should also be able to choose a range of records for printing.

One final improvement the program needs is a file requester. This one is rather complicated and you may not want to undertake it. Luckily, *AmigaWorld* has an article on an Amiga Basic file requester in the works.

80

OUT, OUT, BRIEF CANDLE!

THAT'S IT FOR "BASIC by the Numbers." Before the editors get out the wooden stake, I'd like to say that I've enjoyed writing the column; I hope you've enjoyed reading it.

Listing 1. Address Book program.

```
REM Address Book Program
REM By Bob Ryan
REM May, 1989 AmigaWorld

      REM Main Routine
DIM lst$(100,7)
GOSUB ActivProject
ON MENU GOSUB CheckMenu
MENU ON
ON ERROR GOTO eHandle

s=1
WHILE s=1
  SLEEP
WEND

END

      REM Menu Handling
CheckMenu:
  MENU OFF
  ON MENU(0) GOSUB m1,m2,m3,m4
  RETURN

m1:
  ON MENU(1) GOSUB NewF, OpenF, Quit
  MENU ON
  RETURN

m2:
  ON MENU(1) GOSUB ShowList, CheckForm
  MENU ON
  RETURN

m3:
  ON MENU(1) GOSUB AddRec, GetSearch
  MENU ON
  RETURN

m4:
  ON MENU(1) GOSUB PrintRec, PrintLab
  MENU ON
  RETURN

      REM Exit Routine
Quit:
  MENU RESET
  STOP

      REM Get Data for Search
GetSearch:
  GOSUB ActivNone
  WINDOW 2,"Search",(50,50)-(400,150)
  LOCATE 5,3
  PRINT "Get Search Parameter"
  PRINT
  INPUT "Enter Last Name: "; search$
  WINDOW CLOSE 2
```

Listing continued on p. 108

Color Graphics.

Multiple Fonts.

Spelling Checker.

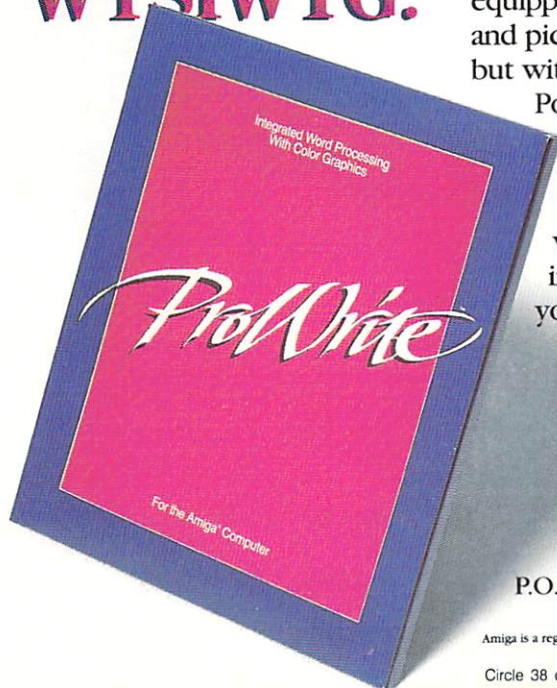
Mailmerge.

Multiple Windows.

Resizable Graphics.

Fast Printing.

WYSIWYG.

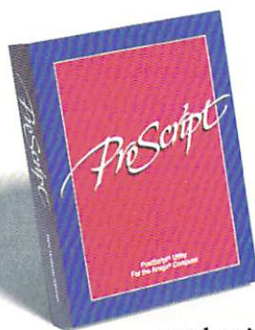


No Other Word Processor For Amiga® Stacks Up To ProWrite™ 2.0.

Word is out. ProWrite 2.0 allows you to expand your Amiga word processing to new horizons. Use it to generate proposals with impressive bar charts. Create letters and reports with snappy graphics. Generate television storyboards. Even dash out newsletters with spot illustrations.

And of course, ProWrite 2.0 has all the other features you expect: a spelling checker with 95,000 word dictionary. Mailmerge. And fast graphics printing. Best of all, it works with our font packages, ProFonts I and II, giving you a broad range of professional and decorative fonts.

All this, plus ProWrite's powerful editing capabilities and ease-of-use combine to make ProWrite the best word processor for the Amiga computer.



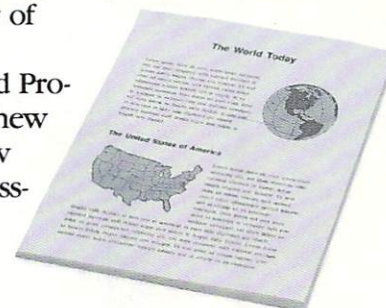
ProScript: Perfection In Print For The Amiga.

ProScript is the new PostScript utility from New Horizons Software that gives you the professional look of typeset copy.

ProScript reads ProWrite files

and prints them on any PostScript equipped printer, giving you the same multiple font and picture capabilities you expect from ProWrite, but with the typeset quality of PostScript printing.

ProWrite 2.0 and ProScript. A powerful new team that puts a new world of word processing and printing at your fingertips.



New Horizons
S O F T W A R E

First in Personal Productivity and Creativity
P.O. Box 43167/Austin, Texas 78745/(512) 328-6650

ProWrite, ProFonts and ProScript are trademarks of New Horizons Software, Inc. Amiga is a registered trademark of Commodore-Amiga, Inc. PostScript is a registered trademark of Adobe Systems, Inc.

Circle 38 on Reader Service card.

PAGE render3D

render3D

PAGE render3D
THE ARTISTS' 3D TOOL



- Supports stereo vision
- Includes large library of pre-defined objects, letters, and numbers while allowing the easy addition of user defined objects
- Generates 3D in any number of bit planes (even one bit plane 3D!)
- Allows exact control over motion in 3D
- Performs automatic light adjustment when light source re-positioned
- Presents choice of co-ordinate systems for optimum 3D generation

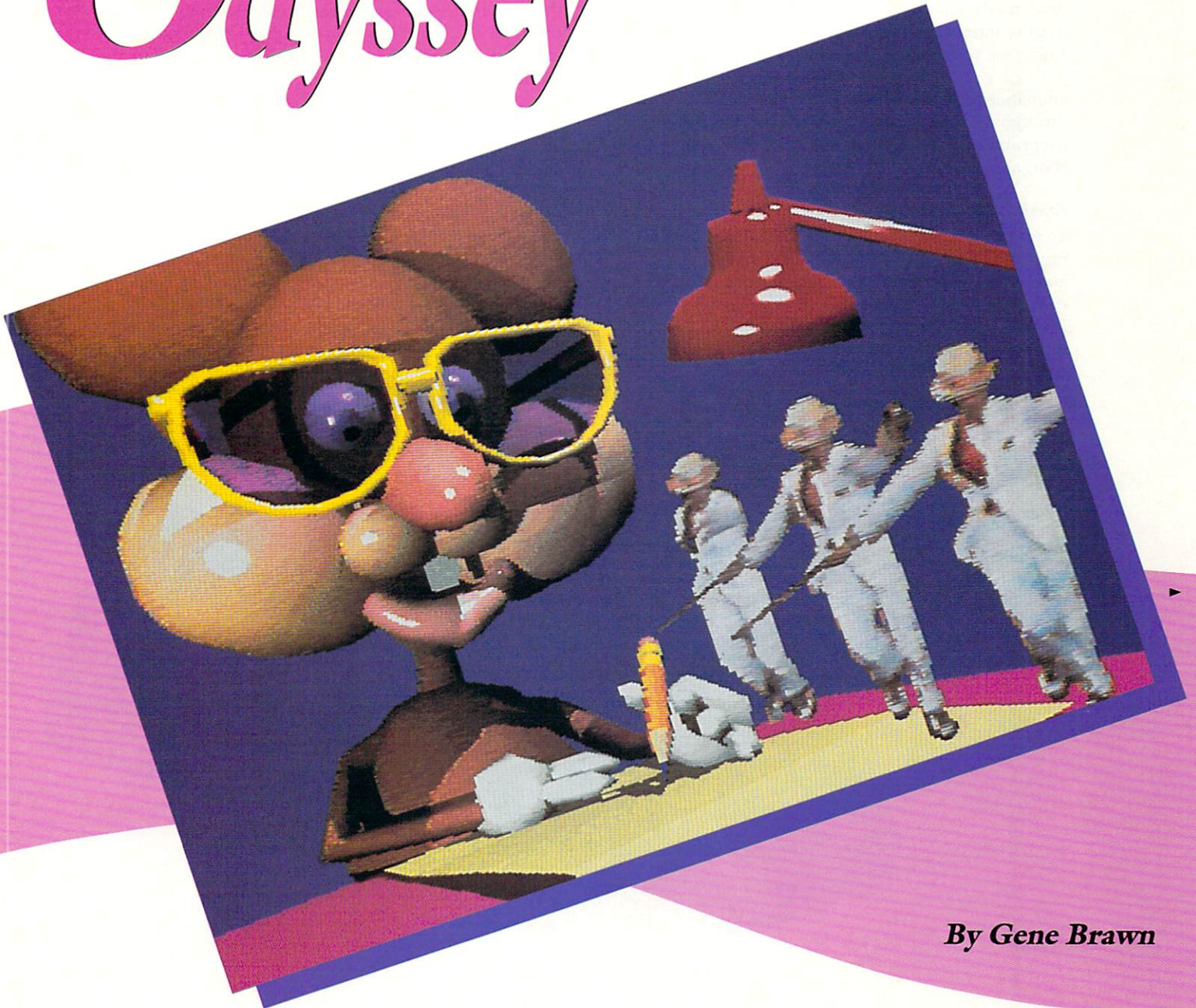


Mindware International 110 Dunlop Street, West, Box 22158 Barrie, Ontario, Canada L4M 5R3

For more information or the dealer nearest you: **1-705-737-5998**

Animation Odyssey

It took Odysseus 20 years to find his way home, but "Homer" Brawn will guide you through the perilous maze of Amiga animation programs in considerably less than epic time.



By Gene Brawn

VENTURING THROUGH THE realm of Amiga animation was not easy. Flipping through my bitmaps, I was surprised to see that all of the roads ran in different directions. The Anim Expressway was obviously built for speed, but strangely, it was nearly empty of traffic. Antic Alley intrigued me with all its twists and turns, but it was far too narrow. The Hash route looked promising, but the directions were so vague that I never did find it. I did find the 3-D Zone, an amusement park, crowded with attractions. There the Turbo Ray Tracer had the longest lines, but the ride took so long to complete that I got tired of waiting.

What I found most frustrating of all on my animation odyssey was that there weren't any intersections or interchanges to connect the different routes. I did pick up in my travels, however, a great deal of practical experience. So to help you find the finished animation you are searching for, let me guide you through the bewildering domain of Amiga animation programs by pointing out the tourist attractions and traps along the way.

ROAD SIGNS

To make it into the animation guidebook, a program must meet several criteria. It must multitask politely and never hog the machine's resources. It should work in all graphics modes and support all of the IFF (Interchange File Format) graphics standards, including Anims. The user interface should be an efficient blend of icons, menus, and keyboard equivalents, while the manual should be well written and completely indexed. Finally, the program code

should be small and efficient, allowing full use of system memory and resources. Unless noted all the programs require a minimum of 512K to run.

As with traditional animation, computer animation is based on the rapid sequencing of still frames to fool the brain into perceiving a single, fluid motion. What makes computer animation unique and categorizes the programs is the way in which the frames are created. The two basic types of animation software are 2-D cel animators and 3-D object modelers. The differences are simple: In the 2-D cel metaphor (derived from the individual frames of cellulose film), the artist creates all, or most, of the frames by hand on screen. In the 3-D method, the animator takes the role of designer and director. After creating the object (or character) in a simulated three-dimensional environment, he directs the computer to display, illuminate, and move the object in its 3-D world.

BURSTING INTO THE SECOND DIMENSION

The most basic and essential tool for any animator, whether manipulating two or three dimensions, is a paint program. DeluxePaint (Electronic Arts) is the standard, as it has been from the start, against which all others are measured. In its latest incarnation, DeluxePaint III (\$149, 1MB required) breaks the barriers of ordinary computer paint programs. By adding the animated Brush, author Dan Silva transformed DeluxePaint III from a paint program into a powerful animation tool. With this new feature, called AnimPaint, you can store a series of cels in a brush. Then, you can animate the brush as you paint, leaving either a trail (all frames) of the animation on screen or single brush impressions (individual

If you can't draw, digitize your images and import them into an animation program.



frames) across a series of screens. You can automate this process with the Move requester, which also provides for animated rotations, flips, and zooms over a range of frames, similar to the perspective tool in DeluxePaint II. When you are satisfied, save your animation to disk in the standard Anim format.

As exciting as DeluxePaint III is, it is not without shortcomings: The program's lack of support for Hold-and-Modify (HAM) mode, for example, continues to plague me. The third version does, however, support Overscan painting and Extra_HalfBrite (64-color) mode. Unless you absolutely need HAM, buy DeluxePaint III. I recommend it to everyone with an Amiga, even if you are not an animator.

LOW STANDARDS

Jim Kent, author of Aegis Animator (Aegis, \$99.95), has incorporated several features of his (and the Amiga's) first animation program into his latest effort, Zoetrope (Antic, \$139.95, 1MB required). Offering both paint and animation tools, the program could have been an all-in-one animation solution for professional users, except for a single limitation. Like the outdated Animator, Zoetrope supports only lo-res (320 x 200, 32-color) mode.

Zoetrope's user interface isn't pretty, but it is efficient and smooth. Some features are truly wonderful: A paint program is built in for creation and touch-up. The APM (Automatic Pixel Mover) can make a brush perform just about any twist, zoom, or flip effect. The blueing feature speeds up the drawing process, while true compositing lets you mix different images into one frame and matches colors automatically. You even can use multiple palettes in a single Anim. Easy-to-edit scripts and a great frame editor facilitate fine tuning. Unfortunately, these powerful features are wasted in a lo-res world unsuitable for

anything other than casual, non-professional work.

CUT! SET IT!

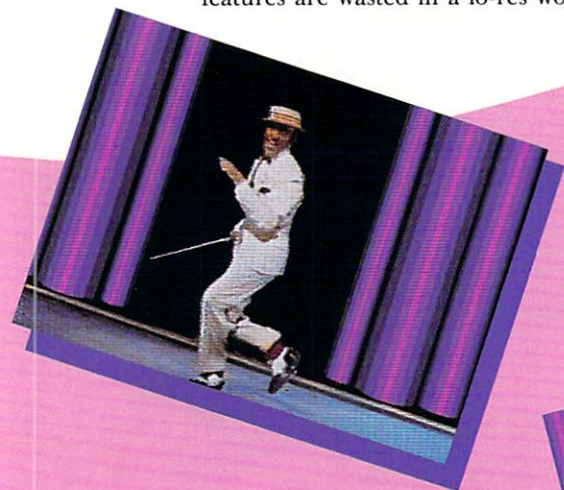
A fellow sufferer of the lo-res straightjacket is MovieSetter (Gold Disk, \$99.95). Probably the most intuitively-controlled animation program ever, MovieSetter lets you manipulate all of your characters and pieces on screen—what you see is what you get. Menus are displayed down the sides of the work area, out of your way. Although your characters are limited to lo-res, backgrounds can be overscanned images, eliminating screen borders. MovieSetter accepts ILBM (InterLeaved BitMap) IFF pictures and brushes for use as background or foreground images. The program, however, lacks Anim support.

Creating an animation with MovieSetter is a three-step process. You create and preview your character's actions (a set of frames) in the Set Editor. The Scene Editor then uses the group of frames to create tracks, which when combined, form a scene. As in a film, you string together scenes to finish your animation. By running the Player you can view your creation. Although the method sounds complicated, it is not. To jazz up your work, you can add special-effects tracks, including background wipes, sound effects, color cycling, looping, and background scrolling.

While it has serious limitations for professionals, MovieSetter is great for almost everyone else.

CHILDREN'S FANTA-SY

Fantavision (Broderbund, \$59.95) also borrows from Aegis Animator. Like Animator, Fantavision uses two-dimensional objects and a technique called morphing ►



for its primary character animation. With the supplied tools, you draw shapes and place your creations on the screen in their starting positions to begin the animation. Next, draw a second character shape and place it where you want the action to end. Finally, tell the program to begin the sequence. Through morphing, the character moves from the starting point to the ending point, smoothly changing its shape along the way. Although it is a lot of fun, the software has a somewhat limited application in the real world. Professionals require finer controls than the program offers, while creating and positioning morphs is quite time consuming. At least Fantavision supports all Amiga graphics modes. You can import brushes (but not morph them) or use IFF pictures as backgrounds. You can easily add sound effects as well.

Fantavision is a great program, particularly for children and grown-ups who want nothing more than to have fun with their computers.

TALENTED TRIUMVIRATE PLUS ONE

For the creative person who can't draw, 3-D modeling software promises Nirvana. Once you try it, though, you quickly find that there are some major limitations. Rendering in 3D takes time—a long time. Designing a smooth, realistic-looking head involves defining hundreds, even thousands, of points. Even with the computer doing all of the tedious work, rendering a single frame of an image can consume many hours. Don't get me wrong, I desperately want this technology to work; it is the future of animation.

Sculpt-Animate 4D (Byte by Byte, \$499.95, 1MB required) is arguably the most popular object-ori-

ented animator in the Amiga universe. Unfortunately, it is not the most friendly environment in which to create.

The major flaw in this oversized gem is its three-window user interface. Frankly, it gets in my way. Front, top, and side views are appropriate for the ancient art of drafting on vellum, but not for the computer age. Byte by Byte needs to do more work before this style of animation is ready for the masses.

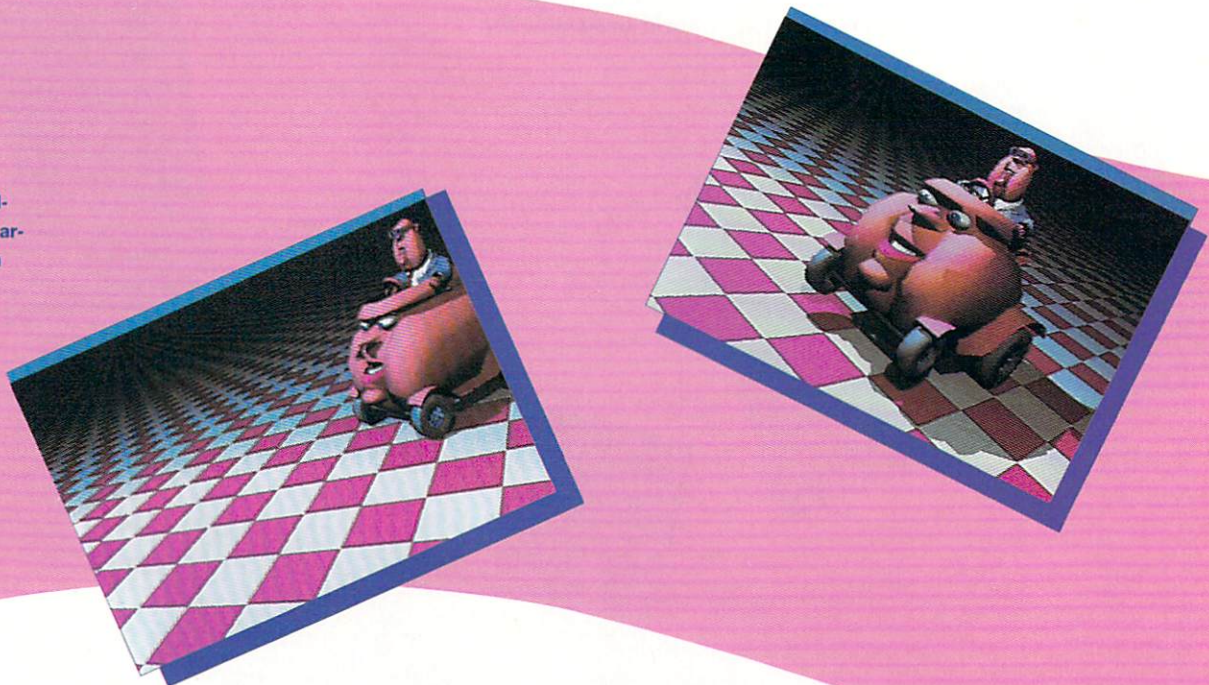
User interface aside, Sculpt-Animate passes my simple checklist easily. It supports all graphics modes, creates ILBM and Anim files (of a sort), and comes with a well-written and comprehensive manual. For those without a megabyte or a megabudget, Byte by Byte offers Sculpt-Animate 4D Jr. (\$149.95), which does not support ray tracing.

The challenger to Sculpt-Animate's throne is Turbo Silver 3.0 (Impulse, \$199), my favorite of the big three. Its power is a lot more accessible, it renders faster, with excellent quality, and it can map bit-mapped images onto the shapes it creates. Creating animations is easy and straightforward. The program, however, suffers from the same user-interface problems as Sculpt-Animate. The manual is skimpy, but I found it to be sufficient.

Last, and not least, is VideoScape 3D (Aegis, \$199.95, 1MB required), the pioneer 3-D program for the Amiga. You would think that after all this time, Aegis would have all of the bugs worked out. Wrong. Even in the most recent version, objects occasionally show through supposedly solid planes.

The addition of a z-buffer, which saves more points in memory, was supposed to correct flaws in the program's ability to join shapes. It does help, but it increases rendering. With the z-buffer turned on,

With 3-D animators, you become designer and director—creating your characters and moving them around the stage.



rendering times approach or surpass those of Sculpt-Animate and Turbo Silver, without those programs' subtle lighting effects. On the plus side, VideoScape can produce frames in any Amiga mode and save the resulting sequences as Anim files.

A long-promised but recent arrival, Caligari Pro (Octree, \$1995, 1MB required) has two things on its side—a great user interface and speed. Caligari uses a true three-dimensional environment for nearly all of its functions. You create the object in 3-D, tweak it in 3-D, and render it in 3-D. The rendering times are phenomenally short, but only solid shading is supported. With Caligari, however, you are animating on a dead-end street; it does not support IFF, ILBM, Anim or any other Amiga format. To top it off, be prepared for sticker shock; all this can be yours for the unmatched price of almost \$2000.

SORCERERS ONLY

Out in front of the 3-D pack, but slightly lost, is Animator:Apprentice (Hash Enterprises, \$295, 1MB required). Apprentice is designed to overcome the limitations of the current 3-D modeling approach by allowing you to create life-like character animation.

I was excited when I first saw how Apprentice worked. To create an animation, define an action using a quickly drawn stick figure and add a drawing of the character's appearance. The program does the rest: puts the body file on the bones, draws it from any aspect or view, adds lighting and shadows, and creates the final sequence of frames. It seemed too good to be true.

It was. The first hurdle was the interface—what there was of it. The feeble attempt at a manual did not clarify anything. Finally, faulty rendering kept forcing me to touch up my frames afterward; the front, back, and side views of my characters would not join properly.

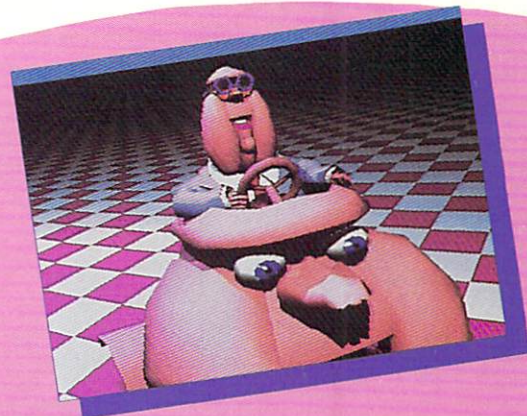
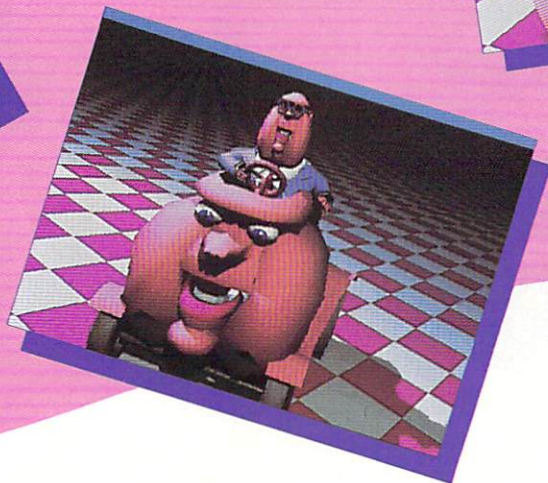
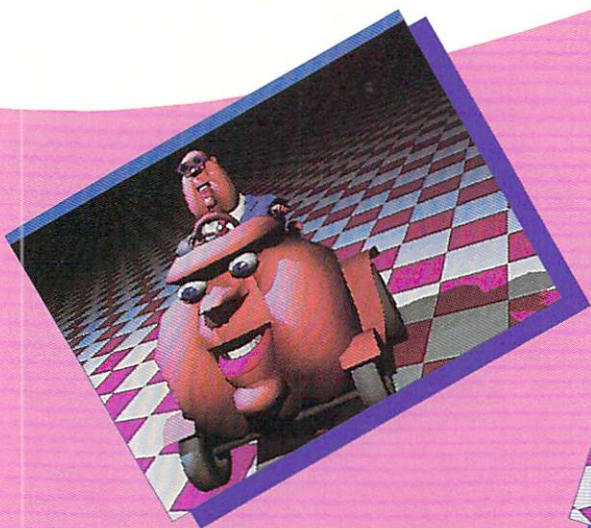
I like the idea and technique behind Apprentice, and I want it to work. In fairness, the manual for the latest release, 3.0, has been professionally rewritten and is somewhat more helpful. The interface is still weak, although the interfaces of subsequent Hash companion products look much better. I think that, over time, Animator:Apprentice will improve, only because this seems to be a labor of love, not a commercial enterprise. I am looking forward to the next version.

STICKY STUFF

Although it is not an animation program at all, The Director (The Right Answers Group, \$69.95) is the most powerful animation tool I use. The program acts as the glue that binds together all of the elements of your animation.

An easy-to-use graphics programming language (similar to BASIC), The Director gives you precise control of the Amiga's graphics displays, as well as many of its low-level functions. Once this power is in your hands, you will be hooked. I have built everything with it, from a simple slide show with sound to a complete hypermedia environment with clickable buttons, text screens, scrolling pictures, and even short movies. The Director supports all of the Amiga graphics modes and formats. If you have your own studio, this program is a must.

Professional animators can further automate their work and save some preproduction time using Photon Video: Cel Animator (MicroIllusions, \$149.95, 1MB required), a 2-D pencil-testing program. Cel Animator lets you flip through previously created ▶



frames in any order at variable speeds to test your character's motion. The program supports IFF and Anim files in all resolutions, and will decompress Anim files into IFF frames. You can even synchronize your animation and sound track. With Cel Animator's companion program, Photon Video: Transport Controller (\$299.95), you can transfer your creation to videotape through a single-frame controller.

IMPERSONATIONS

Many of the software limitations and flaws I have discussed are the result of decisions made by the designer of the software. We of the Amiga community should speak up and tell the programmers what we want, rather than letting them decide what is best for us.

As Andy Rooney would say, have you ever wondered why software publishers ignore the benefits of shared formats? It certainly does not help the sales of their products. How many times have you tried to play someone else's animation only to find that you did not have the correct software? Why do programmers feel that they have to protect me from myself? I can decide which graphics format is best for a particular animation. Please, give me a choice!

Most annoying 3-D programs are memory hogs. Just because the Amiga has a large memory pool, programmers should not have the exclusive right to use all of it. It's my memory, I paid for it, let me use some of it. The Amiga is a superb graphics engine, with some great software designers behind it. Just think what we could do if we really had access to all of its power!

Of the current crop of software, MovieSetter is the best choice for those just venturing into animation. The intuitive controls and extras, such as color cycling and sound-track syncing, make it a program you can

find your way around in quickly and still have room to explore. I would use it more myself, if it were not limited to lo-res.

For the pro, DeluxePaint III and The Director are essential tools for your studio. They are the workhorses I reach for continually. Like a favorite vacation spot, they will never disappoint you.

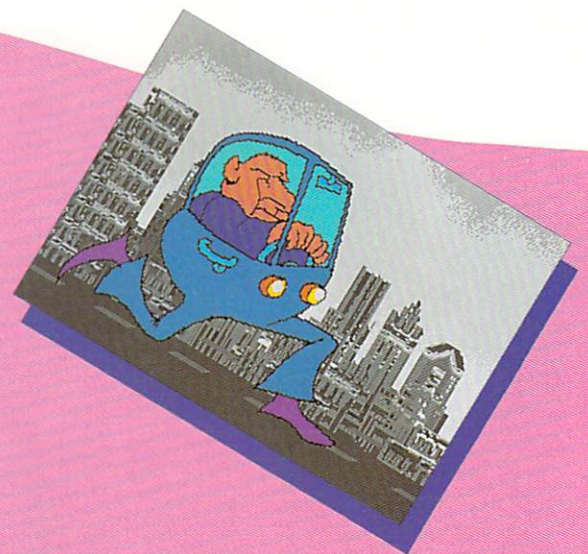
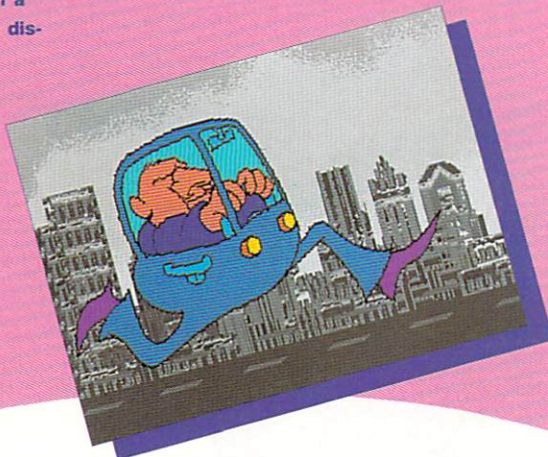
Still a few miles down the road, DeluxeVideo II (Electronic Arts) holds great promise for professionals. It should support all graphics modes, IFF and Anim formats, genlocks, single-frame controllers, and MIDI devices. Preliminary versions appear to address many of my standard gripes. My guidebook and I eagerly await its proposed fall release. ■

Gene Brawn is a graphics designer, television director, computer game programmer, and digital animator. In his words, "Digital animation is the wave of the present!" Write to him c/o AmigaWorld, Editorial Dept., 80 Elm St., Peterborough, NH 03458.

Previous Reviews

Product	Issue	Page
Animator:Apprentice	January '89	64
The Director	June '88	70
MovieSetter	April '89	74
Photon Video: Cel Animator	March '89	84
Photon Video: Transport Controller	January '89	68
Sculpt-Animate 4D	April '89	13
Turbo Silver	April '89	13
VideoScape 3D	November '88	78
Zoetrope	June '89	74

For cel animations, you draw each screen in a paint program, then display them in quick succession.



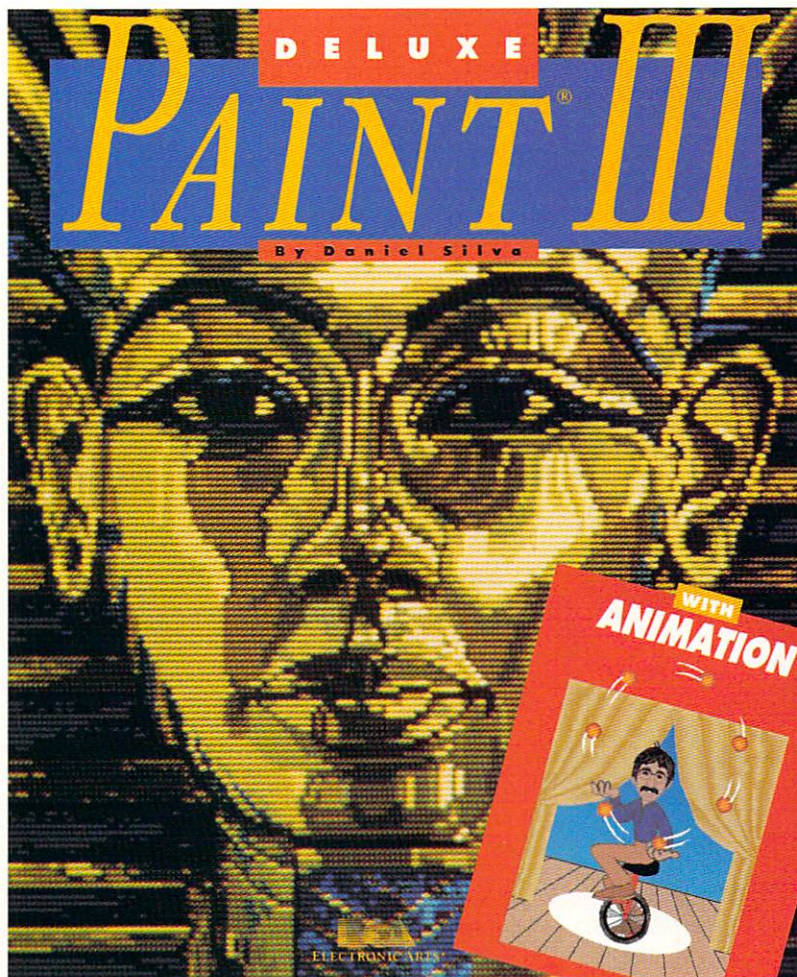
NOW DELUXEPAINT[®] HAS ANIMATION

Presenting AnimPaint[™]

DeluxePaint III makes animation easy. With the AnimPaint feature, you can create animation just by pressing one key to record your paint strokes, and another key to play them back. You can also use any multi-cell animation as a brush and paint with it, even in full 3-D.

8 New Paint Features

DeluxePaint III also adds sophisticated features to the number one Amiga paint software: Extra-halfbrite support for 64 colors; direct overscan painting for desktop video; wrap and tint brush modes for special effects; better font support; improved compression; and many performance enhancements, including faster perspective. Product requires 1MB of RAM.



SPECIAL UPGRADE OFFER:

Upgrade Now and Save \$92.95. (Suggested Retail Price \$149.95)

Send DeluxePaint I or II manual cover and \$57.00 to

Electronic Arts, P.O. Box 7530, San Mateo, CA 94403.

If you bought DeluxePaint between 12/1/88 and 3/31/89 call 800-245-4525.

Allow 2-4 weeks. CA orders add \$3.50 sales tax.



ELECTRONIC ARTS[®]

Circle 2 on Reader Service card.

Manufacturers' Addresses

Aegis Development

2115 Pico Blvd.
Santa Monica, CA 90405
213/392-9972

Antic Publishing

544 Second St.
San Francisco, CA 94107
415/957-0886

Broderbund Software Inc.

17 Paul Dr.
San Rafael, CA 94903-2101
415/492-3500
800/527-6293

Byte by Byte

Arboretum Plaza II
9442 Capitol of Texas Hwy. N.
Suite 150
Austin, TX 78759

Electronic Arts

1820 Gateway Dr.
San Mateo, CA 94404
415/571-7171

Gold Disk

PO Box 789, Streetsville
Mississauga, Ontario
Canada L5M 2C2
800/387-8192 (US)
416/828-0913

Hash Enterprises

2800 E. Evergreen
Vancouver, WA 98661
206/693-7443

Impulse Inc.

6860 Shingle Creek Pkwy. #110
Minneapolis, MN 55430
612/566-0221
800/328-0184

MicroIllusions

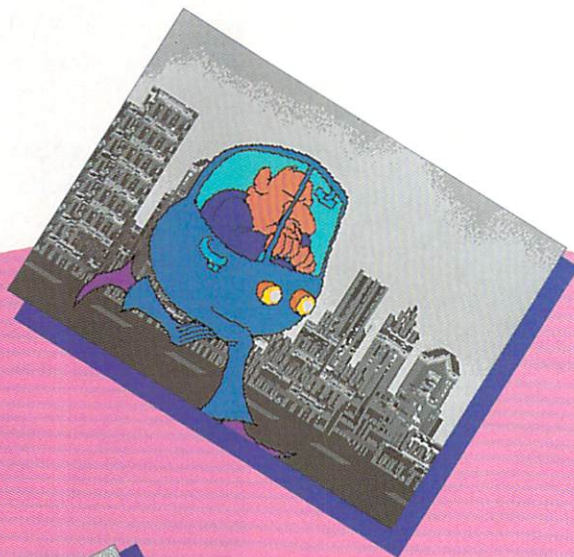
17408 Chatsworth St.
Granada Hills, CA 91344
818/360-3715
800/522-2041

Octree Software

311 West 43rd St.
Suite 904
New York, NY 10036
212/262-3116

The Right Answers Group

Box 3699
Torrance, CA 90510
213/325-1311



FLY THROUGH THE WARE WITH THE GREATEST OF EASE



The easiest and fastest database available on the Amiga.

Organize, arrange, and manipulate graphics, text, and numbers
and enjoy yourself doing it.



No Bugs No Crashes No Gurus **GUARANTEED***

*See your Amiga dealer for legalese



SOFTWARE VISIONS, Inc.

P.O. Box 3319, Framingham, MA 01701

MICROFICHE *filer* **PLUS**

EASIER DONE THAN SAID

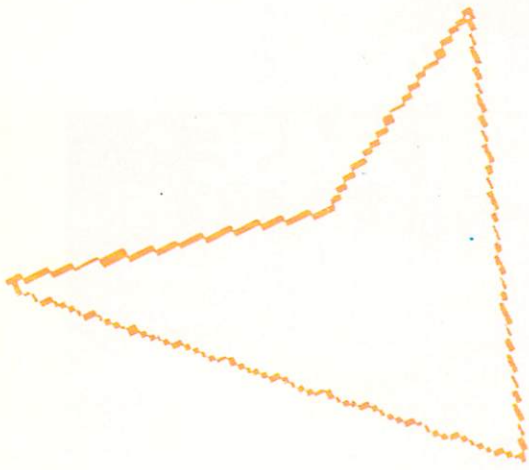


Call Toll Free: 1-800-527-7014

In MA. (508) 875-1238

Look for Designer Databases—Templates pre-constructed for home and business.

Circle 10 on Reader Service card.



GUMBY MEETS GODZILLA

OR
HOW ANYTHING IS POSSIBLE
WITH STOP-MOTION ANIMATION
ON THE AMIGA

By GENE BRAWN

FIFTY-SIX YEARS ago, movie audiences marveled in awe as a gigantic ape clutched the lovely Fay Wray in one hand while swatting down biplanes with the other as he stood astride the top of the Empire State Building. The huge, ferocious, and utterly convincing behemoth—King Kong—was actually no bigger than Ms. Wray's delicate little hand. He was a five-inch model ape created by Willis O'Brien.



To bring his miniature creature to life, the young animator borrowed an old technique from the silent-film era, stop-motion photography, and spawned an interest in productions "starring" animated three-dimensional puppets that spans more than fifty years. Moviemakers and animation artists have returned to stop-motion techniques over and over again—in such classics as George Pal's *Puppetoons* and Ray Harryhausen's remarkable *Sinbad* sagas, and right on up to the current TV-commercial sensations, the *California Raisins*.

The new wrinkle, however, that grabs our imaginations today involves personal computers such as the Amiga and video. While most professional stop-motion animators of the old school have shunned computers and video, still preferring to record on

film, amateur animators are discovering the Amiga provides a more manageable, and sometimes more exciting, method—and one that will certainly make the time-honored technique of stop-motion animation more widely available to the layman.

GEARING UP

Before we find out how the Amiga fits into the picture, let's examine stop-motion animation in a little more detail, and then discuss what other equipment we will need and consider some basic procedures to keep in mind before you start.

The term "stop motion" is nearly as old as cinema itself. Long before the invention of optical printers, blue screens, or computer-controlled cameras, special effects were actually created by the film's cameraman,

not afterwards in the lab. For example, a very common visual trick was the simple “pop off,” or vanishing effect, which was accomplished by *stopping the motion* of the camera while the actor walked off the set. With King Kong, Willis O’Brien simply applied this technique to an inanimate object. After exposing each frame of film, he stopped the camera while he moved his puppet a fraction of an inch, repeating this process 24 times for each second of film.

As you can see, traditional stop-motion animation is a slow, tedious, and exacting process. Soon after you begin your first sequence, you will probably begin muttering to yourself that there must be an easier way. This is where your Amiga will come into play. For right now, trust that with its help you will be free to concentrate on the most important aspect of the creative process—bringing your ideas to life. Your perceptual and observational abilities are your most important tools. The right software, hardware, and technical proficiency are important, but don’t get hung up on them. Instead, concentrate on being an observer and an interpreter. Remember that behavior, body language, and, above all, timing are the most critical elements of the successful stop-motion animation. ►



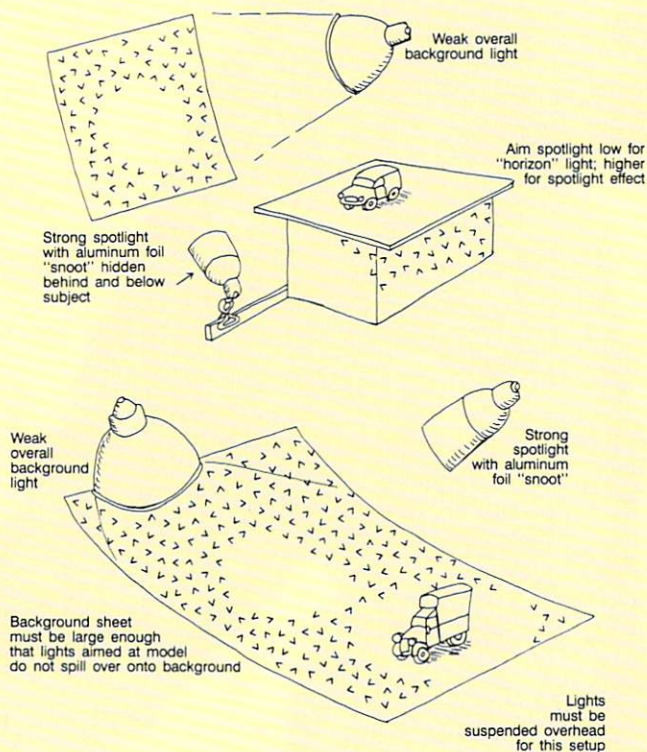


As far as necessary equipment goes, you may already have all of the software required to create your stop-motion masterpiece: a paint program, an image processor and an animation maker and player. My personal preferences are Electronic Arts' recently released DeluxePaint III (\$149.99 / combines paint and animation capabilities) and the same company's Deluxe PhotoLab (\$149.99 / image processing and HAM paint), although any number of other programs will do a serviceable job. (See the Graphics/Video section of "The Great Software Buyer's Guide," *AmigaWorld*, Dec. '88, p. 36 for other programs.)

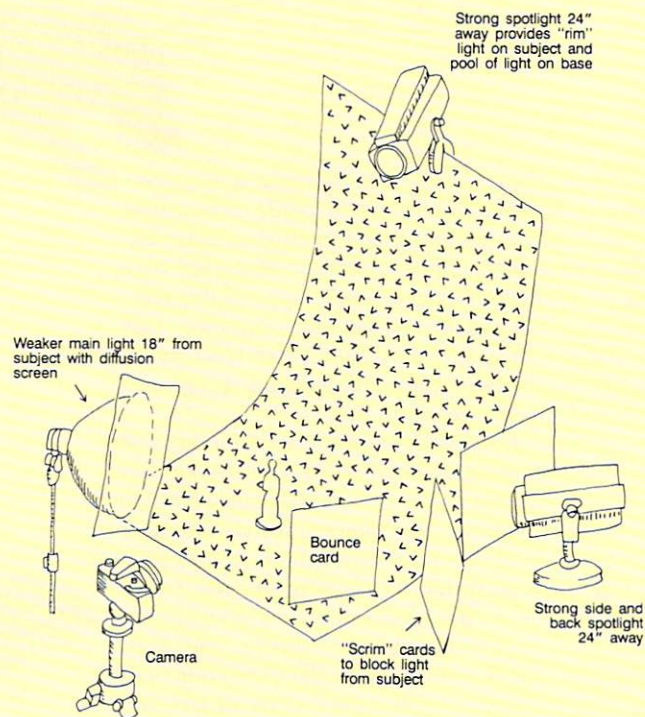
Hardware requirements are a little more extensive. I use Digi-View (NewTek / \$199.95) for my digitizing and preliminary image processing, a Panasonic WV-D5000 CCD color camera, SunRize Industries' Color Splitter (\$99.95) and a multi-purpose copy stand called CopyGym (\$250) of my own design. Again, as far as digitizers and other Amiga-specific hardware go, there is a variety of perfectly adequate equipment on the market that will do the job. (For more infor-

mation, consult the Graphics/Video section of "The AmigaWorld Hardware Buyer's Guide," p. 38, in the March '89 issue.)

If you want truly professional results, pay particular attention to lighting. I strongly recommend that you invest in at least four low-cost fluorescent lights. These are ideal for establishing an even, bright base light over the entire set, and they give you excellent control of depth of field. Proper lighting is extremely important. Many times you will be shooting more than one character in the same scene. If you do not have enough light, you will not be able to maintain focus on all of them. You could shoot each figure separately and combine them later (which might be helpful for complicated scenes), but this adds another level of complexity that you do not need when you are just starting out. Normal photographic studio lights are usually too powerful (and hot) for tabletop work. Instead, I use high-intensity, focusing flashlights for my key (spot) lighting. With this setup you normally will not need a fill light. You will, however, ►



TWO WAYS TO LIGHT A BACKGROUND UNEVENLY



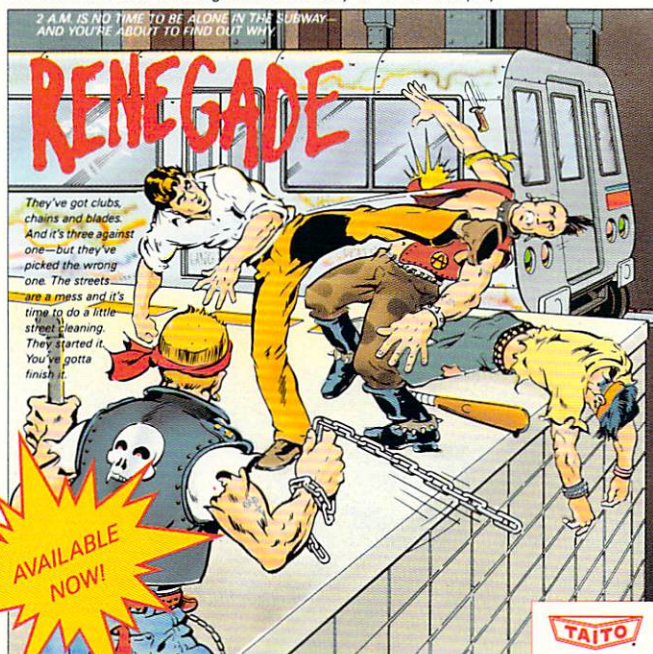
A SETUP FOR PHOTOGRAPHING SINGLE MODELS

Reprinted from *How to Photograph Scale Models* (Kalmbach Books).

FOUR WAYS TO MAKE YOUR AMIGA SCREAM



Now you can take the world's number one arcade game home! All the action-packed arcade thrills of this awesome hostage rescue are ready for home video play.



This is the original arcade hit. Thrill to the arcade quality graphics of this fast-paced, street-style karate brawl. Find out what real action is all about!

If you want to make your Amiga explode with action you've got to give it dynamite games. These are the world famous original arcade screamers. Operation Wolf™, Bubble Bobble™, Renegade™ and Rastan™ will make your Amiga Computer scream with arcade quality graphics and stereo sound.

Everyone knows that arcade games are the



The #1 game in Europe for over 3 months. Scramble through 100 screens of laughs as your brontosaurus buddies, Bub and Bob, drive you crazy with non-stop action.



Now you can thrill to one of the biggest-ever coin-op hits on your home computer. Rastan's mind-blowing graphics take you to a magical land of adventure and excitement.

benchmark for all other video games and Taito has been an arcade leader since 1953. Since then we've made over 1,000 classics for arcade and home play. Count on Taito to bring the heat of the arcade to your home computer.

Buy Taito products at leading stores everywhere. Visa/Mastercard holders can order direct anywhere in the U.S. by calling 1-800-663-8067.

Taito®, Operation Wolf™, Bubble Bobble™, Renegade™ and Rastan™ are trademarks of Taito America Inc. Copyright © 1988.

THE ONLY GAME IN TOWN!™



All rights reserved. Amiga is a trademark of Commodore-Amiga, Inc. Advertisement by: Qually & Company, Inc. (Chicago).

COMING SOON, THE CLASSIC MIND GAME, QIX.



need a backlight to keep your puppets from blending with the background.

TELL THE A.D. WE START SHOOTING TOMORROW!

We have a few more pieces of essential groundwork to cover before we start our animation—namely, choosing a set, positioning the camera, and (most essentially!) casting our characters.

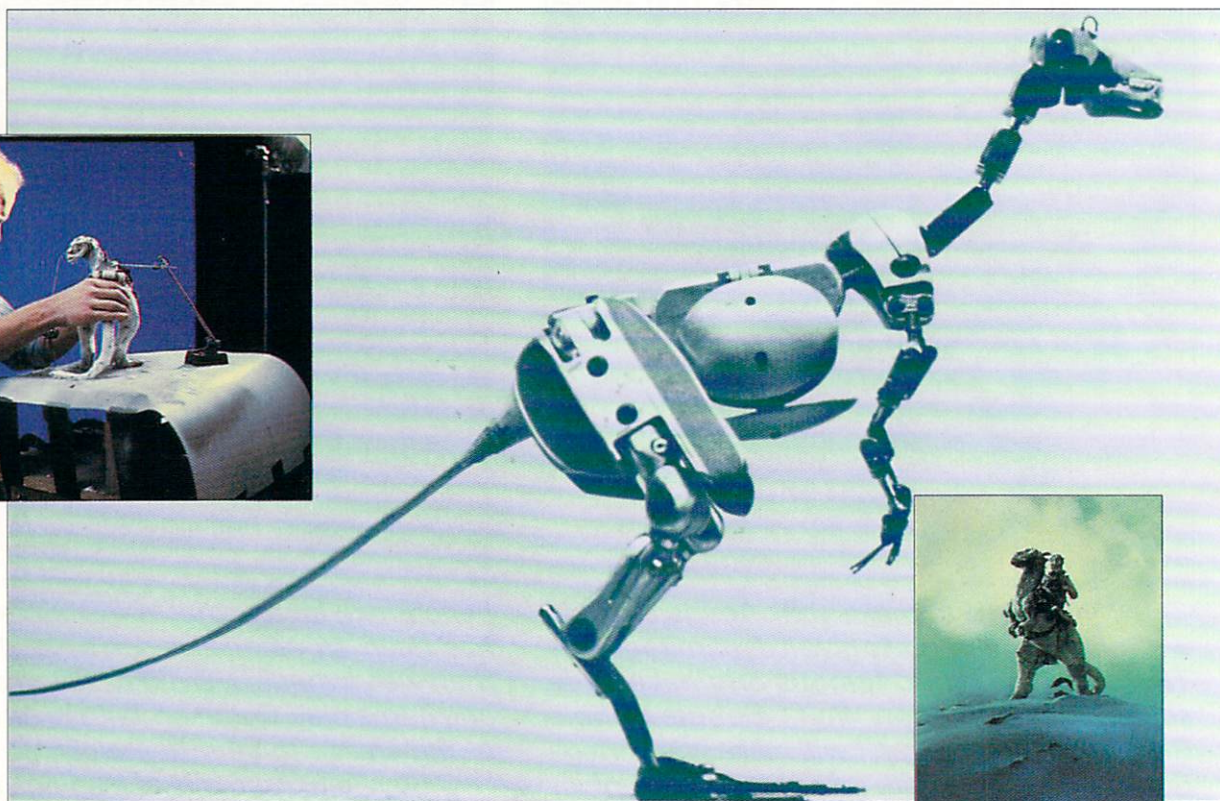
You will, of course, need a place to shoot your opus. This can be anything from a child's dollhouse to an elaborate tabletop shooting stage. When you're just starting out, though, it is a good idea to keep things simple. The set's "floor" should be kept low enough so that you can sit in a chair while you work (you will appreciate this, I guarantee, several hours into the process!). An old coffee table is ideal. Be sure to leave plenty of space around the sides to give yourself room to work with the figures or to rearrange the set. You'll also need a vertical board or frame at the back of the set so you can set up scenery, backdrops, or photographer's seamless paper.

Mount your camera on a heavy-duty tripod. Get the best one you can afford; you will have enough on your mind without having to deal with a wimpy tripod that keeps sagging or bouncing around. The camera and tripod are normally placed on the floor a short distance from the front edge of the table. Be

sure to leave enough room so that you can work on the set without fear of accidentally bumping the camera. This is very important! If you inadvertently change the camera position in the middle of shooting a sequence, it may be impossible to reposition it accurately and you will have to reshoot the entire series of frames.

When it comes to finding their actors, traditional stop-motion animators—much like modern sculptors—build their own characters by carefully layering Latex or modeling clay over a metal armature. This process can be a lot of fun, but it does require a certain amount of skill and the right equipment. If you are just starting out, don't become preoccupied with the mechanics and construction of your characters. Instead, concentrate your energies on the process of storytelling and movement. A simple blob of clay endowed with a convincing personality is a lot more effective than a super-realistic puppet with jerky or unbelievable motions.

An easier and more expedient approach is to look for "ready-made" subjects. Check out your attic or basement, or raid your children's toyboxes. Better still, go to a toy store and poke around in the section with the "action figures"—those plastic replicas of characters from Saturday morning cartoons and popular movies. What you want is a *poseable* character. Choose one with as many joints as possible; the more ►



An armature of a taun-taun from *The Empire Strikes Back*. An animator works on a clay model of the beast (inset left). The effect on film (inset right).



Coming To A Screen Near You.

If you're ready to become your own studio producer, there's only one desktop video system that will bring NTSC and S-VHS to your Amiga's screen. The Scanlock system by VidTech. Other systems give you a genlock that's "either-or." They either support NTSC or S-VHS. But not both.

Two For One

With Scanlock, you get two genlocks for the price of one. So you can migrate from NTSC to the newer S-VHS format without investing in another system. We also offer a Scanlock model that is compatible with the International PAL TV format, including its new S-VHS version.

Scanlock's dual-genlock system gives you broadcast-quality video at consumer prices. And our system offers all the bells and whistles, including front-panel fingertip controls, multiple monitor connections for viewing and editing, and independent fade controls for both reference and Amiga videos. If your Amiga is supporting a load of peripherals, we provide a connection

that lets you use an optional external power supply.

Scanlock is a breeze to use. A "glitch-free" vertical interval switch lets you insert, reverse and remove reference video and Amiga graphics at the touch of a finger. And you can switch between NTSC, S-VHS and analog RGB formats without moving cable connectors. When you're done editing, you can resume normal Amiga operation with the flip of a switch.

Don't Get Locked Out

So if you're ready to become your own producer, choose the desktop video system that doesn't lock you into one genlock — the Scanlock system by VidTech. Coming to a screen near you.

Call or write us today: VidTech International, Inc., 2822 NW 79th Ave., Miami, Florida 33122. Telephone 800-727-2261 or 305-477-2228. Fax 305-591-1651. Prices: NTSC-\$995, PAL-\$1,095. Distributed by Southern Technologies, Dallas, Texas.



Circle 170 on Reader Service card.



ways you can bend it, the more realistic the final result.

Models made from rubbery plastic shaped over a wire also work well. A puppet of this type can be bent to nearly any position and will hold its pose. (I have found several "Gumby" and "Noid" figures of this type and have had a good deal of fun animating them.) If the models are available in different sizes, choose the larger ones. A small model is too hard to position and will inevitably lose its pose (but so slowly that you may not notice it until you view the completed animation).

OKAY! LET'S GET "MOVING!"

Now that you have built your stage and auditioned your cast, it's time to get down to the real nitty gritty of production. This is complex work and requires your undivided attention (you seriously might want to consider locking the door and unplugging the phone). There is nothing more frustrating than having to stop in the middle of a move, only to return and realize that you cannot remember whether you were moving some character's arm up or down.

You will be impatient to see what you can do, but resist the temptation to hurry. Start small, try something simple first. For example, have your character turn and wave at the camera. This move requires no more than 15 to 20 frames and is a good way to get a feel for the timing, speed, and production routines you will be using throughout.

When you are ready to move on, begin by planning out what you are going to do. Draw stick figures representing the key scenes of your production. This is called a storyboard and it helps to keep you on track. With a VCR and a stopwatch, try out a variety of sequences and time them. Videotape yourself performing a move and then review it, noticing those little motions that add character to the action. If you do not have a tape deck, use a full-length mirror for your trial sequences (Walt Disney used this technique for years).

If the action you are planning takes two seconds to complete, a VCR would record 60 *video* frames at 30 frames per second (fps). Unless the screen image of your object is very small, you will not be able to achieve this rate in your animation and still maintain good image quality. I usually try for a more reasonable 12–15 fps.

If you cannot get your character to move faster than eight frames per second, the action will appear to be very jerky. Trying to minimize the jerkiness by reducing the distance your model moves between frames usually results in unnaturally slow motion. In addition, your file will be huge because you must create many more frames to complete the same action. Normally, the tradeoff is not worth the effort.

The most common cause of sluggish animation performance is referred to as "shimmer," or "noise," an effect similar to that of looking at something

through heat waves coming off a hot road, or viewing a TV picture through cellophane. It is caused by slight differences between individual frames. If you are working with Anim-format files (the popular IFF animation-file format for displaying compressed scenes of animation developed by Aegis/Sparta), remember that Anim files are compressed by saving only the differences between frames. If you minimize those differences, your completed Anim file will be smaller and will run faster. There are several techniques you can use to reduce the amount of shimmer:

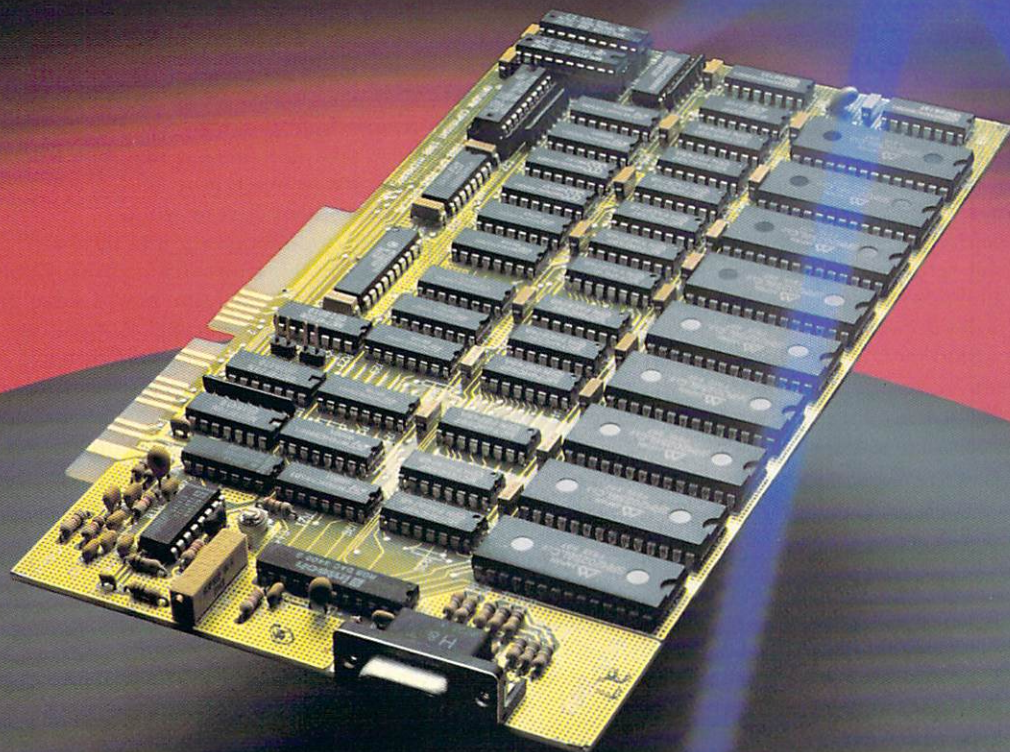
- Keep the image small. This reduces the size of the areas that can shimmer. One-quarter to one-third the size of the screen is a good rule of thumb.
- Shoot in black and white and add the color later. Color images have significantly more noise in the picture.
- Shoot the action against a black velvet cloth. Even though the background may be static, it can still shimmer; the soft, heavy, dark quality of the velvet will minimize any shimmer here.
- Increase the contrast and reduce the sharpness of your images. This will give you smoother, more solid colors—meaning fewer changes from frame to frame.
- Reorganize your color palette so that the colors you use most often are grouped in the lower registers.
- As a last resort, you can retouch each frame by hand in a paint program, or use an image processor, such as PIXmate (Progressive Peripherals / \$49.95), to smooth the image. Obviously, this adds a lot more time to your efforts, so do as much as you can when you first capture the image.

Getting back to the problem of jerkiness, the difficulties appear even trickier. There are, however, steps you can take to make your animations seem more natural. Even professional stop-motion animators suffer from the criticism that their efforts seem unnatural or jerky. This is not a shortcoming on their part, but an artifact of the stop-motion process. For example, you could duplicate, frame by frame, a baseball player swinging at a fastball. Surprisingly, when you replay the sequence at full speed it still looks jerky. This effect is called "strobing."

The problem here is that the stop-motion process is too good, too perfect. A normal television camera, film camera, or even your eye cannot capture each step of the sequence cleanly—some of the frames will be blurred. This effect itself, however, suggests a solution. Load each of those frames representing the most rapid point of the action into a paint program. Grab each one as a brush and drag it away from the ▶

AGA 2000

The flickerFixer™



UNLOCK THE GRAPHICS POWER OF YOUR AMIGA 2000!

flickerFixer is an advanced graphics adaptor that eliminates your Amiga 2000's interlace flicker and visible scan lines. The result: superior quality color or monochrome graphics and text — for such demanding applications as CAD/CAM, Desktop Presentation, Graphic Design, Animation, 3D Modeling, Video, and Word Processing.

flickerFixer upgrades the Amiga 2000 with a flicker free 4096 color palette, has an overscan mode that features a screen size of 704 x 470 pixels and drives most of the popular PC Multiscan and VGA monitors, including the NEC Multisync and Mitsubishi XC1429C.

Accolades include: **Best of 1988 Award**, Commodore Magazine (12/88); **#1 Reader's Choice Award**, AMIGAWORLD (12/88); **"The display is fantastic . . . It is the best display we have ever seen on any computer system."** Amiga GURU (5/88)

flickerFixer fits into the Amiga video slot, is fully compatible with all software, and does not modify the standard Amiga video signals. For more information or to order, call MicroWay Sales at (508) 746-7341 or your Amiga Dealer. Priced at \$595, **flickerFixer** is made in the USA and is FCC Class B approved.

MicroWay . . . Respected throughout the industry for high quality engineering, service and technical support.

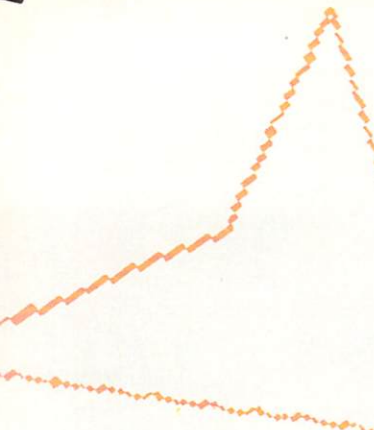
**Micro
Way**

World Leader in PC Numerics

P.O. Box 79, Kingston, MA 02364 USA (508) 746-7341
32 High St., Kingston-Upon-Thames, UK, 01-541-5466
USA FAX 617-934-2414 Australia 02-439-8400

Circle 78 on Reader Service card.

flickerFixer and MicroWay are trademarks of MicroWay, Inc. Amiga is a registered trademark of Commodore. Multisync is a registered trademark of NEC.



direction of motion and smear it for a few pixels. Then, reinsert these frames into your animation for a more natural effect.

C'MON, BABY, DO THE ROTO MOTION

Nearly all traditional stop-motion animators use a tool called a Head (or Surface) gauge (available from many machinists's supply firms for about \$50). Simply a metal pointer on an adjustable arm, this tool is used to mark the position of the puppet during the last frame while the animator poses the model for the next. The reason for this is that, as we mentioned before, most professional stop-motion animation is still recorded on film, so there is no way for such animators to see what they have done until the film is developed—they are effectively working blind.

Stop-motion animators using the Amiga, however, can make use of a wonderful alternative to the traditional procedure. Using a genlock, Amiga animators can avoid the painstaking work of using a Head gauge and the hit-or-miss anxiety of working blind.

As an example of how a genlock can help your animation efforts, I took an old animation process called Rotoscoping (tracing a projected photograph directly onto an animation cell to create a new character) and combined it with a video process called Keying (combining two video images to create a single image). The result is something I call RotoMotion. In addition to your normal digitizing setup, you will need a genlock with fader controls, such as Digital Creations' SuperGen (\$749.95) or Magni Systems' Genlock Encoder System I (\$1695-\$1995).

Feed the output of your video camera into the

"reference" input of your genlock. Set the fader controls so that only the camera input is fed to the Amiga. Digitize the first frame of your stop-motion sequence. Next, "split the bars" so that both the live and the newly digitized image appear on the screen. You can now position your puppet based on a direct comparison with the last frame. Reset the bars so that only the camera image appears. Digitize the next frame. Repeat the process for as many frames as necessary. It is amazing that such a simple procedure can save so much time, and produce such dramatic improvement in your work.

Our stop-motion tutorial has barely scratched the surface of this truly exciting area of animation. Take the concepts and techniques I have presented as a foundation, not as gospel. A great deal of the fun of animation is trying new things, being an innovator. As mentioned before, most of the artists currently producing stop-motion animations have—for whatever unknown reasons—shunned video and computers altogether, preferring the traditional film route. This puts us—the Amiga animators, whether professional or amateur—in the position of being new pioneers. Think of Willis O'Brien and his mighty model midget Kong, and welcome the opportunity to push the limits! ■

Gene Brawn is a graphics designer, television director, computer game programmer, and digital animator, who has employed stop-motion techniques in a variety of productions. In his words, "Digital animation is the wave of the present!" Write to him c/o AmigaWorld, Editorial Dept., 80 Elm St., Peterborough, NH 03458.

MANUFACTURERS' ADDRESSES

Digital Creations

2865 Sunrize Blvd.
Suite 103
Rancho Cordova, CA 95742
916/344-4825

Electronic Arts

1820 Gateway Dr.
San Mateo, CA 94404
415/571-7171

Magni Systems Inc.

9500 S.W. Gemini Dr.
Beaverton, OR 97005
503/626-8400

NewTek

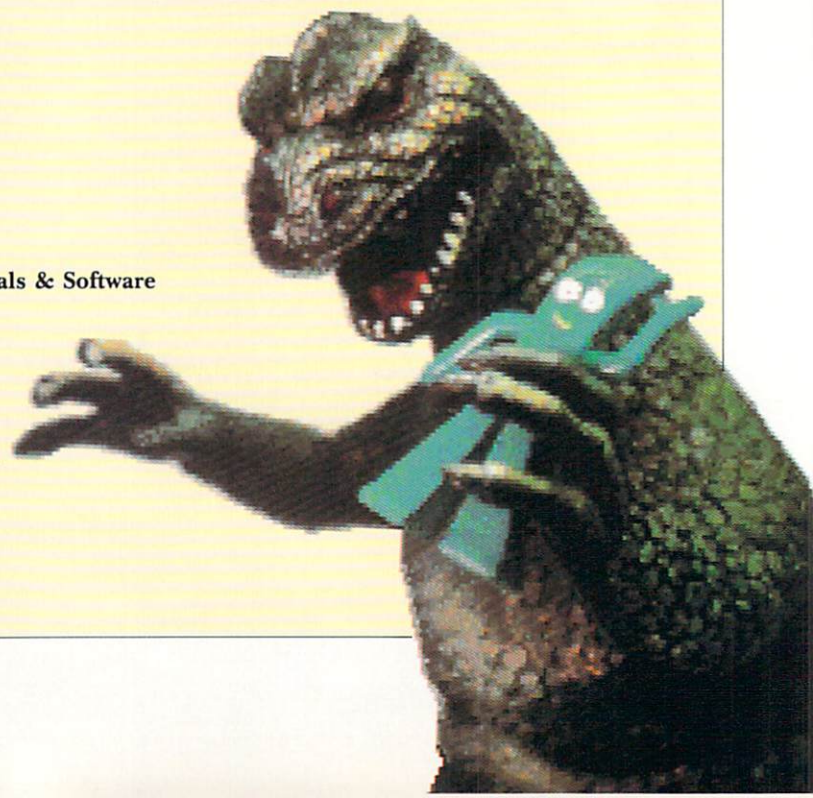
115 W. Crane St.
Topeka, KS 66603
913/354-1146
800/843-8934

Progressive Peripherals & Software

464 Kalamath St.
Denver, CO 80204
303/825-4144

SunRize Industries

3801 Old College Rd.
Bryan, TX 77801
409/846-1311





You Can't Buy Time.

You can't buy time, but you can save it if you have the right tools. WordPerfect Corporation's latest creation for the Amiga is WordPerfect Library, a collection of integrated programs to organize your appointments, notes and files. Whether you're a home manager or an office manager, Library was made for you.

Calendar keeps track of your daily schedule and will remind you of important appointments by sounding preset alarms. From your *Calendar*, you can print a daily list of appointments, notes, and things to do. Accomplishing is easier when you can chart your progress on paper, and *Calendar* lets you do just that.

At home, you'll want to use *Notebook* to organize important information. Addresses, phone numbers, recipes, home fix-it instructions, even decorating ideas can be easily sorted and accessed according to your instructions.

Notebook is every bit as practical in the business world. You can organize your telephone files in various ways: alphabetically, according to area code, or using any other factor you choose. Lists of clients and associates, too, are easily collected and categorized. All *Notebook* files are saved in WordPerfect format for easy transfer to WordPerfect documents.

Calculator, as you might guess, calculates. You can choose any of its financial, programming, and scientific functions. You might, for example, create a payment plan for a home or car

loan, or calculate the future value of a savings bond. The scientific calculator can also help students, since logarithms, exponents, and trigonometry are among its functions.

Of course, *Calculator* is as valuable in the office as it is at home. You can access the *Calculator* without exiting your document, and then save your current state in *Calculator*. When you flip back to your document, your calculation remains intact for easy reference.

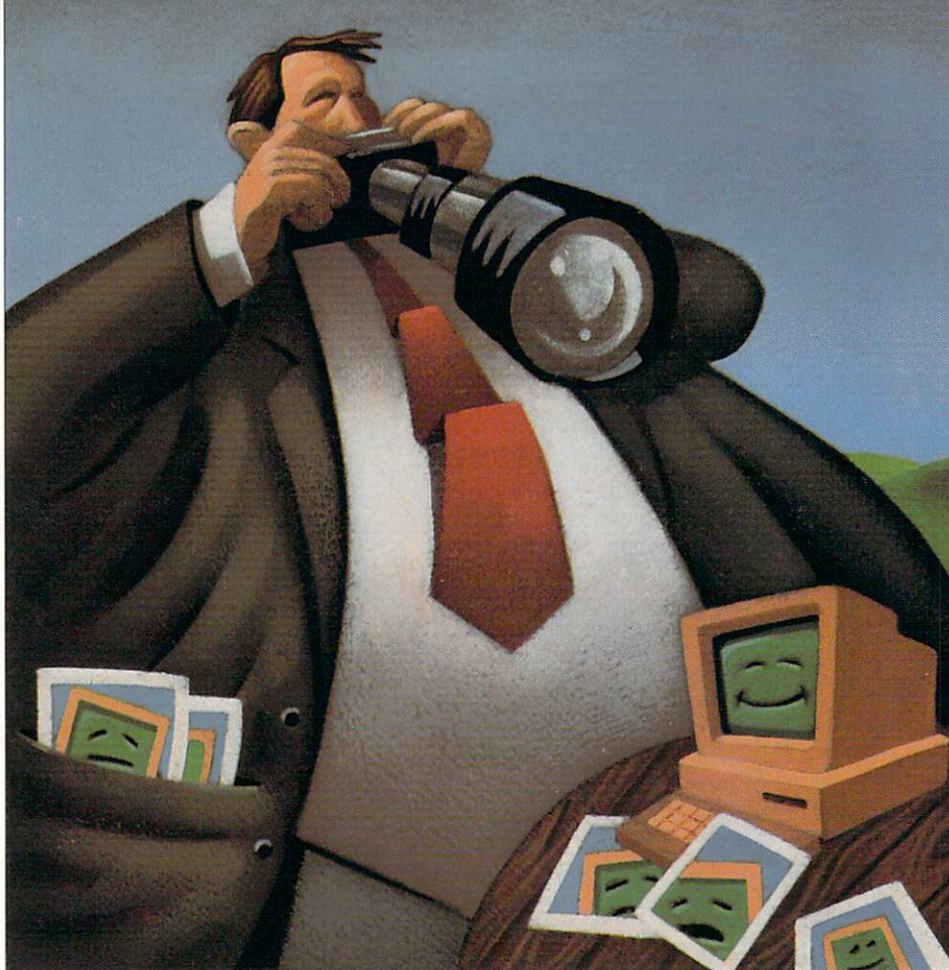
The list of Library's features goes on and on. *File Manager* helps you arrange, mark, edit, and print your files. *Program Editor*, with powerful features like hex edit and multiple block functions, lets you see and edit the codes behind your documents.

WordPerfect Library for the Amiga is now shipping. Save yourself some time by looking into it; you'll be glad you did. You can learn more about Library by contacting your local dealer or

WordPerfect
CORPORATION

1555 N. Technology Way • Orem, Utah, 84057 USA
Tel: (801) 225-5000 • Telex: 820618 • Fax: (801) 227-4477

WordPerfect is a registered trademark and WordPerfect Library is a trademark of WordPerfect Corporation. All other brand and product names are trademarks or registered trademarks of their respective companies.



OKAY, YOU GUYS, FREEZE



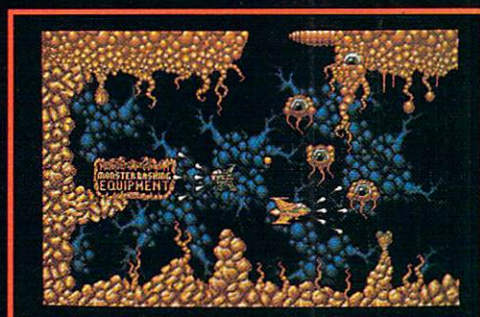
*Capture your on-screen video and graphics in the act
and book them to film with Polaroid's FreezeFrame.*



TO TRANSFER A combination of live video and Amiga graphics to film, your previous choices ranged from simply taking a photo of the monitor screen, which can result in bowed images and visible scan lines, to purchasing a \$100,000 film recorder, which can break your budget. A more accurate and affordable option is Polaroid's FreezeFrame (\$1995), a film recorder that gives excellent results. Even though the FreezeFrame was not designed for the Amiga, the ►

B y D . L . R i c h a r d s o n

Blood Money



BLOOD MONEY

The ultimate arcade game

Hold it right there. Are you REALLY ready for this one? Have you got the courage to load up the experience that makes all the other games you've played seem prehistoric?

Because **BLOOD MONEY** is simply the best arcade game you've ever seen. It has a staggering 1 megabyte of bit-mapped graphics, an amazing 400K of sound effects and music and the most gripping gameplay you've ever tackled in your life. **BLOOD MONEY** just leaves the competition for dead and takes you into new realms of arcade action.

But it's going to be tough. From the instant you hear that driving soundtrack you'll be plunged into a maelstrom of sheer destruction, as you plunder the four Outer Planets in a kamikaze quest for gold and glory. The aliens in **BLOOD MONEY** set some vicious traps, and it will take all your skills just to survive.

Use your awesome firepower wisely and you'll turn those aliens into blood money that can earn you extra weapons and equipment. And you're going to need them, because there are no easy screens in **BLOOD MONEY**. It's a life and death struggle that demands all your tactical genius and shoot-em-up know-how before you battle through to confront the four planetary Guardians.

With its vast bit-mapped graphics, superb animation, blistering sound, devilish obstacles, awesome firepower and 1 or 2 player options, **BLOOD MONEY** is the greatest challenge yet faced by any games player with a passport to outer space.

It's here. It's ready and waiting for you. But are you sure you're ready for **BLOOD MONEY**?

Two joysticks required for two-player game
Screen Shots are from the Amiga version

AMIGA \$39.95 ATARI® COMING SHORTLY

Psygnosis Ltd.

PO Box 483

Addison Illinois 60101

800-669-4912



two form a perfect partnership.

Made to work with live video from a camera or VCR, the FreezeFrame differs from other recorders in that it accepts an NTSC (National Television Standards Committee) video signal, rather than a digital RGB signal. While the RGB signal is better quality than the video, the difference is not as great as you might think, especially when you consider the video signal's versatility and simplicity of control. The first film recording system for the Amiga, the Polaroid Palette (\$1495) and Imprint interface (\$495, Liquid Light), connects to the Amiga's serial port and captures only IFF graphics. By reading the video signal, the FreezeFrame can take pictures of a single frame of live video, Amiga graphics, and graphics superimposed over a live scene with a

genlock. (For a direct comparison of outputs, see the sidebar "Photo Finish.")

THE LINEUP

Unlike the Polaroid Palette, which requires Imprint, the FreezeFrame requires no special software to take a picture of the screen. Factory fresh, the unit comes with an instant camera for Polaroid prints. For more flexibility, you can also install the optional 35mm camera (\$399) to shoot slides and prints. The camera will take any daylight film with a speed of 100.

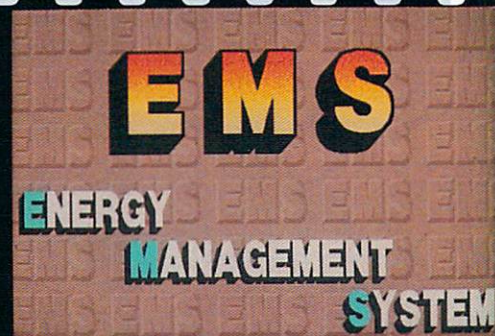
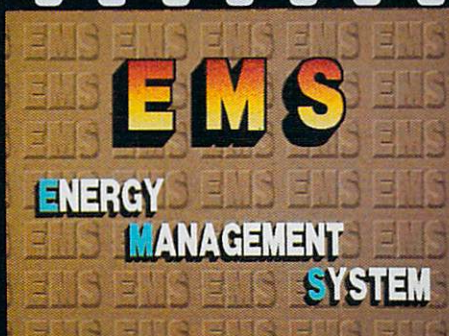
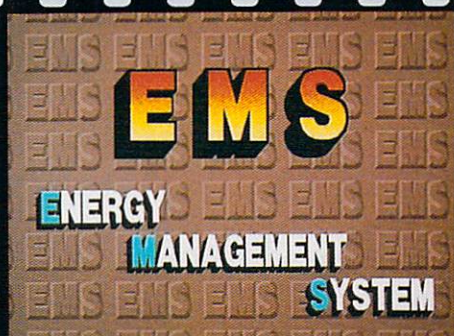
Inside the FreezeFrame is a high-resolution black-and-white monitor and a color wheel. Similar to the Polaroid Palette, the FreezeFrame takes a picture by making exposures of the image on the monitor ►

PHOTO FINISH

A Comparison of Slides from the FreezeFrame

and Polaroid Palette/Imprint System Film Recorders.

	FreezeFrame video cable	FreezeFrame Analog RGB cable	Imprint
Sharpness	Good	Excellent	Excellent
Scan lines	No	No	Sometimes visible
Ghost images	Sometimes, slightly	No	No



Imprint was the first film recording system made especially for the Amiga, so it is the standard by which others are judged. Imprint is based on an IBM version of the Polaroid Palette; Liquid Light adds the adapter

box, cable, software, and manual for Amiga use.

All pictures were taken with Ektachrome 100 film. The slight difference in color balance is due to different emulsion numbers and processing, not the film recorders.

Professional Desktop Video

Amiga Makes it Possible...

...Digital Creations and Progressive Image Technology make it happen.

This Summer, Digital Creations and Progressive Image Technology will introduce the most complete and cost effective line of Professional Desktop Video, Professional Paint, Titling and Animation products available on any computer. After more than two years of development and through the use of state of the art video memory and gate array design technology, Progressive Image has created a new series of revolutionary desktop video products. Digital Creations has created the software to make it all work, and now we would like to take this opportunity to show you the future of Desktop Video....

VMACHINE™

The VMACHINE™ is the ultimate desktop video tool created specifically for the serious video professional. The VMACHINE™ is a Time Base Corrector with dissolve, overlay and keying systems, as well as a programmable real time digital video effects system. In one simple package, we have included the ability to perform:

- A/B roll editing with full cross dissolves.
- A complete PaintBox with Living Color™ software.
- Resolutions up to 1024x512x16 million colors.
- Real Time video effects are created and modified with the Video Artist Workstation™ software.

- Video on top of video effects including:

Titling, Chroma Key, Mattes, Overlays, Dissolves, Keys, Mosaics, Posterizations, Solarizations, Shrinks, Flys, Pushes, Wipes, Zooms, Spins, Flips, Tumbles, Warps, Page Turns, plus virtually unlimited special effects you can create and modify yourself.

Living Color™

The Living Color™ series includes add-on expansion products for SuperGen 2000S™ as well as professional Desktop Video Software products.

Living Color™ Frame Buffer (requires SuperGen 2000S™)

The Living Color Frame Buffer™ provides the Amiga full 16 million color Paint capability. There are also several color register indirect and double buffering display modes that allow both color cycling animation as well as ANIM type animation with up to 256 colors. Living Color™ Paint, IFF picture and ANIM conversion systems are included with the Frame Buffer.

Living Color™ TBC/Digitizer option

(requires SuperGen 2000S™ and Frame Buffer)

The TBC/Digitizer option gives the Frame Buffer the ability to digitize full speed video in 16 million colors as well as act as a video Time Base Corrector. The Time Base Corrector allows full A/B roll editing as well as the ability to shrink or zoom, move and then overlay the digitized video in real time over the video sent through the SuperGen 2000S™. Includes Video Artist Workstation™ software for creating visual effects with the TBC.

Living Color Paint™

Living Color Paint™ is the next generation paint system for the Amiga. A virtual color paint system included with all of our paintbox products including the Frame Buffer and the VMACHINE™. A version of Living Color Paint™ is also available for the Amiga supporting all of its resolutions and drawing modes including HAM.

Video Artist Workstation™

The Video Artist Workstation is a real time, interactive software system for the creation of visual special effects. Through the use of the Video Artist Workstation™, included with the VMACHINE™, the video professional can create and modify thousands of special effects.

SuperGen 2000S™

suggested list **\$1595**

The SuperGen 2000S™ is a true S-VHS compatible Genlock and overlay device for the Amiga® 2000 series computers. The new SuperGen 2000S™ installs into the video slot of any A2000 or A2500 Amiga. We have retained all the important features of our now industry standard SuperGen™ including dissolve sliders (through a remote console) and software controllability. SuperGen 2000S™ encodes and overlays in separate luminance and chrominance channels thus guaranteeing full S-VHS bandwidth and stunning picture quality. Composite RS-170A NTSC video is also supported, and with separate channel encoding, color crawl is virtually eliminated! An expansion port provides an upgrade path to the Living Color™ series of professional video products.

Features:

- S-VHS and NTSC compatible inputs.
- 2 NTSC outputs, 2 S-VHS outputs (can also transcode).
- Dissolve slider console, Software controllable.
- Built in Proc Amp, 360° SC phase adjust, ±3μs H phase adjust.
- Internal Sync generator, Separate Y/C encoding and overlay.

The Original SuperGen™

still only **\$749.95**

Our best selling genlock. Full NTSC Broadcast quality, dissolve sliders, software controllable, and works with all Amiga models.

Prices and specifications subject to change without notice.

Circle 28 on Reader Service card.



Digital Creations



865 Sunrise Blvd., Suite 103 • Rancho Cordova, CA 95742 • (916) 344-4825

This ad was generated entirely on an Amiga using Living Color™ and Gold Disk's Professional Page™.



through the red filter, then the green, and then the blue. Each picture takes 18 seconds, after which the unit automatically advances the film.

Connecting the FreezeFrame to the Amiga is easy. Run a common phono cable from the video output of the Amiga or a genlock to the FreezeFrame's video input. To see what you are capturing, connect a second cable from the FreezeFrame's output to your monitor's input. According to the manual you can also connect the FreezeFrame via analog-RGB or digital-RGB cables, but the latter are not available for the Amiga. For an analog RGB cable, you can either make one yourself or contact a custom cable supplier, such as Redmond Cable. Analog RGB output does improve the picture quality. The image will be slightly sharper, without the traces of ghost images that sometimes appear in video signals. The disadvantages of using the RGB cable are that you must disconnect the monitor to plug in the RGB cable, and you will also lose some controls.

The FreezeFrame's control panel is unique. It has buttons to select the film speed, toggle on autocolour, fill scan lines, preview, save a frame of video to memory, and print (take a picture). Sliders let you control the color saturation, tint, sharpness, contrast, and brightness of the image. When using an RGB cable, you give up the Autocolour, Memory, Color Saturation, and Tint controls.

GO AHEAD AND SHOOT

To photograph a live scene or graphics superimposed over a live scene, press the Memory button to grab a single frame, Fill to hide the scan lines, then Print to take the picture. The results are less than spectacular, but your only other options for getting such a picture are buying a higher-priced recorder or snapping a picture of the screen yourself.

When photographing a graphics-only screen you can greatly improve the picture quality by using some undocumented techniques. For best results use an interlaced picture, int-res or hi-res. Be sure there is no motion on the screen, such as color cycling. Do not capture a single frame with the Memory button, and do not fill the scan lines. Be sure the Film Select is set properly for your film, and that all the sliders are centered. Then press the Print button to take the picture. If you use non-interlaced, lo-res or med-res

graphics, follow the same steps, except do fill the scan lines.

The FreezeFrame's automatic exposure control is great for normal-contrast pictures. Problem images, such as titles on black backgrounds, however, require special brightness and contrast settings. To keep the background pure black and make the characters stand out, turn off the Autocolour, increase Contrast a notch and decrease Brightness a notch. Line drawings on white backgrounds need special attention as well. The automatic exposure tends to make the white background look gray. To keep it white, increase Brightness.

When you are finished with a roll of film, hold back the Rewind button. If the FreezeFrame sounds as if it is chopping up the film during rewinding, don't worry—it always sounds that way.

LOCK 'EM UP

In addition to slides and prints, the FreezeFrame offers some bonuses for the professional and home user alike. For the small-video producer, the FreezeFrame offers an unexpected advantage: It can substitute for a proc amp (Processing Amplifier) in a video-editing system. You can use it to correct color balance, color saturation, contrast, and brightness. Home users can take advantage of the FreezeFrame's frame-grabbing abilities to record the frozen images on video tape, by hooking up the unit's video output to a video recorder's video input. Do not expect to use the frozen frame in a professional setting or to broadcast it, because it is not an interlaced signal.

Whether you need slides for business presentations, art exhibitions, or to send to your Aunt Mabel, give the Polaroid FreezeFrame some serious consideration. The unit is made to order for trapping live video or graphics genlocked over video to film. Although more expensive than the Palette and Imprint, the FreezeFrame is equally hard to beat for quality of straight graphics slides. If you need a large volume of prints and slides, you will quickly make up the extra cost in the time and frustration you will save. ■

D.L. Richardson has a Master's Degree in Motion Picture Production and currently produces industrial videos and slide shows. You can write to him c/o AmigaWorld Editorial Dept., 80 Elm St., Peterborough, NH 03458.

MANUFACTURERS' ADDRESSES

Liquid Light Inc.
2301 W. 205th St.
Suite 106
Torrance, CA 90501
213/618-0274

Polaroid Corporation
575 Technology Square
Cambridge, MA 02139
800/225-1618

Redmond Cable
17371—A1 N.E. 67th Ct.
Redmond, WA 98052
206/882-2009

Add some color to your fantasies.

Looking for sparkle and excitement in your fantasy role-playing games? Then look for these colorful titles from SSI:

QUESTRON II.™ Travel back in time to find the way to destroy the Evil Book of Magic — before it can be completed by the six Mad Sorcerors led by Mantor.

The superb color graphics is nothing short of stunning. The visual presentation of the mystical world — from the wilderness, towns and dungeons to the countless characters and monsters — is truly breathtaking.

QUESTRON II offers an experience so awe-inspiring, it surpasses even its legendary predecessor!

APPLE, APPLE II GS, C-64/128, ATARI ST, IBM, AMIGA.

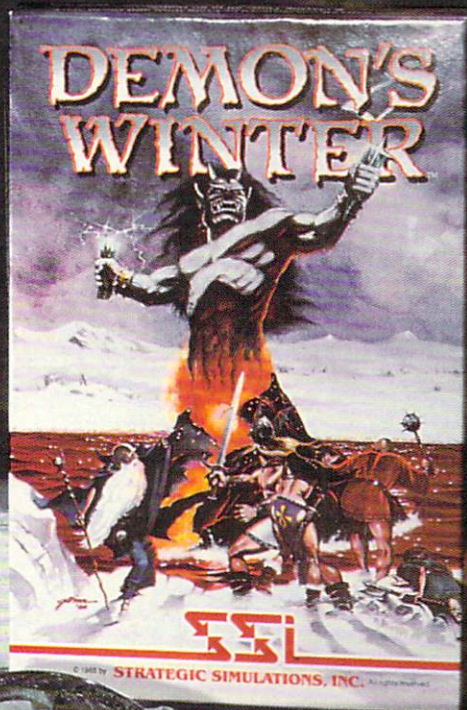
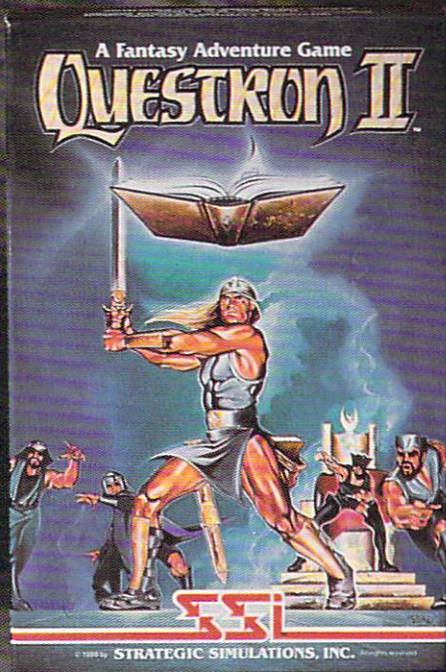
DEMON'S WINTER.™ The five adventurers you guide in this role-playing game are faced with the apocalyptic menace of the demon-god, *Malifon*. Although trapped inside a volcano, Malifon threw the entire world into a deep, frigid winter — and turned the oceans into blood. In this desolate setting, his minions thrive and threaten to free Malifon!

Your mission: Search this vast world for the spells needed to trap Malifon forever and undo his wintry curse.

Though the Demon's Winter may chill your bodies, may courage, honor and perseverance warm your souls!

APPLE, C-64/128, IBM.

AMIGA, ATARI ST.



© 1988 by STRATEGIC SIMULATIONS, INC.™ All rights reserved.

TO ORDER: Visit your retailer or call 1-800-245-4525 to charge on VISA/MasterCard.
To receive SSI's complete product catalog, send \$1.00 to: SSI, 1046 N. Rengstorff Avenue, Mountain View, CA 94043.

Circle 244 on Reader Service card.



5

◆

**An occasional series
of tips, techniques,
and tricks for
creating more
imaginative Amiga
graphics.**

◆

By Joel Hagen

Page-Flipping Animation

BY WAY OF incentive for getting involved in "Accent's" topic this month—page-flipping animations—consider this: The Bay Area Amiga Developers Group (BADGE) in California hosts an Amiga animation competition each fall, the BADGE Killer Demo Contest. Grand prize is an Amiga 2000 system from Commodore, with generous additional prizes from other Amiga hardware and software manufacturers. Just about every computer animation style and technique is represented, from screen-hacks to math-intensive ray-traced page flipping. Last year, Brad Schenck's beautifully illuminated "Charon" received the grand prize. In 1987, my own "RGB Hazard" animation took top honors. Both of these pieces were created with a program called The Director and make use of an interesting feature of that software called partial-screen page flipping, or BLIT. This article will discuss page flipping in general, and some specific techniques as used in these prize winners.

Page flipping refers to the sequential display of a chain of successive images. When such a sequence is displayed rapidly enough, persistence of vision causes the eye to perceive that succession as smooth motion. This is what makes a series of images in a motion picture appear to move. You may also have seen "flip books," in which a sequence of drawings can be flipped with the thumb to produce the illusion of motion. Hence the term "page flipping."

In the Amiga, page flipping is accomplished by loading a sequence of images into the computer's memory, then rapidly displaying them to the screen, one at a time. Examples of software one can use to do full-screen page flipping are The Director (Right Answers Group, \$69.95), Pageflipper Plus F/X (Mindware Int'l, \$159.95), and Photon Video: Cel Anima-

tor (MicroIllusions, \$149.95). Images can come from any source—digitizers, paint packages, math graphing software, etc.

Usually, the longer you can run an Amiga animation, the better the results. There is greater freedom to tell a story. Available memory, however, becomes a constraint to which a clever animator must adapt in order to lengthen running time. Reducing the amount of memory each image occupies increases the number of images that can be loaded and displayed. Carefully controlling the rate at which images are displayed can also save valuable memory.

Low-resolution images take up less memory space than high-resolution images. Reducing the number of colors can also reduce the file size. Color, however, must be reduced in certain stages. The key is the number of bitplanes involved in the display: six bitplanes are required for HAM, five bitplanes for 32-color, four for 16-color, three for 8-color, two for 4-color, and one for 2-color. Low-resolution, two-color pictures, for example, take up relatively little space. I usually work in low resolution, full 32-color.

The rate at which frames are shown is also a significant memory issue. Most films are shot at a rate of 24 frames per second. Video uses 30 images per second. Many cartoons were done at 12 frames per second to reduce the amount of labor. A basic question arises: How few frames per second can you use and still convey the illusion of smooth motion to the eye? Knowing this limit, an animator can plan how much incremental movement to create between images. I find that I can sometimes get away with about eight frames per second, depending on the subject and the amount of movement between frames. If an animated character needed to raise its hand to its face in half a second, Walt Disney

Perfecting memory-conserving techniques can enhance your page-flipping animations...and perhaps win you some recognition in the bargain!

might have drawn 12 frames to accomplish that movement. The economy-minded Amiga animator might get away with four, saving precious RAM space. Capturing an image sequence from a VCR with a good freeze frame, one need not capture every frame. Perhaps every fifth image will suffice, with an appropriate pause for each display.

FLIPPING ITS BLIT

Returning to the specific subject of this article, we find in The Director yet another opportunity for memory conservation. The Director is an Amiga-specific language designed for creating anything involving graphics, text, animation, and sound. One of its most powerful features is the BLIT command, which allows partial-screen page flipping. Using this feature, you can pack a single screen with many individual elements of a presentation, which you can then assemble at animation speeds on a display screen.

A single screen could, for example, contain arms in 20 different positions and five different faces for a character who has six body positions stored on another screen. A third screen could contain an elaborate background. The Director's BLIT utility allows you to pluck a body from the storage screen, put it on the background, add arms and a face from another screen, display the created image, then repeat the process with new pieces. Relatively long animations can be created using few screens.

This ability to grab any part of a graphic screen and display it, wipe it, or dissolve it anywhere else is a powerful option, and one reason we see so many elegant presentations done with The Director. Using partial-screen page flips in "Charon," Brad Schenck animated a knot tying itself and a flying bird. He also created whole screens of parchment

from parts of one smaller piece on which he used BLIT repeatedly. This is real economy, letting the computer do part of the painting for you. I animated everything in "RGB Hazard," from moving arrows to my stretching nose, using partial-screen BLIT operations.

The space illustration (Figure 1) is from "Emissary," a new animation of mine involving discovery of an alien craft in our own solar system. Using partial-screen page flipping, this sequence of Mars' moon, Phobos, appears to zoom from a blurry dot to a large, sharp image on a data screen while the section of Martian surface scans into another window of that screen. The illustration of the chemical flask (Figure 2) is an exam-

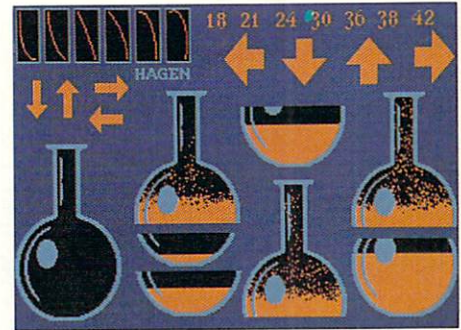


Figure 2. Component parts of an animation are "packed" into a single screen for later use.

ple of packing all the elements for an animation into a single screen. Using BLIT, we could create an elaborate display screen for a smooth looping sequence in which the flask appears to be boiling while readouts of waveforms undulate. This screen demonstrates all the points of potential memory conservation I have discussed: low resolution, reduced bitplanes, and screen packing. So, pull up your Amiga and get an entry ready for this year's BADGE contest. ■

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

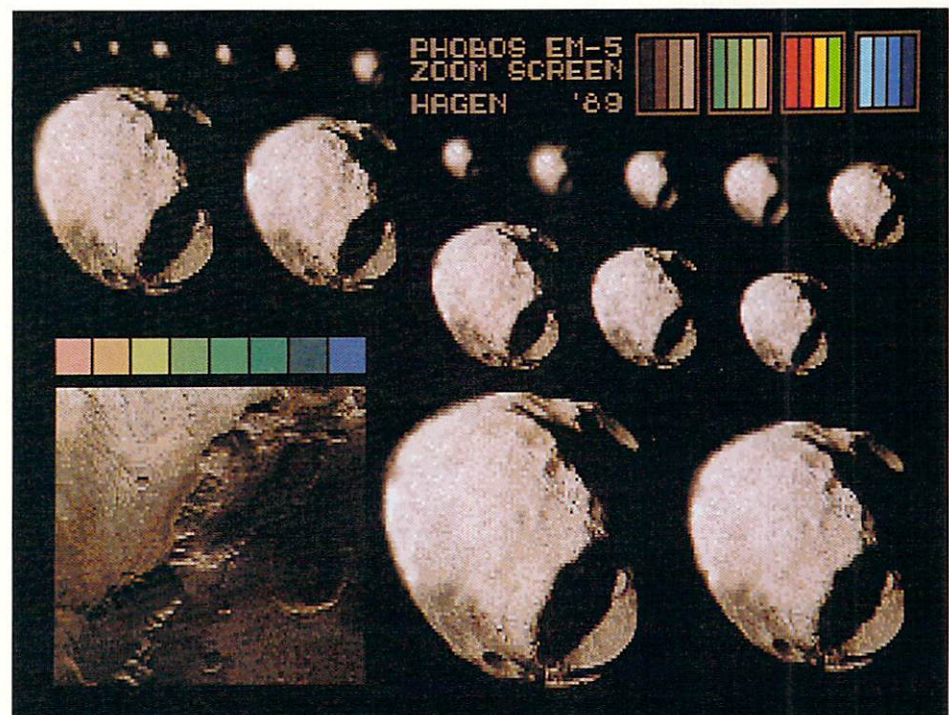


Figure 1. The moon Phobos appears to zoom into focus using partial-screen page flipping. Smaller window, bottom left, contains detail of Martian surface.

SPRUCING UP THE OLD BENCH—4*

Extras 1.3

*Our mini-series on Workbench 1.3 concludes
with a guided tour through that other disk
that comes with 1.3: the Extras disk.*

By Mark L. Van Name and Bill Catchings

**Editor's Note: This month, Team info.phile presents Part 4 of their latest AmigaDOS 1.3 "mini-series." While their previous collection ("Exploring AmigaDOS 1.3," Aug. '88–Dec. '88) focused on new or improved CLI commands, this series explores the other side of the AmigaDOS coin: the Workbench.*

EXTRAS 1.3 CONTAINS some useful tools and programs, but it poses something of a problem for those of us without hard disks. After all, the Workbench 1.3 disk is almost completely full, leaving very little room for you to add those "extras" that you will want to access often. In this quick tour, we'll point out which of those extras may be the most useful, and which ones you can pass up. We'll also make some suggestions for freeing up space on that crowded Workbench disk.

THE BASIC ROUTE

The largest single contribution of Extras 1.3 is Amiga Basic. If you need it, just copy its program and icon files from the main directory onto a bootable disk and you're ready to go.

Well, almost ready. You'll probably also want, at least for a little while, the demonstration programs in the Basic-Demos directory. If you're going to be doing any serious BASIC programming, you'll also need the library description files in the FD1.3 directory. These files, which all end with the suffix .FD, unfortunately are not in the format that Amiga Basic requires. To convert them to that format, use the BASIC program ConvertFD in the BasicDemos directory—but you will have to compile it first with Amiga Basic. ConvertFD reads in a .FD file and produces an equivalent .BMAP file that Amiga Basic can handle.

DESTINATION: DEVS DIRECTORY

Next on our tour is the Devs directory. Devs contains two subdirectories: Keymaps and Printers. You almost certainly won't need all of the files in either of these subdirectories, but you may well want a file or two from each.

Devs/Keymaps contains alternate keyboard encodings for folks outside the U.S. If the language you need to use is one of the dozen represented here, then you're in luck. Just copy the key map file

you want into the Devs/Keymaps directory on your Workbench disk, delete the standard usal key map that you'll find already there, and you're ready to go. If there is no key map for your country, you'll either have to make do with the standard U.S. mapping, or find the closest other key mapping.

The Devs/Printers directory is one that most of us will need to get into at least once. It contains most of AmigaDOS' many printer drivers. Pick the drivers for the printers you use with your Amiga, and copy them into the Devs/Printers directory on your Workbench disk. There are over two dozen printer drivers from which you can choose.

Another Extras 1.3 directory, Fonts, offers three additional typefaces—Courier, Helvetica, and Times—in several different sizes that you can use with applications like Notepad. If you decide you want one of these fonts, copy its entire directory and its corresponding .FONT file into the Font directory on your Workbench disk. (To get back some of the Workbench ►

PRISON™

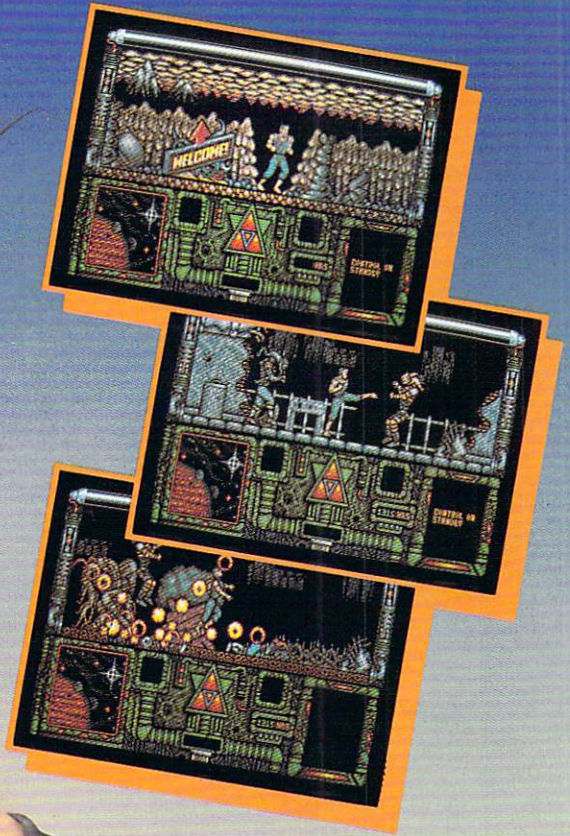
You're as mad as hell and not going to take it anymore!

The year is 3033. Criminals are no longer sent to jail, they're sent to a penal colony on the abandoned planet, Altrax. You have been wrongfully convicted of a crime and sent there. A long life is not likely among the galaxy's worst undesirables. Your only hope for a long life is to find a rumored space pod and escape. So begins your adventure into terror!

Features . . .

- Superb Graphics
- Ultra-Smooth Animation
- Over 300 Screens
- Total Joystick Control (no typing)
- Save and Load Games
- Multiple Escapes
- Communicate and Interact with Other Game Characters
- Game Play and Lighting affected by Game Day-Cycle

It's never too late to escape.



ACTIONWARE™

Circle 7 on Reader Service card.

Actionware, Inc.
38 W 255 Deerpath Road
Batavia, Illinois 60510
(312) 879-8998 FAX (312) 879-6880

Licensed from CHRYSALIS Software Ltd.
For the AMIGA™, ATARI ST™, IBM™ PC and Macintosh™

space that these fonts consume, you can delete any of the standard Workbench fonts that you don't use.)

DOWN AN OBSCURE PATH. . .

So far this tour has been fairly routine, but now let's take a turn into esoterica: the PCUtil directory. This directory is the home of three tools—PCFormat, PCCopy, and ToPCCopy—that let you copy files between Amiga 3.5-inch disks and IBM PC 360K 5.25-inch disks. There is also a short "Read Me" file that explains the basics of these utilities.

These tools are useful only if you have an Amiga 1020 5.25-inch disk drive, or a third-party equivalent, and a need to read IBM-PC files. If you have a Bridge-board and run a few MS-DOS applications, or if you transfer spreadsheet or word-processing files between a PC and your Amiga, these tools could be just the ticket. Most of us, however, probably don't need them.

If you decide to use these tools, be sure to obey a few simple rules. First, turn on the 5.25-inch drive before you turn on your Amiga, so that when the Amiga boots it will be aware of the drive.

Next, *don't* mount the 5.25-inch drive. That advice runs contrary to most of what we've told you about disk drives in the past; AmigaDOS usually cannot work with a drive unless you first mount it. But because AmigaDOS must treat this 5.25-inch drive as a PC drive, it cannot view it as a standard, mounted AmigaDOS drive.

Finally, remember that PC disks, like Amiga disks, aren't ready for action until you format them. You can either format your PC disks on a PC or use the PCFormat utility.

If you use PCFormat, put a disk in the drive before you start, or you might be sorry. PCFormat is a temperamental tool that has taken us to visit the Guru more than once. When you bring it up it will let you choose the DOS version and disk format for your PC disk. Unfortunately, while most of the PC world is using DOS 3.0 or higher and 1.2MB floppies, PCFormat limits you to DOS versions 1.0 or 2.0, and to either 160K (one side, eight sectors per track) or 360K (two sides, nine sectors per track) disks. Still, if you stick with the defaults, you'll get 360K disks that most PCs can read.

Once you've got a formatted PC disk, you can copy files between it and your Amiga disks with the PCCopy and ToPCCopy tools. The two tools are basically the same, except that PCCopy copies from a PC disk to an Amiga disk, while ToPCCopy goes the other way.

TOOLING ALONG

Our final stop on the Extras tour is the Tools directory. This may conjure images of opening a toolbox full of useful gadgets, but it's more like opening Christmas presents: You find gold every now and then, but most of what you find will end up collecting dust in the back of your closet.

On the useful side, we have MEMACS and KeyToy2000. MEMACS is an extremely powerful, albeit hard to learn, text editor that will do just about anything. (For more information, watch for our article on MEMACS, scheduled to appear in a future issue of *AmigaWorld*.)

KeyToy2000 is a little program that you won't need often, but you'll be glad you have it when you do need it. It displays a picture of the keyboard and shows the character that each key pro-

A

GEN/ONE from CSI...
Quality. With the
commitment to match.

One look and you'll see for yourself why this desktop genlocking encoder is taking the marketplace by storm.

Specially designed for compatibility with all AMIGA computers, the GEN/ONE is a no-nonsense interactive component for superb video graphics.

So give us a call to get more information about this feature-packed accessory. For the price, it's the best composite genlocking encoder around, with Super-VHS output as an added bonus.

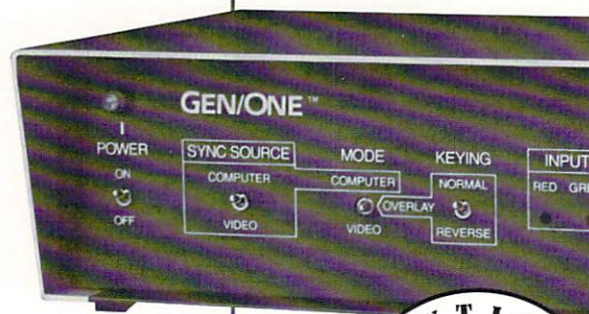
LOCK

Remember, we back GEN/ONE with the best warranty in the business.

- Separate RGB & Video Gain Controls
- H, V, Subcarrier Computer Timing
- 3 Modes of Operation
- Y/C Output for Super-VHS
- 2 Composite Outputs

ON

QUALITY



\$895.
With 1 Year Warranty

Call For More Information
And A Free Brochure
(516) 273-0404

☒ Communications
☒ Specialties, Inc.

89-A Cabot Court
Hauppauge, NY 11788



SMASH! HITS!



Looking for some real action in home computer games? Excitement that'll have your heart pounding and palms sweating? Razzle dazzle graphics that'll drive you wild?

Look no further than these incredible arcade smash hits — now *faithfully* converted for your home computer by Tengen.

Speaking of smash, Blasteroids® gives a lot of space rocks a chance to do exactly that to



your starship. Twist, dodge and blast away at the never-ending onslaught of asteroids and enemy ships. But



one wrong move and you'll bite space dust.

When it comes to hits, nothing lets you give or take more than

TENGEN

WE BRING THE BEST ARCADE HITS HOME.

1901 McCarthy Boulevard., Suite 210, Milpitas, CA 95035 (408) 435-2650

Vindicators™. It puts you in charge of a hyper futuristic tank that'll blow your mind — fighting against enemy tanks and turrets that'll blow you *away*.

Get Tengen's smash hits at your favorite retailer today. And experience the best of the arcades at home!

They're available now for the C-64/128, Amiga and Atari ST.

BLASTEROIDS: © and ©1987, Atari Games Corp.
VINDICATORS: TM and ©1988, Atari Games Corp.
Screen displays for different computers may vary.

duces. Press the Shift key, and you see the characters that the shifted version of each key produces. Ditto for the ALT key. This tool is just the ticket when you're looking for that hard-to-find copyright symbol (ALT e), beta (ALT s), or other esoteric character.

From here on, however, we're in the scrap heap. For example, take Palette. Please. Palette lets you change the colors of any screen. You can already do that with Preferences, but only for the Workbench screen. Of course, most Amiga applications use windows, not screens, so Palette is largely redundant with Preferences.

Then there's FED. FED lets you create and edit fonts. It's a neat tool, and we had a nice time playing with it, but let's face it, how many of us really need or even want new fonts for Workbench? Where we might want fonts is in a desktop-publishing program, but most of those already come with an ample supply.

And, of course, there's the icon-editing utilities, IconEd and IconMerge. IconEd lets you change an icon's appearance, while IconMerge lets you split or merge

icons. Again, IconEd can be fun, but how often do you need it? As for IconMerge, well, we like icons that change their appearance when you click on them as much as anyone—who doesn't get a kick out of seeing the Trashcan lid open—but we don't get the urge to change those icons very often. Developers may like these tools, but they aren't very important for most of us.

FreeMap is another tool in that same class. It shows you how much of your chip memory is free, and how much is in use. This might be nice to know when you're trying to run a graphics program that needs a lot of chip memory, but in the end either that program runs or it doesn't. If it does run, who cares how much chip memory you have? If it doesn't run, you know you have to close some other tools to free up some memory, so FreeMap doesn't really help. Now, if FreeMap would tell you how much chip memory each process is using, that would be handy, because then you would know which ones to abort to gain back the most chip memory. As it is, however, FreeMap is largely a curiosity.

Finally, here's our candidate for the

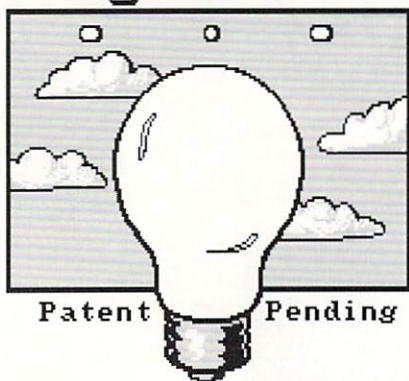
dumbest tool: PerfMon. PerfMon monitors the system's performance, showing you the degree of CPU and memory utilization. That information may sound useful, but what are you really going to do with it? If you have work to do, you have to do it, regardless of whether your Amiga is running at half capacity or full bore. Further, PerfMon presents its CPU information as a difficult-to-read graph. Why it doesn't have a nice simple 0–100% scale, or maybe a speedometer, is beyond us.

END OF THE ROAD

We've been covering 1.3 for nearly a year, and it's time to move on to other aspects of the Amiga. Until next time, take a few minutes to experiment with the contents of the Extras disk, and see how your assessment matches up with ours. Let us know if you want; we're always willing to be persuaded that we're wrong. Happy touring! ■

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

Light Box



"The drawing tool for Animators."™

LightBox is a new animation software for people who want to draw. It allows you to easily make animations with all the charm and fullness of old time hand drawn cartoons. LightBox software automatically shows you the previous and following drawings as if they were stacked up with pegs on a conventional light box. The low resolution drawings are shown in contrasting colors for easier identification. You fill in your animation by creating additional drawings inbetween the ones displayed. You can flip your drawings as you work to instantly see them animated at true speed. Drawing each frame gives you full artistic freedom to give your animation life and impact. Examples illustrating basic principles of animation drawing are included.



R & DL Productions
11-24 46th Ave 2A
L.I.C. NY 11101
(718)392-4090

Amiga™ computer with
minimum 1Mb RAM,
Kickstart 1.2 or 1.3
required. **\$189**

Circle 109 on Reader Service card.

AC/BASIC™ V1.3 — NEW

Easy to use compiler is **very fast** with great **graphics**. Plus, AC/BASIC is the only BASIC compiler for Amiga that is **compatible with the AmigaBASIC** interpreter so your existing programs can be compiled with no changes and run up to **50x faster**.

Easy to use documentation is indexed and includes over **200 examples** on disk: plus a full **spreadsheet** written in AC/BASIC and **HAM graphics** examples

Extensions include: **SELECT CASE, BLOCK IF, STATIC** arrays. **Recursive** subprograms. Create stand-alone applications (no redistribution fee) NCP \$195.

AC/FORTRAN™

Mainframe quality, full feature **ANSI FORTRAN 77** compiler includes: **Debugger**, Linker, Library Manager, Runtime Library, **IEEE math**, and **C interface**. Supports **Complex** numbers, **Virtual** arrays, **Overlays** and **Linking**. Not copy protected. \$295.

68020/68881 version also available \$495.

abs:ft

Scientific/Engineering Software

2781 Bond Street, Auburn Hills, MI 48057/(313) 853-0050

Amiga trademark of Commodore/Amiga. Microsoft trademark of Microsoft Corp.



Telephone orders welcome

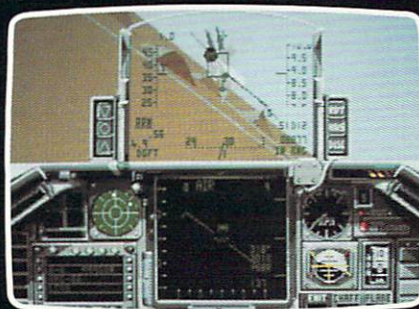
Circle 175 on Reader Service card.

FALCON



**NOW AVAILABLE FOR
AMIGA AND ATARI ST**

- "It's the best flight simulator yet put on a microcomputer... a must for any Mac owner..." John Dvorak — San Francisco Examiner
- Other flight simulators "...pale to insignificance compared to FALCON..." Jack Warner — United Press International
- "Flying FALCON is nothing short of exhilarating..." Howard Bornstein — Computer Currents



Amiga & Atari ST screen

FALCON TAKES TOP HONORS

- **BEST SIMULATION**
- **BEST ACTION/
STRATEGY GAME**
- **BEST TECHNICAL
ACHIEVEMENT**

THE F-16 FIGHTER SIMULATION

Climb into the FALCON cockpit and fly a highly realistic simulation of the F-16A Fighting Falcon. Perform fighter maneuvers while engaging enemy MiG's in dogfight battles OR connect two computers and go head-to-head against another plane piloted by a second person. Realism is captured by use of sound and digitized airplane images, advanced radar mechanisms, and four alternating heads-up-displays. Multiple levels and missions challenge even expert pilots. Feel the exhilaration of power, speed, and maneuverability of the F-16 as you claim the skies as FALCON territory!

FALCON Available on Macintosh (1 Meg), IBM 256K, Amiga 512K, and Atari ST 512K.

Circle 141 on Reader Service card.

**Spectrum
HoloByte™**

2061 CHALLENGER DRIVE
ALAMEDA, CA 94501 (415) 522-0107

FALCON and Spectrum HoloByte are trademarks of SPHERE, Inc. Macintosh and IBM are registered trademarks of Apple Computer, Inc. and International Business Machines respectively. Amiga is a trademark of Commodore-Amiga, Inc. Atari and ST are registered trademarks of Atari Corp.

THE GAME PRESERVE

Burn Rubber

Screeeeeeeech. A sleek red Ferrari with the license plate "BG" streaks off into the horizon.

By B.G. Hunter

IN A SEARCH for the ultimate racing game, I've driven almost every kind of vehicle over almost every type of terrain, all from the comfort of my Barcolounger. I'm not too demanding; the arcade game Pole Position, with its simple controls and fast pace, has gobbled more than its share of my quarters. None of the ten Amiga games I tried, however, gave me that total racing thrill.

ON THE COURSE

Take, for instance, **Ferrari Formula One** (\$49.95,

Electronic Arts). Like many recent computer games, it's too complex. In some respects Ferrari Formula One is a tour de force; its graphics are stunning, and it doesn't miss a detail. Want to see what's behind you? Check your dual side-view mirrors. Unfortunately, those same details can overwhelm you. Before you even start racing, you must pick your tires, adjust the suspension, and tune the engine and gear ratio.

I might enjoy these items if the driving were more fun, but it's not. Steering with the mouse is bad enough, but then you have to shift through six gears. While you steer and shift, you also have to monitor gauges for fuel, oil pressure, RPM, turbo-boost level, and your cooling system, as well as keep an eye on how your tires are wearing.

I always finish in last place.

On the other end of the spectrum, **Formula 1 Grand Prix** (\$29.95, StarSoft Development Laboratories) does not pay enough attention to details. Its racing is straightforward, if unexceptional. You still have to shift through six gears, but here you really have to get it right; over-rev the engine and your car explodes. Resume racing, and you begin in the gear ▶



Barrelin' through the Baja.

Magic Johnson's BASKETBALL

1 MG
AMIGA VERSION
IDENTICAL TO THE ARCADE GAME!

*Basketball the way
the Pros play.*

Arcade action brings the realism of the big time game home to you in this direct translation of the popular coin-op arcade game, "Magic Johnson's Fastbreak Basketball."

Featuring:

- Arcade-quality animated graphics and characters larger than any before seen in a home computer basketball game, because it's NOT a home computer game, but a REAL Arcade game!
- a full-court scrolling screen
- two-on-two play, WITH OFFICIALS!
- full stats - see if you can achieve Triple Doubles like Magic!

Make the "jump shot," the "alley oop," and of course Magic's famous "fast break" with a "slam dunk" finish. Dribble 'round your opponent to make the "lay up" that wins the game!

Now you've earned the honor of playing the ultimate One-on-One...

You against Magic Johnson.

Available now:	Amiga (1 mg)	- \$49.99
	IBM 5-1/4"	- \$39.99
	IBM 3-1/2"	- \$39.99
Coming soon for:	Amiga (512 K)	- \$39.99
	Commodore 64	- \$29.99
	Apple IIGS	- \$39.99



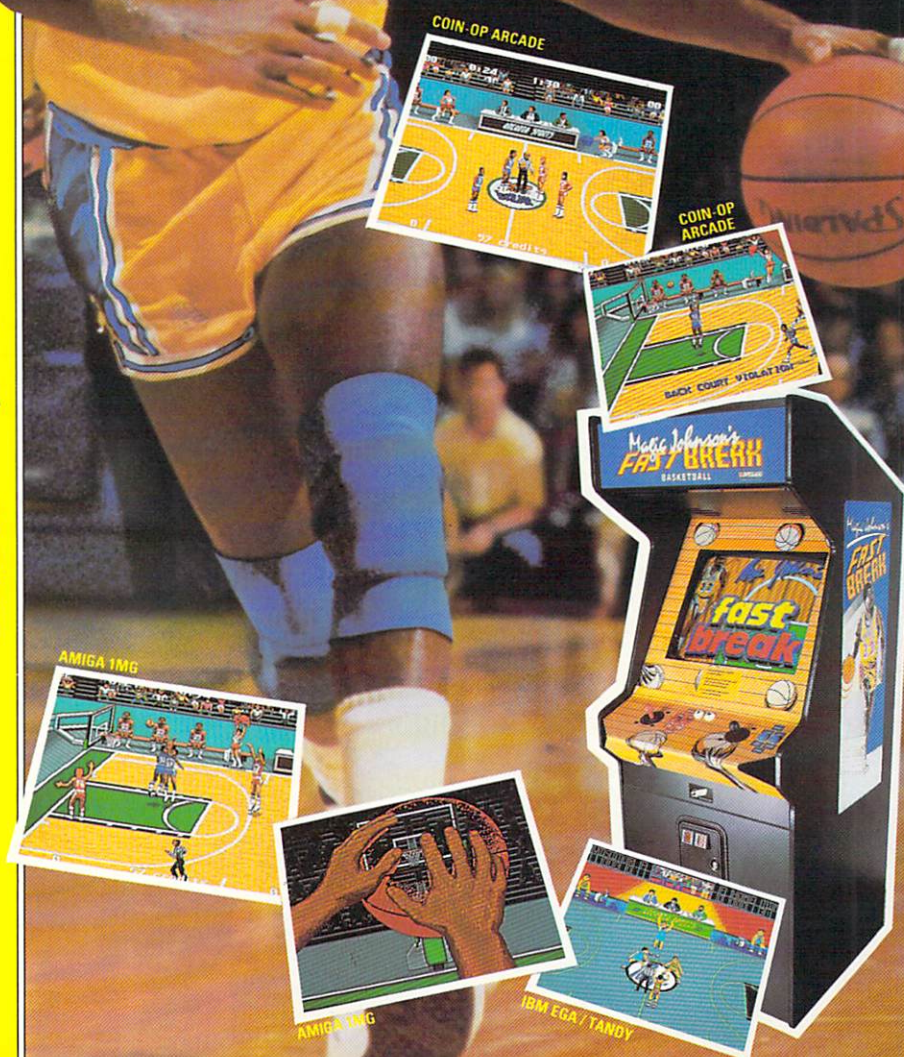
Setting New Standards
IN COMPUTER SOFTWARE

MELBOURNE HOUSE
711 West 17th St., Unit G9, Costa Mesa, CA 92627.
Tel. (714) 631-1001.

Melbourne House is a member of the Virgin Mastertronic Group.

Circle Reader Service #104

GAME
INCLUDES
Magic Johnson
POSTER



you were using before the explosion. Starting in sixth gear is no fun.

Far worse, however, was the penalty for getting a high score: the game hung. To be fair, it probably hung because I didn't use a high-score disk, but it never warned me.

The documentation, like that of so many other Amiga games, told me practically nothing. I'm being generous, actually. Its "manual" is one double-sided, photocopied page. Only one-quarter of the page is actually documentation and includes such deathless hints as "avoid collisions and overtake as many cars as possible." Wish I'd thought of that. Worse, instead of springing for an extra manual page, StarSoft added an insert that, like an overgrown matchbook cover, invites you to become rich by writing for them. If this game is making anybody rich, I'm in the wrong business.

Perhaps the most enjoyable of these Formula One racing games is **Grid Start** (\$24.95, Anco). It has decent graphics and enough options to keep you interested. As in all of these games, you can race once or run a multiple-course season. I didn't win often, but the ability to choose different skill levels at least made me competitive. Unfortunately, you can't save your high scores to disk.

Like the others, Grid Start makes you wade through six gears. I ended up in fourth gear most of the time because downshifting was so hard: you have to press the joystick's button while at the same

time pulling back on the stick. Miss the button and you've just hit the brakes, so you've got to be careful.

A faithful reproduction of the arcade version, **Out Run** (\$49.95, Sega) brings a thankfully-simple two gears to a less realistic drive. Instead of a race track, you speed through a succession of highway landscapes as you try to beat the clock. Geography takes a back seat to speed, as Holland borders Death Valley. (You also can't save your high scores to disk. What's wrong with these people?) Along the way you have to weave through a series of racing cars, trucks, VW Bugs, and other vehicles—all the while running at as close to full throttle as you can manage. Hit a tree or another obstacle and you, and your companion, go flying out of the car.

That's right. You, the male driver, get a blond female friend, as well as your choice of three different "hot music" selections from your car stereo. Is this 1950, or what? Let's have some options here; my daughter may someday want to drive a race car. This game is obviously intended for the under-16 set, and I also enjoyed it, so I don't see why she shouldn't as well.

OFF ROAD

If you feel like getting a little closer to the wind, step out of the car and onto a dirt bike in **Kikstart 2** (\$19.99, Mastertronic). As you speed, jump, and wheelie your way to the finish line on the scrolling top of the screen, your opponent (Amiga or human) races you on the screen's bottom half. You race on a series of five courses that you can pick from a selection of 25. All have good graphics, as well as such obstacles as ramps, picnic tables, and red British telephone booths.

My main frustration with Kikstart 2 is that L.G. Hunter, my four-year-old son, is better than I am. While plagued with a case of chicken pox, he got all too good at it. I eventually topped his score, but I may never live down the defeats I suffered along the way.

Another off-beat game that I enjoyed a great deal is **4x4 Off-road Racing** (\$39.95, Epyx). Maybe it's because I drive a pickup, but I had a great time trucking through Baja, Death Valley, and muddy Georgia.

You start by selecting a course and one of four skill levels. Then you pick a truck. You must balance such factors as weight, cargo capacity, gas mileage, and durability. Then you have to get some tires, gas up, and buy tools, spare parts, and some extra gas. All ►

Company Information

Accolade

550 S. Winchester Blvd.
Suite 200
San Jose, CA 95128
408/296-8400

Anco Software USA Inc.

PO Box 292
Burgettstown, PA 15021
412/947-9922
800/992-9198

Electronic Arts

1820 Gateway Dr.
San Mateo, CA 94404
415/571-7171

Epyx

600 Galveston Dr.
Redwood City, CA 94063
415/366-0606

Mastertronic Int'l Inc.

711 W. 17th St., Unit G9
Costa Mesa, CA 92627
714/631-1001

Sega

distributed by Mindscape
3444 Dundee Rd.
Northbrook, IL 60062
312/480-7667
800/221-9884

StarSoft Development Labs.

3331 Bartlett Blvd.
Orlando, FL 32811
407/423-1987

One Good Book deserves another and another, and another, and a...

New



Amiga C for Advanced Programmers

-contains a wealth of information from the pros: how compilers, assemblers and linkers work, designing and programming user friendly interfaces using Intuition, combining assembly language and C codes, and more. Includes complete source code for text editor.

ISBN 1-55755-046-8 400 pp **\$24.95**

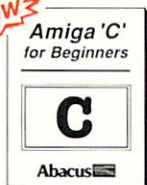
AmigaDOS Inside & Out

-covers the insides of AmigaDOS from the internal design up to practical applications. Includes detailed reference section, tasks and handling, DOS editors ED and EDIT, how to create and use script files, multitasking, and much more.

ISBN 1-55755-041-7 280pp **\$19.95**
Includes Workbench 1.3 Info



New



Amiga C for Beginners

-an introduction to learning the popular C language. Explains the language elements using examples specifically geared to the Amiga. Describes C library routines, how the compiler works and more.

ISBN 1-55755-045-X 280 pp **\$19.95**

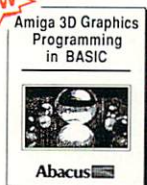
Amiga Machine Language

-is a comprehensive introduction to 68000 assembler machine language programming and is THE practical guide for learning to program the Amiga in ultra-fast ML. Also covers 68000 microprocessor address modes and architecture, speech and sound from ML and much more.

ISBN 1-55755-025-5 264 pp **\$19.95**



New



Amiga 3-D Graphic Programming in BASIC

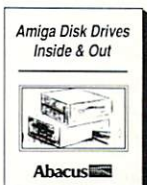
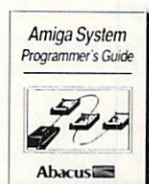
-shows you how to use the powerful graphic capabilities of the Amiga. Details the techniques and algorithms for writing three-dimensional graphic programs: ray tracing in all resolutions, light sources and shading, saving graphics in IFF format and more.

ISBN 1-55755-044-1 300 pp **\$19.95**

Amiga System Programmer's Guide

-comprehensive guide to what goes on inside the Amiga in a single volume. Only a few of the many subjects covered include the EXEC structure, I/O requests, interrupts and resource management, multitasking functions and much, much more.

ISBN 1-55755-034-4 442 pp **\$34.95**



Amiga Disk Drives Inside & Out

-is the most in-depth reference available covering the Amiga's disk drives. Learn how to speed up data transfer, how copy protection works, computer viruses, Workbench and the CLI DOS functions, loading, saving, sequential and random file organization, more.

ISBN 1-55755-042-5 360 pp **\$29.95**

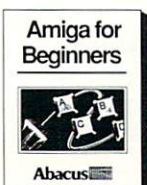
AmigaDOS Quick Reference *

-an easy-to-use reference tool for beginners and advanced programmers alike. You can quickly find commands for your Amiga by using the three handy indexes designed with the user in mind. All commands are in alphabetical order for easy reference. *Includes Workbench 1.3 Info*

ISBN 1-55755-049-2 128 pp **\$14.95**



New Handy



Amiga For Beginners *

-the first volume in our Amiga series, introduces you to Intuition (Amiga's graphic interface), the mouse, windows, the CLI, and Amiga BASIC and explains every practical aspect of the Amiga in plain English.

ISBN 1-55755-021-2 184 pp **\$16.95**

Includes Workbench 1.3 Info

Computer Viruses: a high-tech disease *

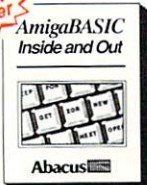
-describes what a computer virus is, how viruses work, viruses and batch files, protecting your computer, designing virus proof systems and more.

ISBN 1-55755-043-3 292 pp **\$18.95**

"Probably the best and most current book...a bevy of preventive measures"
PC Week 11-21-88



Best Seller



AmigaBASIC Inside & Out

-THE definitive step-by-step guide to programming the Amiga in BASIC. Every AmigaBASIC command is fully described and detailed. Topics include charts, windows, pulldown menus, files, mouse and speech commands.

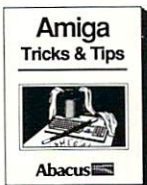
ISBN 0-916439-87-9 554 pp **\$24.95**

Includes Workbench 1.3 Info



Save Time and Money! Optional program disks are available for many of our Amiga reference books. All programs listed in the books are on each respective disk and will save you countless hours of typing! **\$14.95**

(* Optional Diskette Not Available for these Titles)



Amiga Tricks & Tips

-follows our tradition of other Tricks and Tips books for CBM users. Presents dozens of tips on accessing libraries from BASIC, custom character sets, AmigaDOS, sound, important 68000 memory locations, and much more!

ISBN 0-916439-88-7 348 pp **\$19.95**

Abacus

Dept. L3, 5370 52nd Street SE
Grand Rapids, MI 49508
(616) 698-0330

See your local Dealer or Call Toll Free 1-800-451-4319

Add \$4.00 Shipping and Handling per Order
Foreign add \$12.00 per item

right, so I griped about too many details earlier. That might bug me here, too, except that the driving is so much fun. There are no gears; it's just you, the road, and a succession of obstacles and other trucks that you have to avoid. Every time you hit something, you damage your truck, and eventually it'll break down. You can fix it, but that takes valuable time. You also have to watch your fuel. The faster you travel, the more gas you consume.

While I enjoyed 4x4 and Kikstart, I am still seeking the ultimate racing game. Fortunately, so too are

some of the game companies. Accolade, for example, just released **The Duel: Test Drive II**. I was not particularly fond of the original, but the new one promises a lot of extra features, such as new cars, optional auto-shifting, a variety of scenery, and better crashes. Maybe it will be the end of the road.

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

G A M E R E V I E W S

FALCON

By Denny Atkin

A MiG-21 ON my tail, I bank hard right and kick in full afterburner. An explosion shakes the F-16. Warning klaxons sound as the powerless plane dives. I've destroyed \$25 million worth of military hardware, but thanks to Spectrum Holobyte I can try again.

One of the most realistic simulations available, Falcon lets you pilot an F-16 Fighting Falcon jet fighter on air-to-air and air-to-ground missions. Don't expect to open the package and immediately soar away. You'll need to read the

excellent 134-page manual to survive.

You can choose your rank and mission. Ranks range from First Lieutenant, where you can't crash and the enemy won't shoot at you, to Colonel, where surface-to-air missiles (SAMs) are attracted to you in swarms, and even putting your landing gear down at too high a speed can severely damage your aircraft. Twelve missions are available, from the Milk Run, a practice attack on target buildings in friendly territory, to the Grand Slam,

in which you must shoot down four enemy MiGs.

After selecting weapons, you take to the air. Falcon presents you with a very realistic cockpit—you must look to the side to view many of the instruments, just as in a real F-16. Graphics, both in- and outside of the aircraft, are excellent.

You won't have much opportunity to enjoy the view; Falcon really shines in the dogfights. Unlike many computer flight simulations where enemy planes defy the laws of physics and gravity, the MiGs in Falcon attack you using realistic maneuvers, such as the variable scissors or low G yo-yo.

While Falcon will run on a 512K Amiga, it offers a number of bonuses for larger systems, including a head-to-head mode, where you can fly against another player using Falcon on an Amiga, Macintosh, or Atari ST via a modem or special cable.

My only complaint is that

whether you use the mouse, keyboard, or joystick, Falcon is very hard to control. None of the controls allow you to change attitude and direction at the same time, preventing you from diving or climbing while turning. Also, the game is not compatible with accelerator boards.

While the casual game player may find Falcon overly complex and perhaps a bit too realistic, the program is a flight simulator lover's dream.

Falcon

Spectrum Holobyte

2061 Challenger Dr.

Alameda, CA 94501

415/522-3584

\$49.95

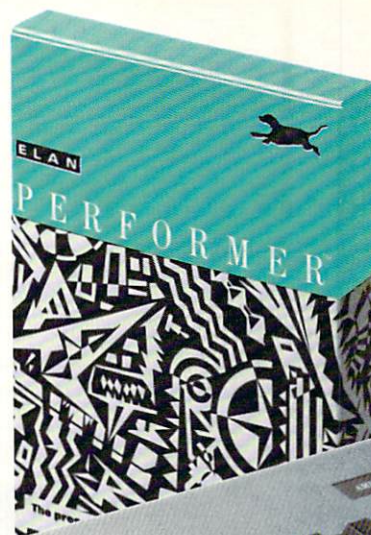
No special requirements. ▶



Dodge the bogies and the bridges.



PUT ALL OF YOUR AMIGA VISUALS RIGHT AT YOUR FINGERTIPS



WITH ELAN PERFORMER

It's a jungle out there—scores of paint and animation programs, all set up to help you create great imagery. But when you're ready to display it, how do you put it all together?

ELAN PERFORMER™ is the only presentation system to put all of your Amiga graphics in one place, where you can display them as quickly as you can hit a key. Whatever the format. No complex script or menu systems. No more loading all those different programs.

QUICK AND EASY

There is no faster or easier way to produce a presentation. Use a simple control screen to assign your images or animations to keys on the keyboard. Then, during your presentation, press any key and its image instantly displays on the screen. You never need to pull down menus or return to the control screen.

If you wish, you can fully automate your display to follow your precise timing and sequence settings, or use the mouse like a remote control to move forwards and backwards through your imagery.

Whether for business, education, creative projects, animation, or real-time editing onto videotape, ELAN PERFORMER is absolutely indispensable.

- Precise automatic sequencing or direct manual display from keyboard or mouse.
- Bring together imagery from your paint and animation programs into a single presentation.
- Powerful utilities let you cut animations into individual frames, splice any imagery into an animation, or convert animations between RIFF and ANIM formats.
- Control frame-by-frame, forward, and reverse playback of animations with mouse movements or arrow keys.
- Multitask with music and sound software.
- Supports IFF, HAM, RIFF, ANIM, and RGB formats. Works with Amiga graphics and animation programs such as Deluxe Paint™, DigiPaint™, Photon Paint™, Videoscape 3D™, Zoetrope™, Turbo Silver™, Sculpt™ and INVISION™.
- Works with minimum 512K of RAM.
- Handles all Amiga resolutions including severe overscan. Available in PAL or NTSC video formats.

List price: ONLY

\$59.

See your dealer or contact:

ELAN P.O. Box 31725
DESIGN San Francisco, CA
94131

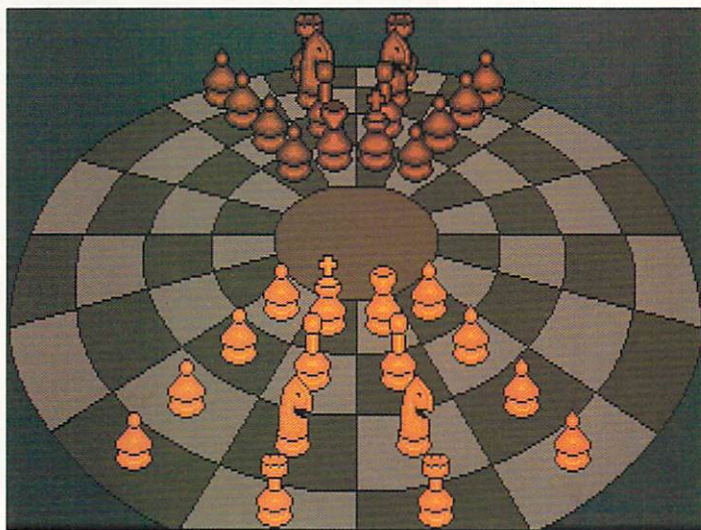
Elan Performer is a trademark of Elan Design, Inc. Amiga, Deluxe Paint, DigiPaint, Photon Paint, Videoscape 3D, Zoetrope, Turbo Silver, Sculpt and INVISION are the trademarks of Commodore Business Machines, Electronic Arts, NewTek Inc., Microware, Aegis Software, Antic Software, Impulse, Byte by Byte and Elan Design Inc., respectively.

DISTANT ARMIES

By Dodson Yaple

A HANDS-ON history, Distant Armies offers you ten different precursors of chess—from the original game of sixth-century India to a twelve-piece, 36-square version designed to fit the limited scope of early computers. On-screen illuminated

manuscripts annotate each game, describing its rules and placing it in historical perspective. To learn the legal moves for unfamiliar pieces, press the Help key and click on the piece in question, or select Show Moves from the menu.



Try a round of Byzantine chess.

Unfortunately, the rules occasionally confuse vertical and diagonal movement, but the accompanying diagrams are always correct. To ease into competition, you can select your difficulty level.

Playing the individual games is surprisingly like playing conventional chess. The games differ primarily in the sort of contest they tend to produce. The early Indian and Persian varieties, for example, encourage quiet, positional play, largely because the stronger pieces cannot get into action until the middle or end of the game. Medieval chess is a faster game, allowing privileged moves intended to enable quicker openings. Later variations like Courier and Decimal employ larger boards and high-powered killer pieces that favor a wild slash-and-burn style. In Burmese chess, you decide the initial deployment of your pieces. While

you play Byzantine chess on a round board, you play Los Alamos chess without bishops, on a six-by-six layout. There's even Chinese chess with a river running across the center of the board.

Distant Armies is not copy-protected, but you will have trouble installing it on a hard disk. The sequence of commands listed in the manual contains syntactical and typographical errors.

Though it's unlikely to be your workhorse chess program, Distant Armies is a carefully wrought coffee-table-book of a product that historically-inclined players will delight in browsing.

Distant Armies

Eagle Tree Software

PO Box 164
Hopewell, VA 23860
804/452-0623
\$44.95

No special requirements.

THE UNIVERSAL MILITARY SIMULATOR

By Patrick Quaid

THE UNIVERSAL Military Simulator (UMS) from Rainbird Software might be the best looking war game available. The battlefield is a three-dimensional wire grid viewed from the side to show elevation, with white and black flags, which symbolize the various army units, planted at its vertices.

Unfortunately, the designers of UMS took a disappointingly

simplistic view of combat. For example, there are only two terrain types: woods and not woods. There is only one fundamental unit type, which can fire ranged weapons to approximate artillery or travel quickly to simulate cavalry. A unit's relative force is determined by a single number, so an effective artillery unit is necessarily a tough close combat unit. Although the game supports concepts like morale and efficiency, it does not con-

sider an army's command structure, which makes ancient combats unrealistic. Meanwhile, the lack of any true air units and an understanding of the rock/scissors/paper interrelationships of modern combat units make contemporary scenarios almost impossible to simulate.

Faced with this lack of realism, you must consider UMS more of a strategy game than a war game. The battles are fun to play and to watch, and the computer is a decent opponent if it's attacking. During

the command phase you can issue all the orders, or just give the critical ones and let the computer oversee the rest based on your guidelines. During the combat phase you can direct your side's artillery fire, or again allow the computer to do it. ►

JUST
\$14.95!

NEW!

Your Workbench needs our Tool Chest

Introducing the *AmigaWorld* Tool Chest! A brand-new collection of special software written for your Amiga. Now there's no need to know how to program, draw, animate, or compose on your computer because the *AmigaWorld* Tool Chest gives you all the tools your Workbench needs. It's that easy!

Each bi-monthly release of the Tool Chest gives you two disks packed with high-quality Amiga programs, utilities, games, professional clip art, predefined animation objects, sound and music files, and the best of Amiga Shareware. Plus, you get an original Amiga animation complete with an animation-player program! Users of every Amiga model—and at every level of skill—will be thrilled with these top-quality programs and tools.

All for just \$14.95 per issue!

The Premier issue of the *AmigaWorld* Tool Chest gives you...

Programs—

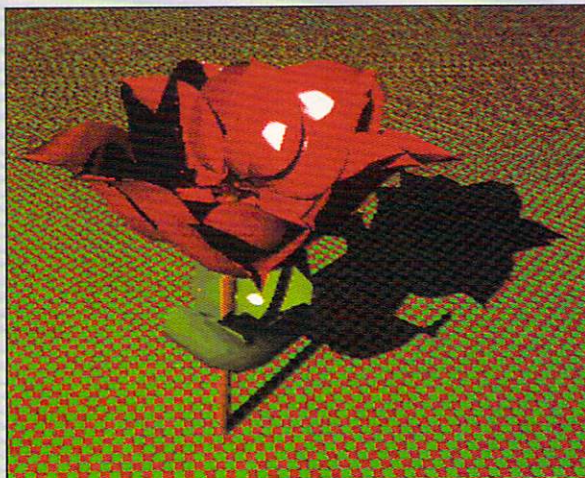
WBSalv, a disc-recovery program that you can run from Workbench.

Mosaic Maker, an easy way to create Escher-like graphics.

Alien Duels, a lightning-fast arcade clash with an alien invasion force. Joystick required.

Clip Art—

Monsters! Monsters! Monsters! You'll have a great time incorporating these fantastic creatures into your graphics creations.



Animation Objects—

The Horse, a beautifully detailed chess piece.

The Rose, a delicate complex object.

The Sail, a great object for your water-born animations.

Sounds and Music—

A collection of very weird sound effects for use in your programs. PLUS a brand-new, disk-length animation from Gene Brawn, a master of Amiga animation!

The *AmigaWorld* Tool Chest. What no Workbench should be without.

TRY IT! To order, use the coupon below or look for the special insert in this issue.

**For immediate service
call 1-800-343-0728.**

Charter Subscription Opportunity! Save \$20 off the single copy price and get these charter subscriber benefits:

- automatic delivery of every two-disk edition for an entire year. That's 12 disks in all, delivered every other month.

- FREE *AmigaWorld* Public Domain Library Catalog.

- *AmigaWorld* subscription/renewal discount certificate.

- Discount on AmiExpo admissions!

- Full Money Back Guarantee. If you are not completely satisfied with the *AmigaWorld* Tool Chest, simply return it for an immediate refund.

☐ **YES!**

Send me the *AmigaWorld* Tool Chest Vol. 1, #1 today. My payment for \$14.95 is enclosed.

☐ Save me \$20. Enter my one year (6 issue) charter subscription for \$69.95.

Name _____

Address _____

City _____ State _____ Zip _____

☐ Check/Money Order Enclosed (payable to *AmigaWorld* Tool Chest)

☐ Charge my: ☐ MasterCard ☐ Visa ☐ American Express

Account# _____ Expires _____

Signature _____

Foreign Orders, add \$2.50 for Air Mail Delivery.

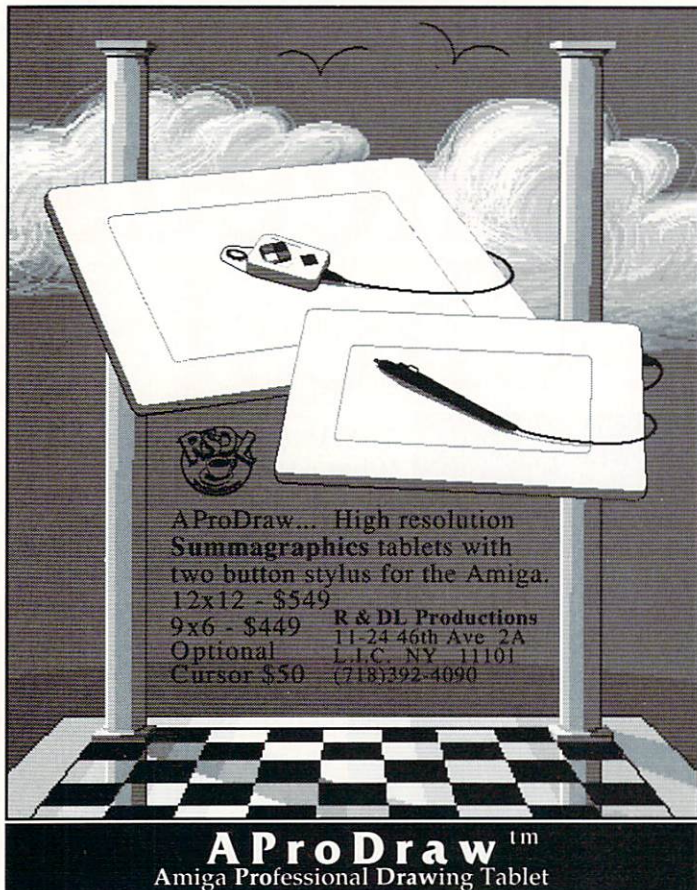
Foreign Subscriptions are \$84.95, postpaid. Payment required in US Funds drawn on US Bank.

Note that some animations require 1MB of memory.

***AmigaWorld* Tool Chest, 80 Elm Street, Peterborough, NH 03458**

1-800-343-0728 • 1-603-924-9471

AW689



AProDraw... High resolution Summagraphics tablets with two button stylus for the Amiga.
 12x12 - \$549
 9x6 - \$449
 Optional Cursor \$50

R & DL Productions
 11-24 46th Ave 2A
 L.I.C. NY 11101
 (718) 392-4090

AProDraw™
 Amiga Professional Drawing Tablet

Circle 79 on Reader Service card.

Writing long or technical documents? Tired of the jaggies? Need mathematical equations? Check this out:

$$I_0 = \sqrt{\frac{\omega}{2\pi}} \int_0^{2\pi/\omega} \left(\frac{1}{2} + \frac{1}{2} \cos(2\omega t - 2\theta) \right) dt$$

AmigaTeX

Full TeX functionality
On-screen preview
ARexx compatibility
Includes LaTeX, SlitEX, and BibTeX
Over 1500 previewer fonts
Main package is only \$200

AmigaTeX provides the highest possible quality on any printer, whether impact, ink-jet, or laser. It gives you the power to quickly typeset long, complex documents. Write for your free demo disk! Or stop by your local college bookstore and pick up a copy of *The TeXbook*, by Donald Knuth, to see what this system can do.

Radical Eye
Software

Box 2081 • Stanford, CA 94309 • (415) 32-AMIGA

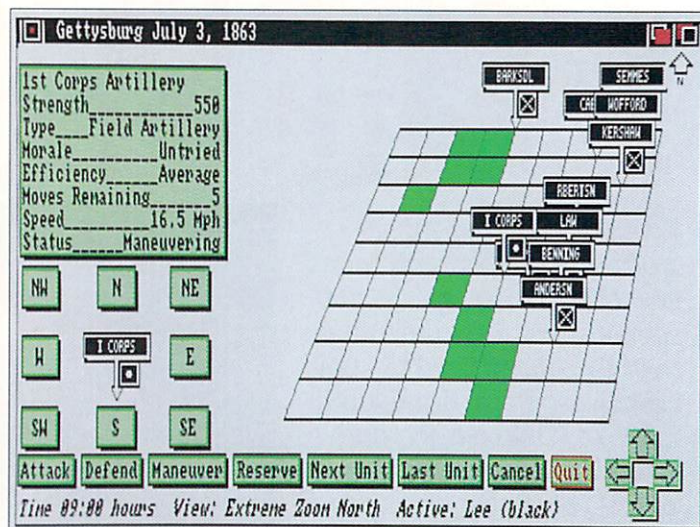
Ad printed true size on a NEC P6 dot-matrix printer.

Circle 118 on Reader Service card.

The combat looks impressive, with thick black arrows boldly announcing each unit's proposed path toward the enemy and the digitized din of war punctuating the encoun-

tally important issues will remain guesswork.

The Universal Military Simulator is far from universal, not very military, and for that matter not much of a simula-



Plan your advance.

ters. Attacks designed by the computer are particularly stirring, full of the sweep and symmetry you expect from these epic battles. Who cares if it sends artillery units out in front.

UMS has a facility for creating new battles, but provides virtually no useful documentation for doing so. You can use the five included scenarios as a rough guide, but several vi-

tor. As long as you don't expect much realism, you might enjoy it.

The Universal Military Simulator

Rainbird Software

distributed by Mediagenic
 3885 Bohannon Dr.
 Menlo Park, CA 94025
 415/322-0900
 \$49.95

No special requirements.

TOWER TOPPLER

By Neil Randall

IN TOWER TOPPLER you climb and destroy a series of increasingly dangerous towers. Each tower is ringed by a series of exterior platforms, many of which terminate in elevators. Windows lead through the tower to other platforms. All the windows and platforms interact logically. Entering the top window

destroys a tower. As you cruise to the next mission in your sub, you can earn bonus points and extra climbing time by catching fish, in an unsatisfying arcade shoot.

The evil forces, of course, try to stop you. You can destroy block barricades and some cannonballs with your gun, but you must avoid the eyes, robots, and mutant mol-

ecules. If they touch you, they knock you to a lower platform or into the poisonous sea.

You begin with three lives. If you fall into the sea or use up the time allotted to reach the top of the tower, you die. For every 5000 points you earn a new life. Lose all your lives, and you must restart at the first tower, which is annoying once you've reached the higher levels. Even more annoying is the bug that causes obstacles to meet and stick together, forcing you to fall into the sea.

Tower Toppler is graphically

excellent, and is both challenging and enjoyable to play. The towers range from the fairly easy (Tower of Eyes) to the near impossible (Trap of Tricks). A good, solid arcade game, Tower Toppler is for adults and children alike.

Tower Toppler

U.S. Gold

distributed by Epyx

PO Box 8020

600 Galveston Drive

Redwood City, CA 94063

415/368-3200

\$49.95

No special requirements.

CRASH GARRETT

By Dodson Yaple

A HARD-BOILED 1930's aviator, Crash Garrett finds himself on the trail of Nazis who are plotting to establish a master-race breeding farm in the U.S. You play Garrett's myste-

Only when Garrett reaches an impasse does he solicit your counsel; you decide what to do, and the next scene commences.

Crash Garrett's visual effects



What a group of faces to wake up to.

rious inner voice, which has accounted for much of the hero's past success. The game unfolds as a series of quasi-animated comic book-style sequences, during which you are a spectator with no control over the course of the action.

are the best part of an otherwise unexceptional product. While the cameos of the on-stage characters and their props are not animated, their balletic motion about the screen combines with a barrage of fades, wipes, flips, and ▶

ACS Software is proud to announce the release of our new STATE-OF-THE-ART FONT GENERATION AND EDITING SOFTWARE

Font-Works™ allows you to create an unlimited number of color fonts quickly and easily by either using the built-in drawing tools, by "grabbing" letters from any IFF picture, or by adding a variety of effects to existing fonts. Up to 16 colors per font from a palette of 4,096 colors.



A variety of special effects can be easily added to any font by executing a macro list of the desired effects. **Font-Works** automatically adds the effects to every character!

FEATURES INCLUDE

Special Effects include Drop Shadow, 3-D, Outline, Italicize, Underline, Stencil, Flip/Rotate, Box, Neon, and Shift.

Resize and Scale any font up to the size limit of 1,024 x 1,024 pixels.

Capture characters or custom brushes from any IFF picture.

Supports color-cycling, pattern fills, and dithered gradient fills.

Complete shape and line tools (including line, curve, rectangle and ellipse).

Customize the color palette by changing or mixing colors at will.

Stencils let you place custom brushes "behind" or "in front of" other graphics.

Allows viewing, printing, and test typing of the font in any resolution and style.

ATTENTION Calligrapher OWNERS!

We think you will like ours better. We are so sure, that for only \$49.95 we will send you Font-Works. Call or send your program disk and \$49.95 plus \$5.00 for shipping to ACS Software.

From the makers of Grade Manager, Learning Curve, Music Student, and Station Manager Series.



ACS Software

2135 East Sunshine, Suite 106 • Springfield, MO 65804

• Available through •

American Software, Southern Technologies, Micro-Pace, & Others.

Dealer inquiries welcome

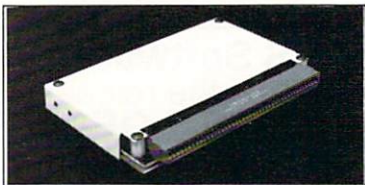
For more information call (417) 887-9923

Orders only (800) 888-9923

MINIMEGS™

JUST ONE MEMBER OF THE HIGH PERFORMANCE,
TINY SIZE, LOW POWER "MATCHBOX COLLECTION"

- 2 MEGABYTE EXTERNAL RAM
- FAST RAM
- AUTOCONFIGURE
- AVAILABLE 512K, 1 MEG, 2 MEG
- RAM TACHOMETER LED
- AUTOCONFIGURE LED
- VERY SMALL SIZE
- LOW POWER
- SUIT A500 OR A1000
- 512K \$359 1 MEG \$519 2 MEG \$829



WELCOME MICROMEGS™ - THE NEWEST ADDITION TO
"THE MATCHBOX COLLECTION"
THE LOW POWER ALTERNATIVE TO THE A501 CARD. THIS 512K
INTERNAL RAM EXPANDER FOR THE AMIGA 500 IS SMALLER THAN
THE A501. USES THE LATEST HI-TECH 1 MEGABIT DRAM'S AND
USES 1/4 THE POWER OF THE A501.
BEST OF ALL - AT \$199 IT IS VERY AFFORDABLE.



**TINY TIGER HIGH PERFORMANCE,
LOW COST, SCSI HARD DRIVES FOR
A5000/A1000/A2000**

- Many Advanced Features
- Free Software Included

20 Meg \$599 30 — Meg \$659 40 Meg \$849
50 Meg \$799 — 80 Meg (Quantum) \$1,199

(TINY TIGER INCLUDES DRIVE, POWER SUPPLY, SCSI INTERFACE AND SOFTWARE IN A SINGLE SMALL CASE.)

UNIDRIVE \$159	THE FULLY FEATURED, SWITCHABLE, NON-CLICKING EXTERNAL 3 1/2" FLOPPY DRIVE. AN OLD FAVORITE!
TWINDRIVE \$299	TWO 3 1/2" FLOPPY DRIVES IN A SINGLE PACKAGE. SWITCHABLE, NON-CLICKING.

MEMORY & STORAGE TECHNOLOGY INC.

USA
3881-E Benatar Way
Chico, CA 95928
(916) 342-6278

M.A.S.T.
Dealer enquiries welcome
Circle our Reader
Service card

Australia
178 Pacific Hwy
St. Leonards NSW 2065
(02) 436 2600

Circle 181 on Reader Service card.

AMIGA
VGA TO 5 BNC

RGB CABLES

CUSTOM RGB
AMIGA TO 4 BNC
SONY KV1311 23F-34F
SONY MULTISYNC 23F-9M
NEC MULTISYNC 23F-9M
MAGNAVOX ANALOG 23F-6MDIN
MITSUBISHI MULTISYNC 23F-25M
NEC 3D ADAPTER 23F-HD15F

ALL

23⁰⁰ TO 55⁰⁰



Typical Non-Standard Cable

**Call For Quotes
On Weird
or Unusual Cables**

**FREDMOND
CABLE**

For The Dealer Nearest You!



EAST COAST
615-478-5760

WEST COAST
206-882-2009



dissolves to convey a sense of action, even character.

Aside from the appropriately jazzy title music, ineffective sound dilutes the game's impact. Crash Garrett's audio comprises little more than half-hearted beeps and gunshots. Dialogue through the Amiga speech device works to limited advantage.

Play is frustrating with the parser the game's weakest aspect. Many plot lines culminate abruptly in peculiarly undramatic situations, and the scenario includes odd endings in which neither do you die nor do you achieve any of the game's objectives.

Crash Garrett is refreshingly unprotected, but its inclination

to make life easier for you stops there. It does not multitask and cannot be made to run from the RAM disk. Most of its documentation (and some of the game) is written in French. You can save only one position at a time, and there is no provision for pausing your game or starting a new one, but I'm not sure why you would want to.

Crash Garrett
Infogames

distributed by

Terrific Software

544 Second St.

San Francisco, CA 94107

415/957-0886

\$39.95

No special requirements.

REACH FOR THE STARS

By Neil Randall

AS REACH FOR the Stars' subtitle explains, your goal is "The Conquest of the Galaxy." You can start in possession of a home planet or in space looking for a planet. Once established, you must expand your realm into the galaxy. The more planets you possess, the more Resource Points you produce, hence the more warships, colonists, and planetary defenses you can produce. If you don't expand, other would-be colonists (up to four computer or human players) will walk all over you.

You use Resource Points to construct ships, which you group in task forces to colonize or conquer other planets. You can spend Resource Points on increased navigational and industrial technology, as well. Increasing the former widens the radius the ships can move in one turn, while increasing the latter raises the number of Resource

Points a planet can produce.

If you desire, a host of options will complicate your mission. Novas make stars become unstable, forcing you to evacuate their planets. Natural disasters can strike. Xenophobes (viruses) force planets into quarantine, while solar debris makes navigation difficult.

The trick to the game is to get out and explore early, constantly building up your home planet and any other planets you control. Because there are four types of planets (Primary through Hostile), five star classes, and several ways to develop your holdings, this task is much more difficult than it sounds. I recommend this gem with absolutely no hesitation.

Reach for the Stars
Strategic Studies Group

distributed by Electronic Arts

1820 Gateway Dr.

San Mateo, CA 94404

415/571-7171

\$45

No special requirements. ■

Win Over \$10,000 Worth of Prizes in The 1989 AmigaWorld Mystery Sweepstakes

1ST PRIZE
An Amiga 2000HD &
A Getaway Trip for 2

2ND PRIZE
An Amiga 500

3RD PRIZE
A Xetec 20MB Hard Drive
System

PLUS Special Prizes for Contest Finalists

AND Dozens of Other Great Prizes for Consolation Winners

IT'S CONTEST TIME AGAIN AT AMIGAWORLD! And this year's prizes are better than ever. Win the **Grand Prize** and you will receive an **Amiga 2000HD** (including a 40MB hard disk drive and a color monitor). Plus, we'll fly you and one guest to **AmiExpo** in Santa Clara in October to collect your prize.

You will be the personal guests of *AmigaWorld* at the No. 1 Amiga show in the country, and receive V.I.P. treatment from AmiExpo organizers. Our **Getaway Weekend** includes two round-trip airline tickets and hotel accommodations (compliments of AmiExpo) for two nights.

And that's not all! This year we're adding two exciting new **Runner-Up Prizes**—an **Amiga 500** (with color monitor) and a **Xetec 20MB Hard Drive System**—plus special **Finalist Prizes** and dozens of great **Consolation Prizes**. (See next month for a complete list of all prizes.)

SO WHAT DO YOU NEED TO DO? Get ready to match wits again with the *AmigaWorld* staff. Last year we took you on a grueling cross-country treasure hunt to San Francisco. This year it's going to be even trickier—and more dangerous! **Foul play** is involved and you're going to have to solve a complex **mystery** layered with lies, deception, unreliable witnesses, and assorted red herrings.

On top of that, our "Sweepstakes Drawing" is no ordinary pull-the-tickets-out-of-the-box affair. Not by a long shot! We guarantee you'll be on the edge of your seats if you're one of our Contest finalists. . .but that's part of the mystery, and we'll say no more about it until later. So put on your deerstalker and find an able Dr. Watson to assist you. **Part 1 of The 1989 AmigaWorld Mystery Sweepstakes begins next month in the July issue of AmigaWorld!** The game is on!



Continued from p. 18

No matter how good an encoder is, however, it cannot transform overdriven video signals into broadcast quality. If you record the Workbench screen, for example, the white title bar appears to bleed and tear. This is not the fault of your encoder—the white level is simply too high. Although low color values may appear dull in RGB, it is best to avoid values above 12 or 13.

OUT OF SYNC?

As impressive as it is, the Magni 4004 is not without problems.

Two manuals are supplied with the unit; one covers the hardware and the other deals with software. Although the coverage in each is fairly comprehensive, locating information is not easy. Combining the two would make things easier, because, for example, the hardware manual does not mention the DIP-switch setting for the software. The text and presentation are reminiscent of a technical service manual. Video engineers will comprehend the buzz words and the discussions of sync, subcarrier, and oscillators, but most of us would rather see plain-English explanations of the system's creative aspects.

The DIP switches are difficult to use, especially if your Amiga is situated with its rear to a wall. Even if your machine is rack mounted, you will tire of peering into the tiny space and hoping that you are flipping the correct switch.

I find it curious that the unit was designed to tie up both the video slot and an IBM slot, especially with all the new hardware coming along for the video slot. My biggest complaint, though, is the 4004's price. Including the 4010 remote control, the system is more than double the price of Digital Creations' SuperGen. Is it twice as good? I think not.

IN THE MONEY

Clearly, the Magni is aimed at video professionals who won't balk at spending a couple thousand dollars to sync an Amiga with the rest of their system. NTSC, however, is not the best way to get a clean videographics signal. Most professionals I have worked with run graphics output directly into a video switcher from a single encoder/sync gen-

erator. Would they prefer a stand-alone encoder with S-VHS, ED-BETA, MII, or Betacam inputs and outputs, and PRE-COMBING and POST-COMBING for better-than-NTSC images? Although Magni has, at press time, announced the addition of S-VHS input and output, for the kind of dollars Magni is asking for this genlock I expected more.

Still, the quality of this unit sends a clear signal to the broadcast community: The Amiga can produce rock-steady video output—even for big-shot broadcasters with shrinking budgets.

4004 Genlockable Video Graphics Encoder

Magni Systems Inc.

9500 S.W. Gemini Dr.

Beaverton, OR 97005

503/626-8400

800/237-5964

\$1695

\$1995 with 4010 remote-control unit

No special requirements.

PROFESSIONAL DRAW

*The first of its kind is not
the last word.*

By Chris Dickman

WHILE THE AMIGA market has long been blessed with several quality bitmap-graphics programs, it's had a dearth of object-oriented programs—those that deal with images not as collections of bits but as mathematical descriptions. As the first program of this type available on the Amiga, Professional Draw (which is less than half the price of similar Macintosh and IBM-PC software) is definitely overdue. With it, you can access the capabilities of PostScript laser printers and imagesetters to output crisply at high resolution, dump to color PostScript thermal printers, and color separate into process film on Linotronic imagesetters, ready for the offset printer.

Gold Disk, the program's creator, is best known for Professional Page, long the most powerful desktop-publishing program for the Amiga. The two programs have many menus and tool icons in common, so Professional Page users will feel at home using Draw. Because

version 1.2 of Professional Page is said to be able to import Draw files, the two make a natural pair.

LONG AND WINDING ROAD

With Professional Draw, as with all serious draw programs, you create graphics composed of lines and Bezier curves. If you opt for the Freehand tool, the program will convert the results to Bezier curves; with the Pen tool you directly create one curve or line at a time. Those familiar with bitmap-graphics programs will feel more comfortable with the former, while the latter provides more control over the creation of each line segment. Professional Draw's lack of the usual provision to let you specify how closely the Freehand tool converts your movements to curves (the result is often an unwieldy number of curves) exaggerates the difference between the tools.

Each curve has anchor points at either end. When you click on these points, the program displays the attached control points. You can drag the anchors to alter the length or angle of a curve. Drawings are thus made up of collections of curves, called paths, which you can close and fill.

The key to productivity with a draw program is a flexible approach to working with paths. Unfortunately, Professional Draw is weak in this regard. There is, for example, no way to delete points, individual curves, or lines from a path. And you cannot select and move just one curve, but are forced to move the entire path. Even worse, you are not able to select multiple anchor points at once and move them as a group. While most draw programs change the color or shape of anchor points when you select them, Professional Draw does not, which makes it hard to know what you are editing.

This problem is especially nasty at Workbench resolution, so for production work plan on using either a long-persistence or high-resolution monitor that can drive Professional Draw at 1008×800 pixels. The problem of clarity is exacerbated by a known bug that causes anchor points to display in white when you deselect a path, thus making it look like

a bunch of unconnected lines. How the program could have been allowed to ship in this condition is baffling.

FREE TRADE

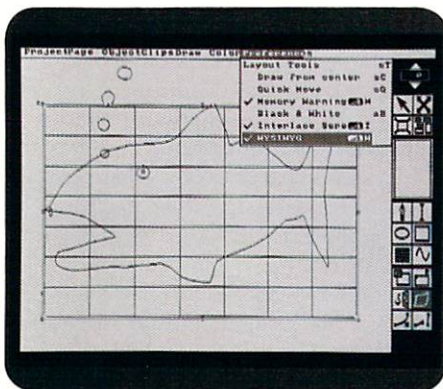
Professional Draw can import IFF bitmap files of any resolution containing any number of colors. On screen, you can combine them with Bezier curve objects. Professional Draw displays color bitmaps in four shades of gray but will output them in full hue to color bitmap printers, in 16 gray shades to PostScript printers, and, most interestingly, color separate them on PostScript imagesetters.

While you may be tempted to trace over imported bitmapped images, using Professional Draw's Freehand tool makes the process tricky. It creates more anchor points than necessary as you draw. Also, the screen does not scroll as you use the Freehand implement, making it awkward to trace when you've zoomed in to view just a part of the template. A feature to let you continue an existing path by clicking on an anchor point and drawing, and one to automatically trace bitmaps (both are provided on most other draw programs), would be helpful additions.

BEYOND REACH

Amiga software that fully taps the power of PostScript printers has yet to be written. Professional Draw really stumbles in its approach to handling type. For start-

ers, only two faces (clones of Times Roman and Univers) are included. There is no provision for using resident or downloadable PostScript fonts, thus shutting Professional Draw users out of the rapidly expanding library of high-quality PostScript typefaces. Worse, the included screen fonts are rendered so poorly as



Professional Draw displays in four gray shades.

outlines on the screen that they are nearly illegible. Instead of being drawn with a few well-chosen lines and curves, they consist of a ludicrous swarm of anchor points; editing the letters is virtually impossible. The manual says that the program "is not a text layout program—that's Professional Page's forte." I say that's a lame excuse for unacceptable text handling. You can't even make type bold, underlined, or italic. Shame!

Professional Draw imposes some severe color restrictions, which are espe-

cially painful given the Amiga's capabilities. You can create graphics in only 16 colors, nine of which are shades of gray and only seven of which are user-definable. To define colors, you use RGB sliders to mix any of the Amiga's available 4096. Gold Disk claims you can share Draw palettes with Professional Page 1.2. As you create screen colors, the equivalent YMC (yellow, magenta, cyan) values are displayed. You can also enter these values directly, and Professional Draw will generate the sum when separating the graphic. Lacking is the ability to define solid colors in terms of the Pantone Matching System (PMS), which is popular in the graphic-arts industry and provided by many draw programs.

GETTING OUT

Professional Draw's ability to create color separations is a feature normally offered only by high-end draw programs. You get a similar amount of control over separations as you do with Professional Page: You can specify the angle and density in lines per inch of the three process colors' halftones plus black. A file can be output directly to a Linotronic or printed to disk in EPS (Encapsulated PostScript) format. It is then ready for color separating with a PostScript imagesetter. You could also output this EPS file in one piece to a QMS ColorScript thermal PostScript printer. Lastly, you can output to any Preferences-supported color printer, but printing detailed draw ▶

HIGHER PERFORMANCE...AND CHEAPER TO BOOT!

FData-10 \$149.95
Single 3.5" External Drive

FData-20 \$299.95
Dual 3.5" External Drive w/Power Supply

- Fully 1010 Compatible
- Ultra Compact Design
- Acoustically Quiet
- Amiga® Color Coordinated
- Ultra Low Power Consumption
- Daisy Chainable
- Extra Long Drive Cable
- No Annoying "Clicking" Noise
- Diskette "Dust Protection" Door



FREE Shipping Via Federal Express!*

FLEXIBLE DATA SYSTEMS, INC.
10503 FOREST LANE • SUITE 148 • DALLAS, TX 75243

Toll Free Order Line: **1-800-562-3539**
Info & Technical Support: 214-669-3999
FAX: 214-669-0021



POLICY: Shipping and handling extra. Personal checks must clear before shipment. For faster service use credit card, cashier's check or bank money order. Credit cards are not charged until we ship. All prices are U.S.A. prices and are subject to change, and all items are subject to availability. These prices reflect a 5% cash discount. For all credit card purchases there will be an additional 5% charge. COD orders add \$5.00. Texas residents add sales tax. All sales are final and returned shipments are subject to a restocking fee. ***SHIPPING:** FREE shipping by Federal Express Standard Air or UPS (if within 1-day service zone) on orders paid by credit card, cashier's check or bank money order. In Hawaii, Alaska, and outside Continental US, call for information. Amiga® is a registered trademark of Commodore-Amiga, Inc.

graphics on a lo-res bitmap printer doesn't make much sense.

For many of us, the world of high-resolution color output and separation is new and awe inspiring. Sadly, Professional Draw's documentation is rather drab. It suffers from a lack of graphic examples. The 20-page tutorial isn't much help, either. It should be much more comprehensive—particularly because Professional Draw is the program through which many Amiga users will be first exposed to using Bezier curves. The so-called 'context-sensitive help'—a few lines of general information that depends on which tool you've selected—is embarrassing. There is no on-line help when working with requester windows, where it's most needed.

WHAT IT'S NOT

I could go on, listing features present in Macintosh and PC draw programs but lacking in Professional Draw (such as graduated and PostScript fills, an undo command, abilities to import EPS files and to wrap text along a definable path, clipping abilities for masking and transparency effects, and more) but perhaps this is an unkind comparison. Maybe I should just take a deep breath and say that the Amiga community still does not have an object-oriented illustration program of power and depth. What we do have is a companion package to Professional Page that will let Pro Page owners create simple logos and graphics to incorporate with their version 1.2 publications, and output to laser printers and imagesetters at high resolution.

You might think of Professional Draw as an inexpensive introduction to draw software; something to whet your appetite for the real thing. It does provide a way for novices to get their feet wet with color separations. Until Professional Draw's bugs, text-handling abilities, and feature set are cleaned up, however, the title of this program will remain a misnomer.

Professional Draw

Gold Disk

PO Box 789

Streetsville

Mississauga, Ont.

Canada L5M 2C2

416/828-0913

\$199.95

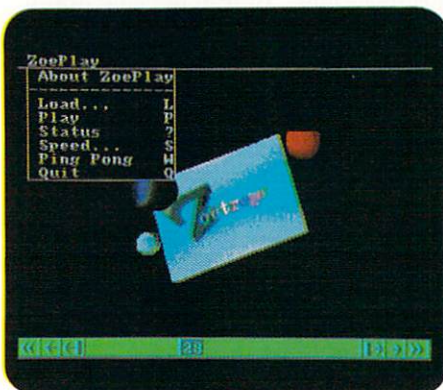
One megabyte required.

ZOETROPE

Fly high in lo-res.

By Sheldon Leemon

ZOETROPE COMBINES A number of the most powerful features found in stand-alone paint, image-processing, video-titling, and 3-D effects programs, and adds some tricks of its own, too. The package, from Antic Software, offers a wide assortment of drawing and 2-D animation tools that help you create cell animations frame-by-frame or touch up existing animations. Other Zoetrope implements can move and rotate two-dimensional bitmap images, perform 3-D effects on flat images, and provide scene transitions. Despite its power, however, Zoetrope has a fatal flaw. Like Cyber Paint, Antic's Atari ST program from which it evolved, Zoetrope operates only in low-resolution mode—320×200 pixels



ZoePlay is Zoetrope's animation program.

with 32 colors. While this is the only choice on the ST, it is arguably the Amiga's least-useful graphics mode.

MORE THAN A BRUSHFUL

Zoetrope's paint program is full featured. In it, you will find all of the usual drawing instruments, including freehand, dotted-freehand, and line tools, and others for drawing geometric shapes. You can use any of these with a variety of brush sizes and shapes or apply connected or concentric modes to these tools to create rays, connected lines, or a series of geometric shapes

radiating from a center point. A zoom feature allows you to magnify portions of the screen for detailed work.

The paint program also lets you clip rectangular sections from pictures to use as brushes. You can manipulate these brushes in a variety of ways by rotating or stretching them on any axis, for instance, or by recoloring them to match the current palette. You can paste brushes beneath the current picture or on top of it.

STEP IN PAINT

What makes Zoetrope different from other paint programs is that it does not confine you to working with one or two pictures at a time. A number of tools are capable of altering not just one picture in a sequence, but a range of frames—or the entire animation—at once. One such set of tools, the APM (Antic Pixel Mover), allows you to move, size, or rotate a clip or an entire picture over a sequence of frames (you are limited to moving one clip at a time in any sequence). Let's say that you have painted a sign board that reads "Presenting" and have copied it to the clip buffer. With the APM F/X menu, you can specify a starting position and rotation, plus an ending position and rotation. Then, you can have APM draw a series of twenty frames, for example, changing the orientation of the sign in each frame slightly, so that when the sequence is played, the sign appears to spin. Drawing all of the pictures can take a long time, and a mistake is not easily undone; thankfully, a preview mode gives you a wireframe representation of the effect. You can apply APM effects not only to clips, but also to an existing sequence of entire scenes.

Pixel effects alter the composition of a frame or series of frames in much the same way that image-processing software does. Among these are Defocus and Antialias, both of which soften the outlines of objects. The Unres option "pixelizes" the picture to make it look like a mosaic. Outline draws a border around each block of color, while Edge-in outlines selected color blocks. The most unique of the Pixel effects are Ripple and Buzz, which use sine and sawtooth waves (respectively) to distort a picture, so you can "bend" objects in a curved path. The rest of the Pixel effects provide functions

similar to those found in video-titling packages: With Tile you can repeat a pattern over the entire screen, while Shatter, Wipe, and Venetian are transition effects for introducing and withdrawing scenes.

Some of Zoetrope's color effects also work similarly to image-processing software. For example, based on various formulas, you can invert all the colors in your palette, change them to shades of gray, or convert the picture to black and white. You can tint a whole scene with red, blue, or green, and change every occurrence of one color or multiple colors to any other hue. The Color Effects menu also provides for versatile color-cycling effects, and for fading or intensifying color over a series of frames.

CELL MATES

Several options facilitate the sketching of cel animations. The Blueing feature displays a blue outline of a figure drawn in the previous frame so that you can trace it, make incremental changes, and then remove the guide lines. The History function outlines the previous frame in one color and subsequent frame in another, allowing you to create smooth transitions between the two. The Get Changes function clips only new material added to a frame.

Zoetrope's load and save functions let you work with file segments, and thus manipulate animations even with limited memory. For example, you can edit just the middle 30 frames of an animation. These options also allow you to merge animation files with other sequences in a number of interesting ways: You can load an animation "under" or "over" one already in memory, or use the former as a mask. Using these options, you can then move multiple clips simultaneously in one animation. Although Zoetrope saves its animations in RIFF format (also used by A-Squared's Live! digitizer), it comes with utilities that let you convert Aegis Animator, Cyber Paint, and Anim-format files to RIFF, and vice versa. These programs can also convert larger format files to Zoetrope's 320x200.

PAINTING YOURSELF INTO A CORNER

Zoetrope's manual contains some of the longest and most tedious tutorials I have seen, and the user interface is somewhat

clumsy. The program employs several modes, each of which limits your actions. Often, you must switch between modes to perform an operation. One action can produce diverse results depending on the mode you are in—even the keyboard equivalents have dissimilar meanings in different modes.

By far the most serious problem, though, is Zoetrope's exclusive use of the low-resolution graphics mode. Because of this restriction, Zoetrope's animations

appear crude compared to those produced with other Amiga programs. Lack of support for interlaced or overscan displays makes this program a poor choice for video applications, and because it does not support HAM or hi-res modes, Zoetrope disqualifies itself for many professional graphics applications. While Cyber Paint stretched the graphics capabilities of the Atari ST, Zoetrope does little to address the Amiga's unique abilities. If it had, it might have set a new ►

DATEL COMPUTERS

800-782-9110

*ORDERS ONLY MON-SAT 8AM-6PM (PST)

CUST SERV / TECH
702-454-7700

TU-SA 10AM-6PM

CALL US FOR LOWEST PRICES ON OTHER SOFTWARE / HARDWARE

AMIGA BURST NIBBLER - ONLY \$49.99

"THE ULTIMATE COPY PROGRAM"

*Copies almost any commercial disk, 1 or 2 sides up to 85 tracks. *Special 'Strategy Files' cope with the most advanced protection schemes. *Decrypts many encoded programs. *Works with one drive or two. *Multiple copy option - many copies from one original. *Special format parameters for non standard formats. *Full verify option. *Updates available - we ship the latest.

ROBOTARM - ONLY \$129.99

*FULL FUNCTION - 5 AXIS MOVEMENT

*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 Accessories: *Finger Jaws, *Magnetic Attachment, *Scoop, and 2 Joysticks *Uses 4 D batt. (not supplied), no computer power to power motor movement

ACCESSORIES

*DATA SWITCH BOXES

\$34.95 A/B Switch - \$49.99 ABCD Switch

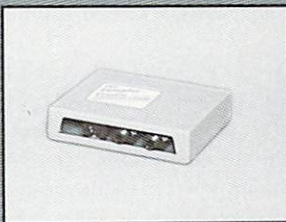
*A/B type connects two printers or accessories to one computer or (vice-versa) *ABCD type connects four devices to one computer (or vice-versa) *Centronics or 25 pin 'D' type connections

*PRINTER CABLES - ONLY \$14.99 6Ft. Length

*25 pin 'D' to 36 pin Centronics *25 pin 'D' to 25 pin 'D'

PRO SAMPLER STUDIO - ONLY \$119.99

*100% machine code software for realtime functions. *HiRes sample editing *Realtime frequency display *Realtime level meters *Files saved in IFF format *Adjustable manual/automatic record trig level *Variable sample rate and playback speed *Hardware/Software compatible with other packages *Reverse, copy, mix,



clear plus other edit facilities *Microphone and line input 1/4" Jack and Din connections *3D shot of sound waveform *Wave editor to design your own waveforms or adjust existing ones.

DATEL 3.5" DISK DRIVE

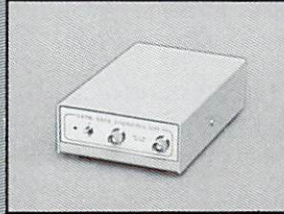
\$169.99 SINGLE DRIVE - \$299.99 DUAL DRIVE



*Slimline extra low profile - 6" long *Top quality drive mechanism *Throughport allows daisy chaining other drives *100% compatible *1 meg uniform formatted capacity per drive

DATA ACQUISITION UNIT - ONLY \$179.99

*Measure a wide range of data inputs. *Sample and display events from microseconds to hours with amplitudes from millivolts to 50 volts. *DIGITAL SCOPE DISPLAY - 2 channel inputs, manual or continuous display, timebase 500ms/div to 20 us/div - accurate to 5% *6 bit latch conversion does 5 million samples/sec *Adjustable trigger level *5x zoom function *Memory scan



*Load/Save functions, waveform enhancement, graph displays *Hardware contains onboard RAM and Crystal dividers *PLOTTER DISPLAY - 2 channel and memory recall display *Timebase range 1 sec to 10 hrs per plot.

512K RAM CARD - NO MEMORY

ONLY \$39.99 card only - \$69.99 with CLK/CAL

*Plugs internally into a A500 slot *Switch RAM in/out with switch supplied *With calendar/clock onboard time/date automatically booted *Battery backed to retain time/date

*CALL FOR PRICES ON BOARDS WITH MEMORY

MIDI MUSIC MANAGER - ONLY \$59.99

*8 realtime Midi tracks for record/playback *Works with standard IFF files. *Adjustable track length - limited only by available memory. *Play sampled sounds on Amiga from any Midi track. *Full dubbing - listen to one track while recording another. *Perfect companion for Pro Sampler Studio or any music application.

MIDIMASTER - ONLY \$59.99

*Full standard Midi Interface *Compatible with leading Midi packages *Midi In - Midi Out x 3 - Midi Thru *Fully Opto Isolated

COMING SOON: 400DPI SCANNER - ONLY \$324.99 AND LOGIC ANALYZER - ONLY \$179.99

CALL FOR INFORMATION ON ORDERING

CALL US FOR THE BEST PRICES ON ALL YOUR SOFTWARE/HARDWARE NEEDS

DATEL COMPUTERS

3430 E. TROPICANA #67
LAS VEGAS, NV 89121

*ADD: \$4.00 Shipping/ Handling in the Continental U.S. - \$7.00- PR, VI, AK, HI, FPO, APO: \$10.00. Canada / Mex: C.O.D. orders add \$3.00 to above shipping charges

SPECIFY COMPUTER MODEL WITH ORDER VISA/MC / Checks / Money Orders / C.O.D. Accepted - Please call for return authorization number - Returns subject to 20% restocking fee.

standard for 2-D animation software on the Amiga.

Zoetrope

Antic Software

544 Second Street
San Francisco, CA 94107

415/957-0886

800/234-7001

\$139.95

One megabyte required.

X-CAD

No power to the people.

By Stephen Ellerin

X-CAD, from Taurus Software of Great Britain, is potentially the most powerful Computer-Aided Design (CAD) program available for the Amiga. Unfortunately, however, X-CAD is far from being the Amiga's most useful CAD package. While the program's muscle is solid, flexing it is a formidable challenge.

X-CAD arrives with two disks—Libraries (which includes an Install routine for hard-drive users) and Workbench (which noticeably lacks such essentials as DIR, MAKEDIR, INFO, and INIT). Because the program eschews Intuition, the documentation is the only place to begin.

MANUAL NON-TRANSMISSION

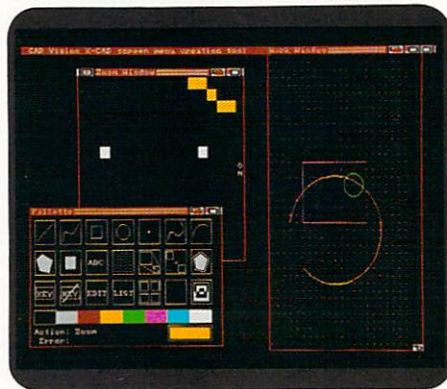
The Preface states that X-CAD's manual "should be used with other reference manuals provided." No additional references were included with my package, and the technical service representative at Haitex, Taurus' US distributor, told me that he had never heard of them.

The documentation starts at the logical beginning, and its explanatory format for commands is good—each begins with an overview of the command and a list of available modifiers. On subsequent mentions of modifiers, the manual either refers you to the nearest explanation or rehashes. I also commend the manual's treatment of X-CAD's layers concept; it compares each of the 256 available layers and eight depth levels to a transparent

sheet. You can view the sheets in total from the top, or withdraw some (turn the layers off) to reveal or conceal parts of the drawing.

Organizational difficulties crop up early, however, with a proclamation that the screen is split into three areas; two paragraphs down, a fourth area is referenced. Under the guise of a tutorial comes a tedious 100-page compendium of commands. One well-written description of each command in the manual proper would effectively replace this.

Some pertinent facts are buried in obscure places. For instance, virtually every phrase of each command must end with a colon, yet not until over 150 pages into the manual will you find this mentioned. Other key information does not appear at all. Dimension lines, which specify the



ModMenu: If all of X-CAD was this easy...

size of an object, should be accurate to at least four decimal places, yet X-CAD's manual does not explain how to enter accurate values. I learned by trial to mark a dimension line's starting point with a mouse click and then to use the IX ("draw a line in a stated Increment along the X-axis") or IY command to compute the end point. While you can sometimes discover on your own how to make the program work, you should not have to.

For many commands the manual offers examples instead of explanations in hopes that "these examples will become clearer the more commands you learn." Although examples represent the manual's strongest point, some fail to carry the full burden of explanation, and too often, cryptic wording, grammatical problems, and poor sentence structure ruin the effect. Proprietary names add another element of confusion, and the typeface that displays command syntax

contains several virtually illegible letters.

Well, you think, the manual may be poorly written and unorganized, but at least you can locate information via the index, right? Wrong. An index is listed in the table of contents (which appears in the middle of the book), but it is not actually in the manual.

ON TO DRAW

The program requires a minimum of either 1.5 or 2 megabytes of memory (depending which page of the manual you believe) and at least two floppy drives, but suggests as much memory as you can afford plus a 20MB hard disk. I used both an A1000 with 1.5 megs and an A2000 with three megabytes, each with two floppy drives.

X-CAD offers all the customary CAD commands but one: Its lack of an Undo command represents a serious handicap. You can draw precision lines, rectangles, circles, arcs, and ellipses, combine them into objects, and then fill these objects with hatched, patterned, or solid lines. You can also move, mirror, rotate, scale, and copy most objects.

X-CAD offers several features that other Amiga CAD programs do not. One of these mirrors a scene (displaying it upside down and backwards) but duplicates any text upright. The Fillet command allows you to round corners, while Spline allows you to position points on the screen through which the program then draws a fair curve. Unlike other programs that let you change the depth of only one item at a time, X-CAD allows you to group items into a box and, with one step, reassign them all to a different layer.

One of X-CAD's most powerful commands is Trim, which forces lines to either extend out or trim back to an intersection of lines or any other designated point. Unfortunately, the program often erases the part you intended to leave and leaves the section you had wanted to trim.

MOUSING AROUND

X-CAD's interface consists of a series of yellow boxes (called AutoMenus) pasted across the top third of the screen. To is-

sue commands, you must dance your mouse through unintuitive, zig-zag box-clicking sequences. It takes as many as 30 clicks to set up a Viewport (X-CAD's name for window), and if you skip or misplace any required element, the program rejects your entire effort and returns you to square one, usually without an error message.

The only alternative to clicking boxes is to type in the command. While you can repeat part of the last command sequence by entering `=`, this saves you considerable time only on commands that include names or numerical values.

For both clicking and typing, X-CAD insists on adherence to a verb-noun-modifier command format, and occasional surprise variations of the sequence constitute another stumbling block. Despite an ever-active Command Line Interface window at the bottom of the screen, no message ever warns which commands break the established pattern. Furthermore, the screen makes no distinction between those modifiers the program considers necessary, optional, and illegal.

Still, as I read the manual I felt as if I might be mastering the complexities of the program. It is no wonder, though, that when I tried the commands without the manual, confusion reigned: The command to verify linked relationships has only three options according to the manual, yet 18 choices appear on screen.

I came across a number of bugs in my tests. When trying out the Array command, I copied the manual's example verbatim six times. Four times the program refused to accept the parameters; the other two times it accepted the entries, but the resulting lines bore no resemblance to the value entered.

The Haitex technical service rep confirmed that the orthogogonal (x- and y-axis) locks rarely work. This makes drawing straight lines difficult because the grid snap works only if your window is zoomed into an area small enough for the program to display the grid.

SEEING THINGS

You can draw in eight colors, but to select a color, you must enter its number. The program doesn't tell you which number represents which color, and although the manual contains one reference listing, unless you turned the corner of the page when you first saw it,

good luck finding it again.

The screen redraws quickly, but X-CAD's interface slows the production pace. Most drawing programs let you work on a magnified portion of your drawing while you observe how your work affects the whole picture in another window on the same screen. X-CAD, however, requires that you zoom in and out of a single screen—a process that devours time and breaks concentration. I used X-CAD to render a project for a client, and found it took me twice as long as if I had drawn it by hand.

Although the program's lone sample drawing would not load into my A1000, I have produced full-size plans on it by dividing my page into sections and saving each separately. The program's organization of projects into sheets (analogous to individual pieces of paper) forces you to break every project into several smaller files even if you have maximum memory. By experimenting, you can figure out how to layer sheets and then output one section at a time to produce a single drawing (these methods

are not discussed in the manual, however).

X-CAD's plot set-up method is simple: Just click in a requester to select your plotter. Difficulties can arise, however, because the program leaves the device's pen where the last line of your drawing file ends. I split one drawing into two disk files after I had lined up the parts for plotting, but because the pen did not start file two from the home position, the sections did not align.

X-CAD lets you change the name of an existing drawing as you reload it, and thus makes it easy to create multiple templates.

X-CAD does not incorporate standard Amiga requesters. The manual warns you to use the full pathname when opening and saving files and so on, as the program "does not consult the currently selected symbol directory." That means no prompt reminds you of what is already on your disk, or even which disk the program will read from or write to. Before you CLI users smirk "No problem," remember that Taurus ►

Ext. 3.5" Drive

Only

\$125.00

Introducing the new external 3.5-inch drive, fully compatible with the Amiga 500/2000.

Compatibility you are looking for at an affordable price.



ORDER ONE FOR
YOUR AMIGA TODAY!

1-800-433-6224 (Outside N.Y.)
516-763-1025 (In New York)

KINSON PRODUCTS CORPORATION

484 Sunrise Highway
Rockville Centre, N.Y. 11570

Amiga is a registered trademark of Commodore Business Machines

Circle 91 on Reader Service card.

Flight notes



8C

✦ **"Hawaiian Odyssey" Scenery Adventure** - Locating the secret jewel of the goddess Pele from the cockpit of your single-engine aircraft (or high-performance jet) isn't just as simple as spotting an object from a distance and then flying toward it. No, you must find and follow an intricate set of clues scattered about the Hawaiian Islands that, with luck, will guide you to your goal.

As with other mythical quests, only the proper approach can put you on the right track to finding the hidden jewel. Even if you can determine its location, the jewel is only visible under a strictly-defined set of conditions. Make a mistake during your final approach and you may get lost so completely that you'll never be able to find your way back!



"Hawaiian Odyssey" Scenery Adventure disk can be used with any SubLOGIC flight simulation program, including Flight Simulator II, Stealth Mission and Jet. The disk covers the entire island chain in such incredible detail you can almost feel the heat from the volcanic crater at Mauna Loa! "Hawaiian Odyssey" Scenery Adventure from SubLOGIC; you've never seen anything like it!

Top Selling Scenery Disks This Month:

(for use with Flight Simulator II and Jet)

1. Scenery Disk # 9 - U.S. Midwest
2. Scenery Disk # 7 - U.S. Eastern Seaboard
3. "Western European Tour" Scenery Disk
4. San Francisco Scenery Disk
5. Scenery Disk # 3 - U.S. South Pacific

See your dealer to purchase SubLOGIC products, or call us direct to order by charge card at (800) 637-4983. Illinois residents call (217) 359-8482.

SubLOGIC Corporation
501 Kenyon Road
Champaign, IL 61820

Please address any feedback/correspondence regarding SubLOGIC products, operations, or this "Flight Notes" column to ATTN: Chairman's Office.

scratched query commands like DIR from the X-CAD disk.

INTUITIVE DISCOVERY!

The last eight of the manual's 300 pages describe how to create ScreenMenus... real Intuition-style screens with gadgets and icons! By creating ScreenMenus, you can rework the X-CAD interface and use the program more efficiently.

To build a ScreenMenu, you click into the Modmenu program from Workbench. (While the manual promises a sample ScreenMenu on the Data disk, not only is there no menu, there is not even a Data disk.) Except for its requester, the ModMenu screen looks like it was extracted from Electronic Arts' DeluxePaint II. A series of boxes on the screen invites you to click inside to draw lines, rectangles, circles, and arcs—the building blocks for ScreenMenus.

"Whereas AutoMenus require at least three selections to execute any command," the manual proclaims, "a ScreenMenu may contain a complete command string and therefore require fewer selections to execute commands." Say, this is such a good idea Taurus should have incorporated it into the program's primary interface! Unfortunately, when I tried using the ScreenMenus I created, the program crashed frequently.

A VIEW FROM THE TOP

Every program has a learning curve, but X-CAD's is mountainous. An incline this steep slashes into productivity. X-CAD's dongle has the potential for holding up production, too; in my opinion, no professional should have to risk not being able to save or plot a drawing because of a missing or broken dongle. Because the Data disk is missing, the promised On-Line Documentation—essential for this program—does not exist. Also, not a single library of symbols is included. For a program costing \$600, there is no excuse for such omissions.

X-CAD's speed and power are impressive. I hope that the programmers design future releases with a more intuitive interface. As it stands, the program is poorly documented, awkwardly constructed, and full of bugs. In the meantime, I am looking forward to seeing X-

Shell from GRAFX Computing, a program that promises to take the hassle out of using X-CAD.

X-CAD

Taurus Software
Guildford, Surrey, UK
0483/579399

Distributed by Haitex Resources
208 Carrollton Park, Suite 1207
Carrollton, TX 75006
214/241-8030
\$599.95

Two megabytes required.

FANCY 3D FONTS

Extra! Read all about it!

By Wayland Strickland

WORDS, ACCORDING TO Rudyard Kipling, are the most powerful drug of mankind. In the realm of 3-D graphics, however, only one of the most popular programs comes with the means to readily inject three-dimensional displays with the power of text. 3-D designers who yearn to say it with style now have more choices.

Fancy 3D Fonts, from Access Technologies, comes in two versions—one for use with Sculpt 3D and Animate 3D (Byte by Byte), the other for use with Turbo Silver (Impulse). Each is sold separately, and except for the fact that the Turbo Silver version includes a set of chess pieces, their offerings are identical. They contain three font styles: Fanc, Bold, and Ital, which emulate Clarendon Medium, Helvetica Bold, and Bookman Italic, respectively. In both versions, Fanc is supplied on one disk, and the other fonts reside on a second.

SPEAKING UP AND DOWN

The three styles offer both uppercase and lowercase characters, plus punctuation marks in separate subdirectories. While each style has a set of symbols and international characters, these offerings ▶

THE PRODUCTIVE AMIGA

Real-world software solutions from Brown-Wagh Publishing...and Amiga

EXPRESS PAINT 3 -

Feature-rich graphics, B/W & Color PostScript, 24-pin dot matrix, Virtual Memory, text importing, 3-D perspective, unlimited Undos & Redos, 64 color Extra Half Brite, dbl-arc curves, 6-range color cycling, large canvas. "Best of 1988" - *Commodore Magazine*.

PAR REAL I -

Professional real estate analysis for realtors or investors. Amortization tables, balloon and variable payments, depreciation, financial statements, loan evaluations, lease vs. buy, cash flow forecasts, ratios, tax benefits, rate of return, 3-D bar charts, forms, agreements.

EASY LOANS -

Amortization tables, tracks interest, principal and time payments. Speech output. Find incorrect charges.

OUTLINE -

Organize lists for reports, meetings, appointments, recipes, etc. Cut/copy/paste. Import into WP. "Best of 1988" - *Commodore Magazine*.

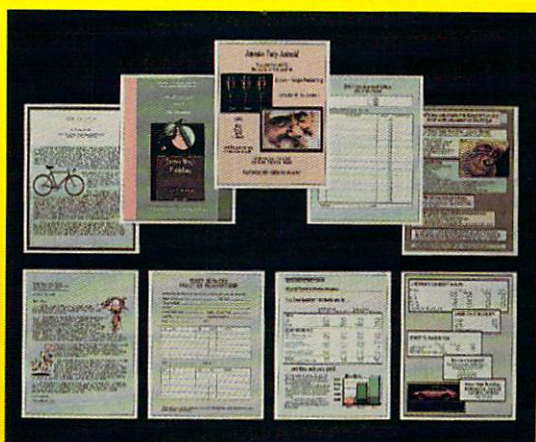
PROJECT MASTER -

Professional project management. Helps you manage projects instead of being managed by them. Graphic flow of activities. Best and worst case schedules. "What if" scenarios

for deadlines, resources and budgets. Critical paths. Actual vs. planned. Expense graphs, Gantt and PERT charts, resource loads.



PEN PAL - Your writing Partner



UNEQUALLED PRINT QUALITY & SPEED

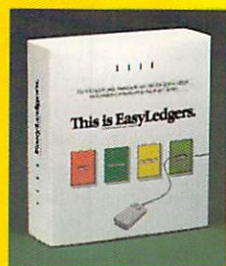
- ◀ Print true printer fonts (NLQ) and graphic images on same page in same pass!
- ◀ Print multiple graphics on same page; each with its original colors and resolution!

UNPRECEDENTED PRODUCTIVITY FEATURES

- Automatically flow text around graphics; box & contoured boundaries; even while typing.
- Colored boxes, borders, shadows, lines & backgrounds.
- View full page and closeup while editing and scrolling.
- Resize/crop images (& HAM); keeps original resolution.
- Create forms; fill in field by field; edit & refresh.
- Spellcheck; 100K words; unlimited user dictionaries.
- Analyze writing style; statistics & reading grade-levels.
- Open 4 documents; search/replace; undo/reredo.
- Access 200 B/W or color fonts; sorted by name and size.
- Mailmerge & copy from built-in database. Report templates.
- Open 4 databases; 9 data types including calculations; 32 fields per record; 32k rec. max.
- Print mail labels & reports; titles, sort breaks, sub-totals.
- Sort by multiple fields; search by logical criteria; screen totals.
- Locate duplicates; delete multiple records; merge

MIDI MAGIC - Easiest Midi sequencer! Fabulous interface. Help text. Multitasking, 16 tracks, 26 sequences. Quantizing. Multi channel recording. "Beginning and serious amateurs will love MIDI MAGIC for its power" - *Amiga World*

EASY LEDGERS - Fully integrated accounting system. Sales, purchases, inventory and general ledger. Extremely easy; uses familiar bookkeeping interface. No complicated codes to learn, no account numbers to remember. Just point and click.



ARCHITECTURAL DRAWINGS

- 4 sets of professional designs; IFF or Aegis Draw(tm) format; FLOOR PLANS - windows, doors, baths, etc.; INTERIOR DESIGNS - beds, tables, desks, sofas, etc.; FOUNDATIONS - framing, rafters, etc.; AUTOS - 1980's, Mercedes, Cady, Ford, etc.

Give Me More!!!

Call for additional product information, prices and participating dealer locations. Ask about our product demos and money-back guarantee.

We acknowledge the trademarks and give many thanks to the producers of our fine productivity products:

Circum Design
Madrigal Designs
PAR Software
SoftWood Company
TRS Labs
Zuma Group

Brown Wagh

1-800-451-0900
1-408-395-3838 (CA)

16795 Lark Ave. #210, Los Gatos, CA 95030

TV*TEXT - Best selling video titling software. Fonts, colors, shadows, strobes, sizing, grids, backgrounds, special effects.

TV*SHOW - Create super slide show presentations. 50 transitions. Any IFF pictures. Voice; Loops. Just point & click.

ZUMA FONTS #1-4 -

Professional fonts for video & graphics. Each volume contains 3 styles in 6 sizes at 2 resolutions.

are not the same for any two fonts. For instance, the asterisk appears in Bold and Ital but not in Fanc, while the £ is included in Fanc and Ital but not in Bold. The circumflex, dieresis, and both acute and grave accents are included in all styles so you can build some foreign letters yourself. Finally, Bold does not provide numerals, but the other styles do.

Impressively, the fonts make optimal use of the 3-D design program for which they are created. For instance, while the Turbo Silver and Sculpt 3D versions of Bold look alike, they are actually constructed differently. Neither font contains unnecessary faces or edges that would slow the rendering process and consume valuable memory.

Each character in the Fancy 3D Fonts packages is stored as an individual object. To load the fonts into your modeling program, follow the same procedure you would to import any object. You place letters side by side in order; spacing characters and words is a matter of eyeballing in Sculpt 3D's Tri-View or in Turbo Silver's Cell Editor. The back faces of all fonts are rendered so you can view them from the rear, and the charac-

ters are extruded (you can adjust the scale of extrusion in all dimensions once you have loaded them in your 3-D program). As with any other vector graphic,



Fancy 3D Fonts goes European.

you can reduce and enlarge the fonts without a loss of resolution.

SAY NO MORE

The instructions are extremely brief. The 5 1/4 x 8 1/2 sheet simply lists the various fonts and subdirectories and gives you an example of how to load them. It does not provide information as to the size of

the fonts and their relative proportions, and there are no tips for forming words and phrases. The Read_Me files on disk merely reiterate what is printed. Otherwise, however, because there is no program to learn per se, the documentation is adequate. The software is not copy protected, and you can install Fancy 3D Fonts on a hard disk.

All of the fonts are nicely designed and well constructed. At \$79.95, though, Fancy 3D Fonts is expensive. For \$119.95, InterFont (Syndesis) provides six type styles, automatic spacing and alignment, various textures, the ability to design your own 3-D fonts, and compatibility with multiple 3-D design programs. Fortunately, Access Technologies recognizes the importance of provisions for creating and customizing characters, too. The company has announced 2D to 3D Converter, a program supporting the Byte by Byte format that lets you alter both color and texture of Fancy 3D font faces and sides, and extrude them before transportation to your modeling package. (Fancy 3D Fonts owners can purchase Converter directly from Access for an introductory price of \$19.95.) You ►

Take a Close Look at the Master-3A

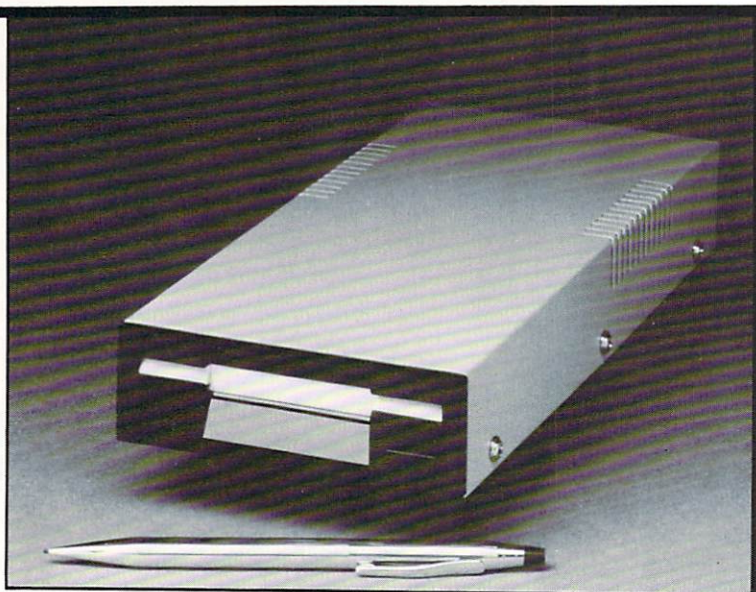
- Fully compatible disk drive with the Amiga®
- 1 Year Warranty
- Pass through connector lets you easily add additional drives
- Extra long shielded cable (28") allows easy placement on either side of computer
- Extremely quiet operation
- Double sided/double density 880 KB formatted capacity
- Slimmer design (4" x 1 1/4" x 9")
- Low power consumption

Mail Order Line
(800) 356-5178 Outside California
(714) 633-1026 In California

Dealer Line
(408) 462-9494 In California
(312) 382-5050 Computer Direct
(313) 427-7713 M.C.S.
(800) 232-6442 Go Amigo

Manufactured by  Oceanic

Exclusively Distributed by: Konyo Int'l Inc. (CA)



MASTER-3A

Only **\$159**



Amiga is a registered trademark of Commodore-Amiga Inc.

COME ABOARD *AmiEXPO*

and We'll Blow You Away in The Windy City

The Amiga Exposition

Sponsored by

AMIGA

W O R L D

July 28 - 30, 1989

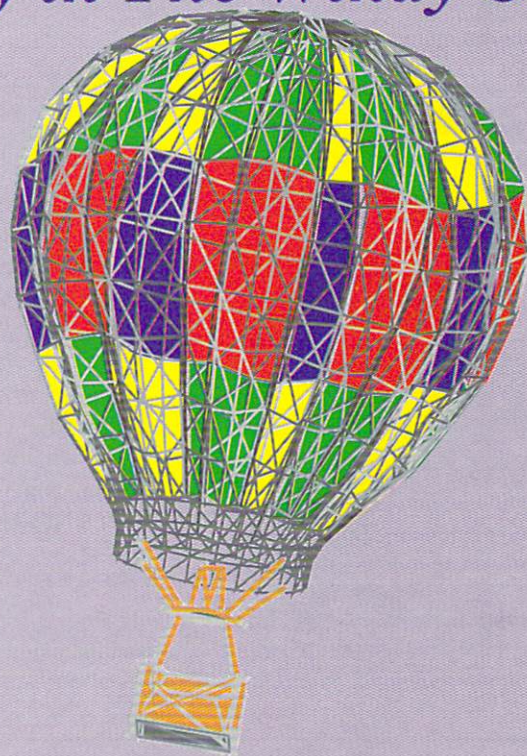
The Chicago Hyatt Regency

151 East Wacker Drive

Chicago, Illinois

*10,000 Attendees and 120 Amiga
Companies Will Be There.*

DON'T MISS THE FLIGHT!



Admission includes the Exhibition, Seminars, Keynotes & Amiga Artists Theatre!

120 Amiga Exhibitors Featuring State of the Art Software and Hardware, at the lowest prices!

Master Classes Available in Amiga Graphics, Video, Programming, Animation, Music and Publishing!

Seating for Master Classes is limited; call for schedule and availability before registering.

PRE-REGISTRATION DEADLINE IS JULY 14, 1989

For Hotel Reservations Call the Hyatt Regency at (312) 565-1234. Deadline for hotel reservations is June 26, 1989.

For discounted airfares, call American Airlines at (800) 433-1790 and give them this ID: S-83536.

*Register by Mail, or Bring This Coupon to the show or Call 800-32-AMIGA Nationwide (or 212-867-4663)
For Your Ticket to The Amiga Event!*

Yes, I want to come to AmiEXPO - Midwest

☐ Friday ☐ Saturday ☐ Sunday

***Registration is
\$5 Additional
At The Door***

One day - \$15 ☐

Two days - \$20 ☐

Three days - \$25 ☐

Master Class(es) - List Class and Time - \$50 Each

Total Amount Enclosed ☐

NAME

COMPANY

ADDRESS

CITY STATE ZIP

For ☐ MasterCard or ☐ VISA Payment

Expiration Date

Account Number

Name as it appears on card:

Signature

Make Check or Money Order Payable to:
**AmiEXPO 211 E. 43rd St., Suite 301
New York, NY 10017**

Bring Coupon to the door and get these Pre-Registration Prices!

will be pleased with the quality of Fancy 3D Fonts.

Fancy 3D Fonts

Access Technologies Inc.

PO Box 202197

Austin, TX 78720

512/343-9564

\$79.95

No special requirements.

TOSHIBA P341SL

Good things print for

those who wait.

By Bob Ryan

ACCESSIBLE VIA Workbench 1.3, the Toshiba P300 line of 24-pin dot-matrix printers feature built-in support for three types of printers: the Toshiba 300 series, Qume Sprint devices, and IBM Proprinters. Although the use of a standard printer device makes the three-in-one concept less valuable to an Amiga

owner than to an MS-DOS devotee, the Toshiba P341SL is nonetheless useful.

DOWN TO SPECIFICS

With a footprint of 22 x 15 inches and a weight of 21 pounds, the P341SL is a

Fourscore and seven ye
a new nation, conceived in
men are created equal.

Now we are engaged in
any nation so conceived and
great battlefield of that
as a final resting-place for
might live. It is altogether

But, in a larger sense
The brave men, living and
above our poor power to add
remember what we say here,
for us, the living, rather
they who fought here have
here dedicated to the great

Address high-quality type with the P341SL.

mid-size unit. Its wide carriage makes it ideal for printing spreadsheets and other special documents.

The P341SL has a wealth of standard features, including both parallel and serial interfaces. The unit allows friction and tractor feed—it even lets you print envelopes and single sheets without removing the paper from the tractor feed. A sound baffle under the dust cover muffles noise appreciably.

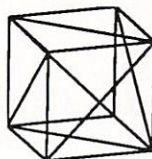
In native mode, the P341SL offers three type styles (draft, near-letter quality, and condensed), and two fonts (Courier and Prestige Elite). In addition, you can have up to four fonts resident on optional cartridges and two in the printer's 32K memory bank. (Without downloadable fonts, the memory serves as a print buffer.) You can choose from five character pitches (10, 12, 15, 16.7, and 20 characters per inch) and four line-space settings (three, four, six, and eight lines per inch), and specify line spacings to 1/120th of an inch.

The front panel of the Toshiba P341SL is pretty high tech. Four buttons give you access to all the features by scrolling through a series of menus, while a liquid-crystal display shows your place. You can set your own power-up values or use one of the four preset configurations. ▶

InterChange™

"If you've ever wanted to share objects between Sculpt 3D and VideoScape 3D, your wish has just been answered." *AmigaWorld*, June 1988

We couldn't have said it better!



InterChange, including Sculpt 3D and VideoScape 3D
Conversion Modules just \$49.95

Turbo Silver add-on Conversion Module \$29.95
Forms in Flight add-on Conversion Module \$19.95



SYNDESIS

20 West St.
Wilmington, MA 01887
508-657-5585

All product names are Trademarks or Registered Trademarks of their respective companies.

NOW
SHIPPING

Ultra-powerful backup tool
for your Amiga.™

\$59.95

RAWCOPY V1.3

START		ABORT	
SOURCE DRIVE		TARGET DRIVES	
DF0:	DF1:	DF2:	DF3:
Read Variables		Write Variables	
Drive 0	Read Length=\$3000	Drive 1	Write Length=\$3000
Cylinder 00	Sync Word=\$4489	Cylinder 00	Pre-Write=\$0000
Side	Sync On Word	Side	Precompensation
Bottom	Top	Bottom	Top
ON	OFF	ON	OFF
READ TRACK		WRITE TRACK	
Format Control		Bit Cell	
MFM	GCR	2us	4us

RawCopy V1.3 backup utility is now available. This powerful program will allow for safe, accurate back-up copies for your favorite programs. Protect your software investments. Micro System International's RawCopy V1.3 provides unique options:

- PASSWORD ELIMINATOR
- RAM buffer to reveal hidden data
- ERROR CHECKER

- Copies software that no others will.
- Deprotects many of your favorite programs.
- Supports up to four 3.5" disk drives.
- Mouse-driven user interface.

RawCopy V1.3 utilizes 100% assembly programming making it very efficient and ultra-FAST.

RawCopy V1.3 makes use of the Amiga environment enabling it to be user-friendly through mouse-driven menus.

RawCopy V1.3 is designed for the user's future expanded needs. MSI offers, to registered buyers, updates of the back-up utility on a regular basis at minimal cost.

This utility interprets just about every aspect of the Amiga system; from standard DOS to non-standard DOS. RawCopy V1.3 is both a standard and a parameter copier. Finally, you will be able to expand your protection to new software releases without buying a totally new back-up program.

Micro Systems International

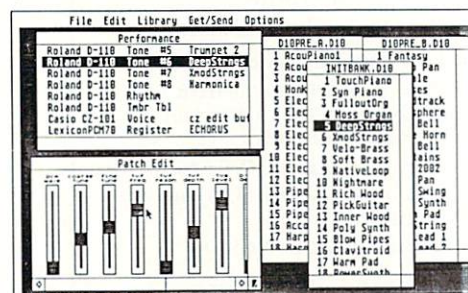
1143 Monroe St.
Carleton, Michigan 48117
(313) 654-8402

Free shipping and handling • Michigan residents add 4% tax • Quantity pricing available

Standards

[illegible]

Features such as the exclusive "Remote Control" in Level II, the incomparable laser printer output of Copyist,



Dr. T's

MUSIC SOFTWARE



The screenshot shows the Ableton Live 9.11.11 interface. The 'Edit' menu is open, displaying various editing options. The 'Solo' option is highlighted in the menu. The background shows a piano roll view with a MIDI clip. The interface includes a top menu bar with 'File', 'Edit', 'Settings', 'Play', 'Mirrors', 'Display', and 'Widgets'. The 'Edit' menu options include: Undo, Copy, Cut, Paste as Selection, Duplicate, Pitches, Velocities, Durations, Controllers, Pitch Bends, Line Reverse, Quantize Selection, Move, Copy/Delete Range, Solo (highlighted), Mute, Master Edit, and a separator line. The piano roll view shows a MIDI clip with notes and a solo button in the bottom right corner.

(617) 244-6954
FAX (617) 244-5243

While I like the sophistication and versatility, I am dismayed at not being able to perform a simple manual line feed from the front panel; you must use the platen knob to fine position paper.

OUTPUT, PLEASE

To test speed performance, I put the P341SL through the same tests I used with five other 24-pin printers (see "Lasting Impressions," p. 25, in the July '88 issue of *AmigaWorld* for details). In draft mode, the printer scored well at 106 characters per second, while in letter-quality mode, the printer came in near the low end of the spectrum at 44 characters per second. The Toshiba fared better in terms of print quality, producing some of the best type I've seen from a 24-pin printer.

Graphics-printing is both a strength and an Achilles' heel for the P341SL. The unit's 360×360-dot resolution produces excellent quality graphics; the problem is speed. A graphics dump that took 53 seconds on an Epson LQ takes nearly five minutes on the P341SL. I began to suspect that the printer driver was at fault, but found that the device

was nearly as slow under Epson emulation.

If you need a wide carriage and high-quality output, you will be pleased with the Toshiba P341SL. If you want a fast graphics printer, look elsewhere.

Toshiba P341SL
Toshiba America Inc.
 9740 Irvine Blvd.
 Irvine, CA 92718
 800/457-7777
 \$999

No special requirements.

MASTERING CLI 2.0

A DOS dossier on disk.

By C.W. Mann

A POWERFUL EDUCATIONAL tool for AmigaDOS 1.2 newcomers, Mastering CLI introduces you to the Amiga's Command Line Interface (CLI) through interactive instruction. It can also act as your guardian angel as you shift gears

and make your first attempts at using the CLI.

The program disk has a pared-down version of Workbench, three executable programs, 52 text files in a special Help directory, and an MCAssist directory with small support files.

Mastering CLI's distribution disk is bootable and non copy-protected. Clicking the Tutor icon in the opening window takes you to a screen with several pull-down menus. (Tutor's text window is designed for use in non-interlaced mode only, and you cannot resize it.) From the first menu, you can open a CLI window, access Preferences, or quit the program. The other menus offer general-topic presentations and 48 tutorials on specific AmigaDOS commands, listed in alphabetical order. To begin, you must open a CLI window so you can follow the program's numerous examples as you progress through the tutorials. You can make your own lesson plan, starting with any command.

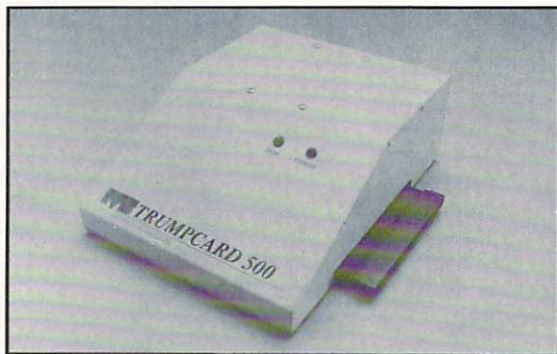
LOOK, NO HANDS!

Wouldn't it have been nice if your first bicycle had been equipped with retract- ▶

NOW! TRUMPCARD 500

IVS brings the quality and performance of **TRUMPCARD** to the Amiga 500 with the **TRUMPCARD 500** series of hard drive systems.

TRUMPCARD 500 INCLUDES:



- **TRUMPCARD** A2000 SCSI hard disk controller card
- High quality, ergonomically designed, color matched aluminum enclosure houses all electronics AND 3.5" SCSI drive!
- A500 86 pin to ZORRO 2 compatible 100 pin adapter motherboard
- Extra slot for addition of optional 2M RAM memory card
- Jumper selectable power source allows hard drive to run from A500 bus power or from optional **IVS SOURCER**, a premium quality, high current 40 watt switching power supply
- Upgrade path to A2000: simply remove the cards and drive from **TRUMPCARD 500** chassis and plug into the A2000. SCSI controller and drive convert into an A2000 hardcard!
- Sloping face of chassis follows keyboard contour to eliminate interference while typing
- Power and drive activity LED indicators monitor drive system status
- Full 1 year warranty parts and labor

IVS **TRUMPCARD 500** hard drive systems are available with 30Mb, 40Mb, 48Mb, 80Mb, and 100Mb hard drives. IVS pretests and preformats every **TRUMPCARD 500** system; Workbench 1.3 and Autoboot ROM included with every drive. Ask your dealer for pricing.



INTERACTIVE VIDEO SYSTEMS

TRUMPCARD 500

15201 SANTA GERTRUDES AVE. STE. Y102 LA MIRADA, CA. 90638 PHONE: (714) 994-4443

Call CMO Today For Amiga



MAGNAVOX 515
14" RGB Composite
TTL Color \$279

MONITORS

Magnavox	
8762 14" Comp/RGB	\$249
NEC	
Multisync IIA	529
JC1402 Multisync	589
Sony	
1302 13" Multiscan	699
1310 13" RGB	339

VIDEO

Anakin Research	
Easy Drawing/2000	349
Easy Drawing/500	319
Digital Creations	
SuperGen Genlock	699
Communication Specialties	
Gen/One Genlock	699
JDK Images	
Pro Video Plus	199
Mimetics	
Amigen Genlock	149
New-Tek	
Digi-View Gold	139
Progressive Peripherals	
Pro-Gen Genlock	399
Frame Grabber	579
Sunrise Industries	
Perfect Vision	199
Elec. Color Splitter	79

AUDIO

ECE Research	
ECE Midi (A1000)	51
ECE Midi (A500, A2000)	51
Mimetics	
Midi (A1000)	44
Midi (A500)	49
Pro-Studio	129
Sunrise	
Studio Magic	62

BOARDS

Creative Microsystems	
Processor/Accelerator A500/ 1000/2000	149

ACCESSORIES

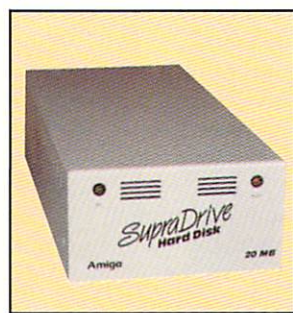
Curtis	
Surge Protectors/Diamond	49
Ruby	69
Tool Kit	22
Allsop	
Diskfile 10 3 1/2"	5
Diskfile 30 3 1/2"	9
Disktub 80 3 1/2"	10

MEMORY EXPANSION

Microbotics	
Star Board II w/512K	\$459
Upperdeck	45
Spirit Technology	
1.5MB Board w/OK (A1000)	289
1.5MB Board w/OK (A500)	279
1.5MB Board Populated (A1000)	989
1.5MB Board Populated (A500)	1509

DISK DRIVES

Great Valley	
Impact A500-30HD	849
Impact A2000-1/0	289
Impact A2000-2/0	319
Impact A2000-HC/40Q	919
Impact A2000-HC/80Q	1359



SUPRA
30MB Amiga 2000
\$689

Supra	
20MB (A500)	699
20MB (A2000)	649
30MB (A1000)	779
60MB (A500)	1499
60MB (A2000)	1399
Miniscribe	
20MB Int. 3 1/2" 40MB	289
20MB Int. 3 1/2" 65MS	269
C. LTD Hard Drives	
33MB (A500)	869
33MB (A2000) Internal	829
44MB (A500)	869
44MB (A2000) Internal	829
50MB (A500)	979
50MB (A2000) Internal	939
Megatronics	
Air Drive 3 1/2" Ext.	155
Air Drive 3 1/2" Int.	125

DISKETTES

Maxell	
MD2-DM DS/DD 5 1/4"	9
MFD2-DDM DS/DD 3 1/2"	18
Sony	
MD2D DS/DD 5 1/4"	9
MFD2-DD DS/DD 3 1/2"	18

PRINTERS

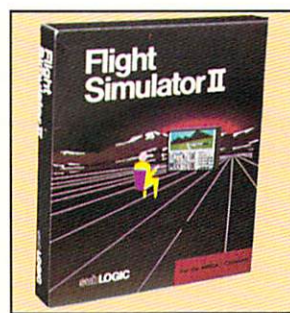
Brother	
M1109 100cps DM	179
M1709 2400cps/50 Col.	389
Canon	
Canon Bubble Jet 130	799
C.LTD.	
Laser Xpress	2249
Epson	
FX850 264cps, 80 Col.	Call
FX1050 264cps, 132 Col.	459

LQ850 330cps, 24-Pin	Call
LX80 150cps, 30 NLQ	\$169
Okidata	
Okimate 20 Color	129
ML182 + 180cps, 80 Col.	239
ML320 + 300cps, 80 Col.	379
Panasonic	
KX-P1080i 120cps, 80 Col.	169
1091i 194cps, 80 Col.	189
Star Micronics	
NX1000 144cps, 80 Col.	189
NR1000 Rainbow Color	179

MODEMS

Anchor	
1200 Baud External	109
2400 Baud External	189
Hayes	
Smartmodem 300	149
Smartmodem 1200	289
Smartmodem 2400	429
Practical Peripherals	
1200 Baud External	84
2400 Baud External	189
Supra	
SJ2400 External	139

SOFTWARE



SUBLOGIC
Flight Simulator II
\$34

Aegis	
Videoscape 3D	\$139
Aegis Draw 2000	159
Byte By Byte	
Sculpt 3D	69
Animate 3D	110
Animate 4D	419
Discovery	
Marauder II	29
Arkanoïd	20
Electronic Arts	
Deluxe Video	85
Deluxe Music	65
Deluxe Paint II	85
Ferrari Formula	34
FA18 Interceptor	32
Epyx	
4x4 Off Road Racing	34
California Games	32
Gold Disk	
Comic Setter	62
Pagesetter	89
Professional Draw	128
Professional Page	255
Lattice	
Lattice C 5.0	189
Lattice Prof. C	259
Mindware International	
Pageflipper + FX	89
Oxxi Software	
Maxiplan Plus	129
A Talk 3	65
Psygnosis	
Obliterator	29
Terrapod	29
Chrono Quest	33
Rainbird	
Star Glider II	33
Black Lamp	17
Readysoft	
Dragons Lair	39
Sedona Software	
Money Mentor	55
Spectrum Halobite	
Tetris	23
Falcon	30
WordPerfect	
WordPerfect	152
WordPerfect Library	82
Zuma Group	
TV Text	59



Your Source for Hardware, Software & Peripherals

In U.S.A.

800-233-8950

In Canada call: 800-233-8949

All Other Areas call: 717-327-9575 Fax call: 717-327-1217

Educational, Governmental and Corporate Organizations

Call toll-free: 1-800-221-4283

CMO, 101 Reighard Ave., Dept. B9, Williamsport, PA 17701

Over 400,000 SATISFIED CUSTOMERS • MAJOR CREDIT CARDS ACCEPTED

POLICY: Add 3% (minimum \$7.00) shipping and handling. Larger shipments may require additional charges. Personal and company checks require 3 weeks to clear. For faster delivery, use your credit card or send cashier's check or bank money order. Credit cards are not charged until we ship. Pennsylvania and Maryland residents add appropriate sales tax. All prices are U.S.A. prices and are subject to change. All items are subject to availability. Defective software will be replaced with the same item only. Hardware will be replaced or repaired at our discretion within the terms and limits of the manufacturer's warranty. We cannot guarantee compatibility. All sales are final and returned shipments are subject to a restocking fee. We are not responsible for typographic or photographic errors.



able training wheels? Mastering CLI offers such support in the form of two other multitasking programs: Assistant and TinyAssist. After graduating from the Tutor program, you can pedal off on the road to DOS with either help utility running in the background.

Assistant is a gadget-driven, half-screen window with 21 buttons that summon on-the-spot help for commonly used CLI commands. TinyAssist is an inconspicuous title bar containing help for the same 21 commands in menus. Assistant adds a quick-reference guide to the complete AmigaDOS command set, and features a Reduce gadget that lets you disable the program and shrink its window at any time. Both Assistant and TinyAssist offer high-level DOS support, and each allows you to return to the Tutor for in-depth review if you get stuck.

Although the program's text files need to be proofread, Mastering CLI's presentation is extremely thorough. The tutorials cover literally every AmigaDOS command—even the potentially destructive ones. You could, for instance, wipe out a day's worth of work by trying out the Format command. The program

warns you against the consequences of rash action in every appropriate place, but it's up to you to read and follow the instructions carefully.

Ironically, you need extensive CLI experience to install Mastering CLI on a hard drive, as the package does not include installation instructions. Although Tutor runs fine once properly set up, it will crash if the utility's special directories are not assigned to the correct paths. I was unable to get either Assistant or TinyAssist to operate properly on my hard drive—while some functions worked others did not.

CAN'T JUDGE BY THE COVER

Although Mastering CLI's documentation doesn't look like anything special—it consists of one 8½ × 11-inch sheet, printed on both sides—it is extremely well written and contains everything you need to get started. It also includes a list of AmigaDOS 1.2 primitive CLI-editing features in quick-reference format.

However you may feel about Mastering CLI's questionable cover design, the product inside is good. In my tests, all three program components multitasked

flawlessly with a high-level word processor, four utility programs, Kickstart, and Workbench 1.3. I recommend the program to any Amiga beginner who wants to learn the fundamentals of AmigaDOS 1.2. The rub, of course, is that we are already well into version 1.3, with 1.4 on the horizon. If the program's tutorial files were appropriately proofread, and if it offered a resizable Tutor window, full hard-disk compatibility, and coverage of the current AmigaDOS release, I would recommend it more heartily. Still, it is a good investment for a beginning CLI user.

Editor's Note: At press time we learned that Graphics Expressions is changing the format for Mastering CLI. The reviewed program is being retitled Mastering CLI: Volume II for Intermediate Users, and will cover Amiga DOS 1.3. Shell reference and editing are reportedly being added to the help utilities, and Tutor is said to include discussions of RAD:, environment variables, and residence, among other things.

Mastering CLI: Volume I, a lower-level program with a highly visual interface, is scheduled for later release. It is designed to draw parallels between Workbench and the ►

The Computer Outlet

P.O. Box 3663 Charleston, WV 25336

1-800-533-3622

AMIGA SOFTWARE AMIGA HARDWARE

CPU's - PRINTERS - MODEMS

May-June SPECIAL

HP Paintjet - \$ 975.00

Supra 2400 Modem - \$ 125.00

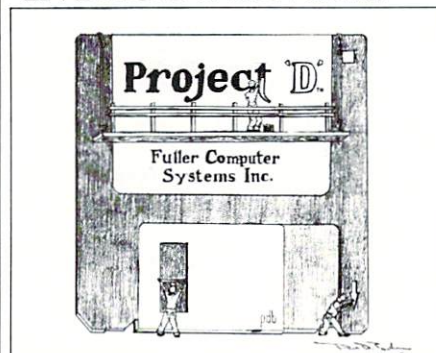
MC

1-800-533-3622

Visa

Circle 13 on Reader Service card.

INTRODUCING.....



An
Evolution
in Disk
Utilities
for Amiga™
Personal
Computers!

- F** • An easy to use, friendly and intuitive user interface.
- E** • A powerful and fast disk backup tool that lets you make backups of your copy-protected Amiga software.
- A** • A disk editing tool that lets you edit raw MFM tracks, AmigaDOS sectors and AmigaDOS files (automatically calculating new checksums).
- T** • A disk cataloging tool that lets you maintain lists of your personal, public domain and commercial software.
- U** • A unique backup tool for duplicating other disk formats including MS-DOS/PC-DOS and Atari ST.
- R** • An easy to read, informative user manual is included.
- I** • This product is not copy-protected in any way.
- N**
- G**

NOW SHIPPING!

\$49.95 EA.

Includes shipping and handling!
Arizona residents add 6.5% sales tax.

TO ORDER

Send check or money order to:
Fuller Computer Systems, Inc.
P.O. Box 9222
Mesa, Arizona 85204-0430
Or CALL (602) 835-5018

Amiga is a trademark of Commodore-Amiga, Inc.

Dealer Inquiries Invited

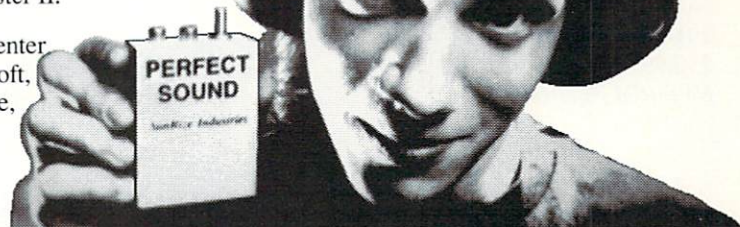
Circle 183 on Reader Service card.

Perfect Sound Brings Music to the Amiga

What can I do with Perfect Sound? You can connect any audio source such as a stereo receiver, a CD player, a Video player, or just a microphone to Perfect Sound and your Amiga. Record in stereo or mono and then use Perfect Sound's editing software to modify the digitized sound. Delete, insert, play sounds backwards, play faster or slower. You can even flip sounds. Perfect Sound creates IFF instruments for Aegis' Sonix and Electronic Art's Deluxe Music Construction Set. It can also be used to digitize sound for Aegis' Audio Master II.

Who uses Perfect Sound? Professionals including: The NASA Space Center Graphics Lab, Texas A&M University, "Dragon's Lair" from ReadySoft, "Arkanoid" from Discovery, "Leisure Suit Larry II" from Sierra Online, "Head Coach" from MicroSearch and a lot more.

Retail Price only \$89.95



Specifications:

- Two channel stereo audio digitizer • 8 bit sample length
- Sample rate (max): 23,283 per sec. • Frequency response: 11.6KHz • Attaches easily to parallel port • Complete sound editing software • Library of pre-recorded sounds
- Supports IFF file format & instruments • Compatible with most popular music programs

"This digitizer is fun and quite addictive! I highly recommend the Perfect Sound digitizer."

Ron Battle, Amazing Computing, Vol 2, #5.

"Perfect Sound is the number 1 selling sound digitizer on the market today."

Craig Craig, American Software.

City Desk 2.0 is Shipping!

Great Amiga Desktop Publishing

Look at this example of text flow around irregular graphics. With City Desk 2.0, it's easy. Now you can give your documents a real "magazine look".

Working on your first novel?

City Desk's default even and odd pages make it easy to set up your page format. Anything you place on the default even page is automatically copied to every even page as it is used. The default odd page controls each odd numbered page as it is opened. You may save default even and odd pages to use as templates for later modification and use. Another handy feature for long documents is "Autoflow". City Desk will automatically flow your entire document onto as many columns and pages as necessary. You can open as many pages on screen as your system memory will allow. 2.0 will automatically hyphenate your text as it is flowed.

Discover the power of macros with 2.0.

With version 2.0, City Desk brings you more power than ever before. You can replace complicated, repetitive, formatting chores by defining and using macros. You can use macros for creating headers, footers, forms, your company motto, your customer's mailing information, headlines, banners and much more. Once you have defined a macro, it may be recalled with a simple embedded command.

Check out these graphics!

This entire page was created with City Desk 2.0 and printed on a Linotronic typesetting machine at 2400 DPI. Proofs were done on a NEC LC-890 PostScript printer. The graphics started out as 16 color, 640 X 400, IFF images. City Desk 2.0 does an incredible job gray-scaling any color IFF image with up to 64 colors. Ham images that are reduced to 64 colors look great.

No matter what other DTP programs you own, you need City Desk 2.0.

Check Out These Powerful Features

- No copy protection (works great with a hard drive!)
- New rewritten manual with complete index
- Overscan capabilities (PAL version available)
- Comes with 1 program disk and 3 data disks

Text Features

- Full-screen text editor with cut and paste simplicity
- Over 50 powerful embedded typesetting commands
- Powerful macros to customize embedded commands
- Text flow around irregularly shaped graphics
- Supports basic WordPerfect commands
- Supports basic Scribble! commands
- Automatic kerning of letter pairs in PostScript
- Widow and Orphan control
- Auto hyphenation routines for alignment of text

Graphics Features

- Completely new graphics editor with brush gadget
- Switch between resolutions, including 640 X 400
- Screened boxes 5% to 100%
- New gray scale support for imported graphics
- X & Y coordinates in graphics editor for accuracy
- Load, create and save brushes in the graphics editor

Layout Features

- Coordinate display for accuracy
- Powerful sizing tool for speed and accuracy
- Copy tool which works with text and graphics
- Object tool outlines text or graphics easily
- Stamp objects to background temporarily
- Multiple pages on screen at one time
- Open as many pages as your memory allows
- Default even/odd pages for speed and control
- Delete, insert and move pages easily
- Append to a project to combine two documents
- Supports Viking Moniterm monitor

Print Features

- Custom HP LaserJet+ printer driver for 300 DPI
- Laser utility to download softfonts to the HP
- Custom PostScript driver for 2400 DPI
- Supports 24-pin printers
- 1.3 printer drivers for fast dot-matrix output
- Print multiple copies easily from within City Desk
- Fonts included for use with 24-pin printers
- Softfonts included for use with the HP LaserJet+
- Supports all 35 PostScript v47 fonts in any size

Suggested Retail Price: \$199 Upgrade Policy: \$35 plus the original program disk and manual.
Please add \$2.00 shipping inside the USA, \$5.00 out of country. Texas residents should add 8% sales tax.

If you're ever in Texas, check out our retail locations. We maintain the largest inventory in Houston and have low prices every day.

Houston Area: 9896 S.W. Freeway @ Bissonnet • (713) 988-2818
Clear Lake Area: 2402-F Bay Area @Space Center Dr. • (713) 486-5630

MICROSEARCH
9896 S.W. Freeway • Houston, Texas, 77074 (713) 988-2818

CLI, and to explain the differences between the CLI and shell, define DOS terminology, and teach you to use the most common AmigaDOS commands.

Mastering CLI 2.0

Graphic Expressions

Box 110028

Nutley, NJ 07110

201/661-0408

\$39.95

No special requirements.

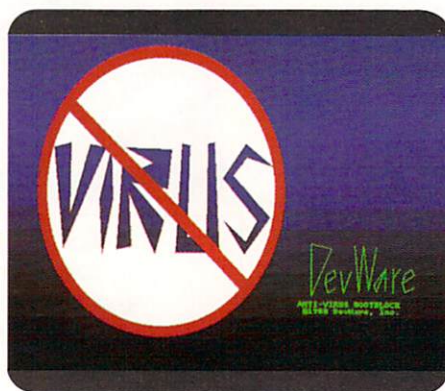
ANTI-VIRUS

*A new recruit in the war
on disk disease.*

By Louis R. Wallace

HUT, TWO, THREE, four! Marching in to join the struggle against ferocious Amiga viruses comes Anti-Virus from DevWare. This non-copy-protected package contains a troop of utilities that seek out and destroy viruses.

The first weapon in Anti-Virus's arsenal is vCat, essentially a database you use to store duplicates of boot blocks from copy-protected software. To enter a boot block into the catalog, you simply select a drive, insert the disk containing the custom block into that drive, and click on the Save gadget. If a cataloged disk later becomes infected, you can



Seeing this screen can ease your mind.

restore the boot block simply by clicking on vCat's Restore gadget. Unlike the similar database function in Discovery Software's VIP, you cannot alphabetize

or otherwise organize your program entries.

SUITING UP FOR BATTLE

The vInstall option comes in two forms: one within vCat and a stand-alone version you can access without entering vCat. Both overwrite the boot block of your bootable applications disk with a custom block. When you boot with a vInstall-protected disk, the colorful, hi-res Anti-Virus logo appears on the screen instantly (within a second). If a treated disk does not display the screen when you boot, or if the graphic is altered, you can consider the disk suspect. When you detect a virus with vInstall, vReboot will remove it from memory and initiate a warm boot from the inserted Workbench disk.

The manual makes it clear that vInstall should not be used with any software that uses a custom boot block as a part of copy protection; doing so will ruin the disk. The documentation also warns that unless you are certain a disk's boot block is standard, you should store it in vCat before treating it with vInstall.

Another vCat feature is View, which ►

Sensational Service With *Sprite Technology*

AMIGA HARDWARE

Amiga 500	\$579
Amiga 2000	CALL
Amiga 2000HD	CALL
Amiga 2500	CALL
Commodore PC40	CALL
1084S Monitor	\$309
501 Ram Card	\$159
Amiga 1010 Drive	\$209
3.5" Internal Floppy	\$129
3.5" External Floppy	\$149
2088 Bridgeboard	\$499
2286 Bridgeboard	\$1125
2090A SCSI Board	\$325
2058 2MB RAM	\$679
DigiView Gold	\$149
GenOne	\$499
GVP 40Q Hardcard	\$799
GVP 25mhz 030 Accelerator	CALL
Microbotics Starboards	\$CALL
MicroWay Flicker Fixer	\$489
Mimetics Framebuffer (Ok)	\$489
MultiTech v.32 9600 Modem	\$699
Sony CPD-1303 Multisync	\$525
Supra 2400 Modem	\$149

AMIGA SOFTWARE

Amax Mac Emulator	\$125
Animate 3D	\$94
Broadcast Titler	\$189
Capone	\$25
Deluxe Paint III	CALL
Deluxe Photo Lab	\$98
Diga!	\$45
Digi-Paint	\$44
Dragon's Lair	\$39
Draw 2000	\$175
Dungeon Master	\$25
Excellence!	\$189
F/A-18 Interceptor	\$33
Falcon	\$32
Fantavision	\$38
Heroes of the Lance	\$26
Intro CAD	\$54
Interfont	\$75
Jet	\$32
Lord's of the Rising Sun	\$32
LV Backup	\$44
Math Wizard	\$35
Maxiplan 500	\$94
Maxiplan Plus	\$135

Modeller 3D	\$63
Pagestream	\$125
Photon Paint 2.0	\$94
Pixmate	\$43
Professional Draw	\$123
Professional Page	\$246
Project 'D'	\$32
Pro Video Plus	\$195
Prowrite 2.0	\$78
Rocket Ranger	\$32
Roger Rabbit	\$30
Quarterback	\$44
Sculpt3D	\$72
Star Wars	\$25
Test Drive II	\$28
The Works Platinum	\$156
Three Stooges	\$32
Turbo Silver	\$125
TV Sports Football	\$32
TV Text	\$63
Videoscape 3D	\$125
Videotitler	\$93
Word Perfect	\$199
Workbench 1.3 Update	\$19
Zoetrope	\$88

Amiga Music Pack

SHS-10 Yamaha Keyboard, MIDI Interface & Cable, Deluxe Music Construction Set	\$169
Pack w/ computer buy	\$149

Music Ware

AudioMaster II	\$62
Deluxe Music	\$65
Dr.T's Midi Rec Studio	\$44
Dr.T's DX Heaven	\$94
M for Amiga	\$152
Perfect Sound	\$64
Pro MIDI Studio	\$126
Sonix	\$50
Texture	\$94

Amiga Accessories

Beach Towel	\$16
Golf Cap - grey or white	\$8
Golf Shirt - L or XL	\$20
Golf Umbrella - 48"	\$22
Sweatshirt - white L or XL	\$16

Starter Software Kit

Money Mentor, TV Text, Arkanoid, Text Craft Plus, Graphics Studio	\$196
---	-------

Amiga is a registered trademark of Commodore Business Machines, INC. Prices subject to change without notice. Please inquire about our policies & procedures.



Sprite Technology

ORDERS: **800-634-9315**

INQUIRIES: **404-535-8806**

9-6 MON-FRI
D.S.T.
Gainesville, Ga.
30501

PROCESSOR ACCELERATOR

The Processor Accelerator is THE affordable "speed-up" product for the Amiga. The creative engineers at CMI have designed this board incorporating a 16MHZ 68000 processor that replaces the existing 8MHZ processor. The end result is doubled processor instruction speeds from 7.16MHZ to 14.32MHZ. What this means to the Amiga user is an increase in total system throughput of up to 40%.

The Processor Accelerator comes with a Math FPU socket that is either 68881 or 68882 compatible, and works with software packages that use the IEEE libraries under Workbench 1.3 recognizing the FPU as a peripheral device.

Unlike some 68020 boards, the Processor Accelerator is **completely software compatible** and comes with a software switch that allows you to slow the board down to standard 7.16MHZ.

To allow for maximized hardware compatibility and optimal reliability, multi-layer board design is used.

PA500 or PA2000.....\$250.00

PA1000.....\$280.00*

*Additional Commodore compatible Kickstart ROM socket feature that allows Kickstart in ROM plus 256K additional memory.

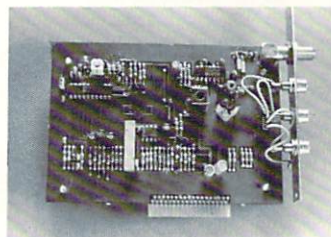
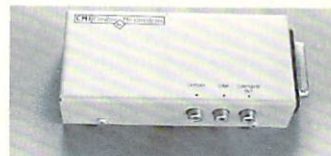
NOTE: When purchasing a speed-up board for your Amiga be sure to understand the REAL differences in performance among the product choices. Not all 68020 boards will be faster for all applications. FOR EXAMPLE, the cheaper 68020 boards (which run at 7.16MHZ) provide substantially faster increases only when used with the very few software packages specifically written for 68020/68881-ONLY after the additional purchase of an MC68881 FPU. However, all applications will run faster with a Processor Accelerator at 14.32MHZ.

Video Interfaces

Composite, Chroma, Luma.....\$79.95

Composite, Chroma, Luma, RF..\$99.95

internal version available

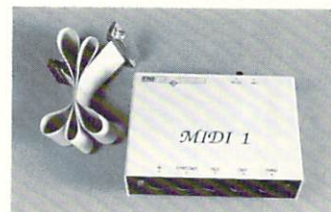


MIDI 1 Musical Interface

In, 2 Outs, Thru, Sync Out, Pass Thru

\$79.95

internal version available



NEW CMInet THE AppleTalk™-Amiga networking solution

MultiPort Board

Amiga 2000 \$199.95

Amiga 500/1000 \$249.95

Optional Hard Disk/SCSI Interface

At the heart of the CMInet solution is the remarkably affordable CMInet-MultiPort Board. This two serial, one parallel port plug in card comes complete with built in high-speed serial networking support.

FEATURES:

- DB9 RS-232 Serial port
- Apple™ Macintosh™ hardware compatible 8 pin DIN RS-422 Serial port
- DB25 Parallel Printer port
- Optional SCSI interface with auto-boot ROM and all necessary utilities

SOFTWARE:

- Serial and Parallel Device: Compatible with new Amiga multi-port standard

AppleTalk and Macintosh are Trademarks of Apple

Utilities \$79.95

The CMInet-Utilities disk gives you all you need to implement a basic networking system and then some. The enhanced device drivers allow shared access to printers, modems etc.. They also have built in print spooler compatibility.

SOFTWARE:

CMInet Device: Uses RS-422 port for networking with Apple Talk Link Access Protocol.

CMInet Manager: Uses AppleTalk Protocols for high speed networking.

-serial device: Enhanced to support shared resources over CMInet

-parallel device: Enhanced to support shared resources over CMInet and print spooling

-CMInet Chat Exchange: Allows multiple users to chat and exchange files over CMInet.

-CMInet Monitor Utility that allows a CMInet node to monitor net traffic. Useful for debugging the network.

-CMInet Documentation Everything you need to write your own CMInet applications

displays on screen the contents of the boot blocks in your choice of drives: df0:, df1:, df2:, or df3:. Two more functions let you compare (by bytes) a boot block you have stored in vCat with one on a loaded disk, and install the standard AmigaDOS boot block on a disk in a specified drive.

A utility called vCheck runs in the background while you work, monitoring all the disks you place in your drives. If you load a disk containing a non-standard boot block other than a DevWare custom block, a warning requester appears.

A VIRUS OF A DIFFERENT COLOR

As I was finishing my review, an update of Anti-Virus arrived. The revision includes vTrojan, a specialty database that addresses so-called "trojan horse" viruses, including the IRQ virus, that attack specific programs. vTrojan lets you store information (including file size) describing the characteristics of a file, a group of files, or an entire floppy disk or hard disk. After you have stored this information, you can later recall it and have vTrojan compare stored data with

that on a disk to determine whether files have been altered. A change indicates possible viral infection.

The vTrojan utility offers two levels of file inspection. The first is fast, but not thorough. The second is far more comprehensive, but is considerably slower, requiring approximately five minutes to analyze a full floppy disk. After vTrojan has analyzed the two sets of files, the program reports, on screen, the differences found. (I have been unable to obtain an IRQ virus, so I could not test this aspect of the utility.)

ASSEMBLING YOUR BATTALION

Although Anti-Virus offers a money-back guarantee against all viruses, I am convinced that it should not be your only defense. There are shortcomings. For one, the documentation states that boot-block viruses are the only strain your Amiga is susceptible to, and as is evidenced by the addition of vTrojan, that is no longer true. Also, vCheck does not identify viruses, it simply determines whether a boot block is standard. Both VIP and the public-domain program VirusX are much more discerning, being

able to recognize the specific virus (including the IRQ virus) that your disk is infected with.

While vTrojan offers protection against the newest styles of software terrorism, it is very cumbersome to use. The vInstall option is good in that it lets you know very quickly if your disk has been hit by a boot-block virus. It is, however, no better in that regard—or any other—than VirusX. In fact, VirusX is more effective than both vInstall and vCheck combined.

The best strategy for protection against viruses is still to regularly update your startup-sequence with the latest version of VirusX and to catalog your vulnerable boot blocks. vCat addresses the latter issue; if you do not already own a boot-block database program, you should consider Anti-Virus.

Anti-Virus

DevWare

10474 Rancho Carmel Dr.
Rancho Bernardo, CA 92128
619/673-0759
\$39.95

No special requirements. ■

MICIP
Associates, Inc.
New York's Premier
COMMODORE
AMIGA
2000
Specialists

NEW!
Graphic Design System I
AMIGA A2000HD COMPUTER
1MB RAM
40 MB Hard Drive
Keyboard & Mouse
New Tek Color Digitizing System
Panasonic WV1410
Copy Stand, Digi-Droid Unit
Digitizing and Painting Software
AProDraw Drawing Tablet
HP PaintJet

Prices from \$5,799.95
Ask about our Video Production Systems
Call or Write for Special Catalogs

(718) 956-9000
FAX (718) 956-9028
28-21 Astoria Blvd., Astoria, NY 11102-1933
authorized AMIGA dealer and distributor

Circle 162 on Reader Service card.

AMIGA Hardware Software

Lowest prices on all
hardware

**Call for latest
prices & availability**

Word Perfect only
\$185

RSISystems
1-800-752-RSIS
1-800-752-7747

**20% RESTOCKING FEE ON ALL ITEMS
RETURNED**

Circle 154 on Reader Service card.

Which
hard disks
for
AMIGA?

Curious?

Any
(IBM compatible)
with our A.L.F.!
(Amiga Loads Faster)

Safer with CHECKDRIVE.
Faster with FASTFILE-SYSTEM.
50% more MB with RLL-CONTROLLER.
More economic – even defective
hard disks can be used.

For more information:
Perspect Technics Inc.
P.O. Box 670, Station H
Montreal, Quebec H3G 2M6
Fax: (514) 876-2869

Circle 230 on Reader Service card.

HOURS:
8 AM to 7 PM Monday - Friday
8 AM to 4 PM Saturday
Call on Sunday

THE SOFTWARE SHOP

International Showcase

for

Products in the AMIGA Marketplace

Visa and MasterCard Accepted



Circle 134 on Reader Service card.

ACCESSORIES

A-B Switch cable	\$35.00
A/B/C/D Switchbox	63.00
Amiga mouse	67.00
Boing optical mouse	109.00
C-View Composite	45.00
C-View Monitor	45.00
Coppy Stand	65.00
Disk head cleaner	7.00
Ece Midi 1000	52.00
Ece Midi 2000	52.00
Epyx 500JX	15.00
Ergo Joystick	17.00
Freedom stick	65.00
Gender changer	19.00
Gender changer NT	22.00
Gravis Joystick	37.00
Infrared mouse	175.00
MD120 3.5 Disk holder	29.00
MD60 disk holder	26.00
MD64 disk holder	26.00
Modern cable A1000	15.00
Modern cable A2000/500	15.00
Mouse holder	6.00
Mouse master	29.00
Mouse pad	9.00
Multisync cable 1-102M/F	24.00
Okimate black ribbon	5.00
Okimate color ribbon	8.00
Phaser gun	49.00
Power strip 6 outlets	17.00
Printer cable 2000/500	15.00
Printer cable A1000	15.00
Quick shot Joystick	15.00
Ribbon panasonic all	10.00
Stick stick	8.00
Stick stick	7.00
Star NX black ribbon	8.00
Star NX color ribbon	12.00
Tilt and swivel stand	21.00
Time saver	55.00
Trackball 1button	39.00
Trackball 2button/mouse	39.00
Xerox 4020 fluid	25.00
Xerox 4020 500/sheet	25.00
Xerox 4020 ink	29.00

EXPANSION MEMORY CARDS

1mg Spirit A500/A1000	\$444
1.5mg Spirit A500/A1000	\$559
1mg progressive A500	\$415
8UP 2mg populated	\$499
8UP 4mg populated	\$799
8UP 8mg populated	\$1439

HARDDRIVES HARDCARDS SPECIAL SAVE

40mg Quantum 11ms w/hardframe 2000	\$769
60mg Quantum 11ms w/hardframe 2000	\$1099
48mg Quantum 40ms w/hardframe 2000	\$639
63mg Seagate 40ms 5 1/4 drive	\$499
48mg Seagate 40ms 3 1/2 drive	\$419
42mg Seagate 40ms 5 1/4 drive	\$459
32mg Seagate 40ms 3 1/2 drive	\$332

DIGI-VIEW GOLD	
or 3.0 WV1410	
Iris lens w/lens	\$414 \$399
Internal 3.5 disk drive	
A2000/A2500	
WV1410 Camera w/lens	\$94
SUPER SPECIALS	
5 1/4 Disk drive	\$207
now available	
	\$179

CREATIVE PRODUCTIVITY

Analytic art	\$39.00
Gizmoz enhanced	45.00
Intellotype	35.00
Magellan	129.00
Master type	25.00
Mavis beacon typing	33.00
Your family tree	32.00

DATABASE MANAGEMENT

Acquisition	\$189.00
Data retrieve	51.00
Data Retrieve Prof.	189.00
Dbman	125.00
Micro base	24.00
Micro fiche filer	64.00
Microfiche filer plus	115.00
Organize	49.00
Software file II gs	79.00
Super base	52.00
Superbase pers. II	98.00
Superbase Pro 3.0	229.00
Superbase professional	189.00

DISKETTES

Fuji 3.5" ds/dd color disks	\$19.00
Sony 3.5" ds/dd	19.00
TDK 3.5" ds/dd disks	19.00
Centech 3.5" ds/dd disks	19.00
Centech 5.25" ds/hd disks	29.00

DESKTOP PUBLISHING

Citydesk	\$97.00
Citydesk companion	15.00
Citydesk companion II	15.00
Page stream	129.00
Page setter	97.00
Professional Draw	129.00
Professional page	249.00
Publisher plus	69.00
Shakespeare	129.00

EDUCATION

Adventure of sinbad	\$32.00
Aesop's fables	32.00
All about America	35.00
Animal kingdom	32.00
Decimal dungeon	32.00
Discovery game math	25.00
Discovery game spell	25.00
First letters and words	35.00
First shapes	35.00
Fraction action	32.00
Grade manager	59.00
Great states	25.00
Kid Talk	35.00
Kinderama	32.00
Kwik speak spanish	19.00
Learning curve	52.00
Link word French	22.00
Link word German	22.00
Link word Italian	22.00
Link word Russian	22.00
Link word Spanish	22.00
Math talk	35.00
Math talk fraction	35.00
Math wizard	35.00
Perfect score	51.00
Quiz master	51.00
Read & rhyme	32.00
Read-a-rama	32.00
Spell bound	25.00
Speller bee	35.00
Tales from Arabia	32.00
Wordmaster	32.00

A500/A2000/A2500 PERIPHERALS

A1010 drive 3.5 extnl.	\$199.00
A1084S stereo monitor	325.00
A2000 HD 40mg28ms w/cont.2299.00	
A2056 2mg 8mg ram board	669.00
A20620/2mg 32bit	1449.00
A20620/4mg 32bit Mem	2169.00
A2090A HD controller	310.00
A2300 Genlock	299.00
A2500 HD40mg28ms3mgMem	
63020/68881	3599.00
Amiga 2000 Cpu	1599.00
Amiga 500 CPU	599.00
AT Bridge card A2286	1179.00
Bridge card A2000	555.00
Memory Expansion 2mg A2000	
	619.00
Memory expansion 512k A500	165.00

COMMUNICATIONS

Atalk III	\$65.00
Atredas profess.BBS	96.00
BBS pc	96.00
Diga	50.00
Online	44.00

HARDDRIVES AND CARDS

150mg SCSI drv. 5.25" 28ms A2000	\$1239.00
20mg 3.5" SCSI drv. 65ms A2000	365.00
32mg 3.5" SCSI drv. 28ms A2000	609.00
32mg 3.5" SCSI drv. 40ms A2000	409.00
42mg 5.25" SCSI drv. 40ms A2000	465.00
42mg ST506 5.25" 40ms A2000	399.00
48mg 3.5" SCSI drv. 28ms A2000	629.00
48mg 3.5" SCSI drv. 40ms A2000	475.00
65mg 5.25" SCSI drv. 40ms A2000	514.00
CLTD -Controller A1000	240.00
CLTD -Controller A500	240.00
GVP-40mg Hardcard 19ms A2000	799.00
GVP-Controller 1mg Ok	269.00
GVP-Controller 2mg Ok	289.00
Hardframe 2000	245.00
Overdrive Controller A2000	171.00
Quantum drive 40mg 11ms acc.	539.00
Quantum drive 80mg 11ms acc.	849.00
Supra 2000 HD controller	222.00
Vault - 20mg	590.00
Vault - 30mg	699.00

PROGRAMMING LANGUAGES

A/C basic	\$129.00
A/C fortran	195.00
Algebra II	33.00
Arexx	33.00
Assem pro	65.00
Aztec C developer	195.00
Aztec C professional	129.00
Aztec complete devel.sys.	315.00
Benchmark C library	60.00
Benchmark iff library	97.00
Benchmark modula 2	128.00
Benchmark simplified	62.00
Cape 68k	59.00
Critic's Choice	159.00
Devpac Ed/Assem/link/debg.	66.00
Dissassembler	45.00
GFA basic 3.0	95.00
Innovatools #1	54.00
Lattice C	132.00
Lattice C++	379.00
Lattice C professional	249.00
Lattice development system 5.0	199.00
Library's source	197.00
Macro assembler	65.00
Metacomco lisp	131.00
Metacomco pascal	95.00
Metacomco shell	40.00
Metascope debugger	65.00
Power windows v2.5	58.00
Pro Basic	124.00
Publishers choice	130.00
Source level debugger	50.00
The power system pecan	93.00
The professional pecan	89.00
The Works Platinum	164.00
True basic	65.00
W. shell	33.00

PRINTERS

1091i Panasonic printer	\$224.00
Alps Allegro 24 PIN	399.00
Epson Apex 80	205.00
NEC LC890 laser PS	3395.00
Okimate 20 color prt.	145.00
Plug'n print	85.00
Star nx rainbow	259.00
Xerox 4020	1295.00
Xerox 4020 starter kit	159.00
HP Paint jet	CALL

SOUND & MUSICS

4-op deluxe	\$97.00
Audio master	37.00
Audio master II	67.00
Back songbook	27.00
Copyst II	179.00
D-50	99.00
Deluxe music	69.00
Dr drums	20.00
Dr keys	20.00
Dr T's Keyboard	160.00
Dr T's Midi recording studio	45.00
Dx heaver	97.00
Dynamic drums	52.00
Dynamic studio	129.00
Future sound A500/A2000	92.00
Hot cool jazz	18.00
Hot licks	32.00
Instant music	32.00
Matrix 6	97.00
Midi Magic	99.00
Mt-32	97.00
Music student	38.00
Pro sound designer	125.00
Promidi studio	129.00
Rock & roll	21.00
Sonix	51.00
Sound sampler	78.00
Studio magic	65.00
Synthia	59.00
Texture	97.00
Utilities 2(mimatics)	43.00

SPREADSHEETS

Analyze 2.0	\$95.00
Haical	32.00
Maxiplan 500	95.00
Maxiplan plus	125.00
Super plan	97.00
VIP Professional	65.00

UTILITIES

B.A.D disk optimizer	\$32.00
C.B. Tree	65.00
Celebrity cook book	20.00
Custom screens	45.00
Cygnused Professional	65.00
Disk 2 disk	33.00
Disk master	33.00
Disk mechanic	59.00
Dos 1.3	22.00
Dos 2 dos	35.00
Doug's math aquarium	52.00
Encore	45.00
Ez backup	33.00
Facc II	22.00
Fine print	33.00
Fleet check	33.00
Flip side	37.00
Gold spell	32.00
Gorm	27.00
Grabbit	19.00
Laser scripts	28.00
Laser up: fonts	26.00
Laser up: plot	33.00
Laser up: print	58.00
Laser up: utilities	26.00
Lex check	33.00
Lv backup	32.00
Multi preferences	20.00
Nag Plus Schedule Assist	52.00
Pro script	32.00
Project D	32.00
Promis spelling	32.00
Quarterback	45.00
Raw copy 1.3	39.00
Superback	52.00
Sys font	22.00
Tai plan	22.00
Tdi editor sources	30.00
Tdi examples	15.00
Tdi grid access	30.00
Tdi kermi	19.00
Text ed plus	52.00
V.I.P.	32.00

FONTS

Asha's fonts	\$57.00
Calligrapher	63.00
Fancy 3d fonts	52.00
Font set I	22.00
Inter font	78.00
Kara fonts color	50.00
Lion fonts	56.00
Masterpiece fonts	159.00
News letter fonts	29.00
Profonts I Prof.	23.00
Profonts II decorative	23.00
Studio font	29.00

GRAPHICS & VIDEO

3-Demon	\$69.00
Animate 3-D	99.00
Animate 4D	439.00
Animation editor	39.00
Animation effects	32.00
Animation Flipper	32.00
Animation multipane	58.00
Animation stand	89.00
Animation w/images	89.00
Animator apprentices	185.00
Animation	65.00
Architectural design	23.00
Art gallery I	20.00
Art gallery II	20.00
Art pack I	20.00
Art parts I	20.00
Art parts II	20.00
Award maker plus	32.00
Broadcast Titler	189.00
Butcher	25.00
C light 3d editor	39.00
Calligrapher help	28.00
Chroma Paint	48.00
Color splitters	79.00
Comesetter	65.00
Deluxe paint II	89.00
Deluxe paint III	102.00
Deluxe print II	55.00
Deluxe photo lab	102.00
Deluxe production	137.00
Deluxe video II	89.00
Texture	97.00
Designasaurus	32.00
Digi paint	39.00
Digi paint help	24.00
Digi view	131.00
Director's Toolkit	26.00
Dpaint help	24.00
Exppr paint	65.00
Express paint III	89.00
Forms in flight II	77.00
Future design 3-d	23.00
Graphic studio	35.00
Human design 3-d	23.00
Icon Paint	59.00
Impact	55.00
Interchange	32.00
Invision	109.00
Lights Camera Action	49.00
Microbit paint 3-d	23.00
Modeler 3d	64.00
Movie setter	65.00
Page flipper fx	95.00
Perfect vision	175.00
Photon expansion disk	19.00
Photon paint	65.00
Photon paint 2.0	97.00
Photon paint help	23.00
Photon video cell anim.	97.00
Pixmate	43.00
Print master plus	33.00
Prism	43.00
Pro video plus set I	83.00
Pro video plus set II	83.00
Pro result using dpaint	35.00
Provideo plus	193.00
Sculpt 3-d	64.00
Silver turbo	129.00
The Director	46.00
Turbo silver	129.00
Tv-show	64.00
Tv-text	64.00
Video effects 3d	121.00
Video scape 3-d	120.00
Video titler	95.00
Zoetrope	91.00

WORDPROCESSORS

Becker text	\$92.00
Excellence	179.00
Flow idea processors	63.00
Gold spell II	30.00
Kindwords	65.00
LPD writer	75.00
LPD writer unprotected	83.00
Micro text	22.00
Prowrite v2.0	80.00
Reason	249.00
Text pro	50.00
Word perfect	159.00
Wp library	79.00

ENTERTAINMENT SOFTWARE

We have them all! Over 300 games in stock. Call for your favorite game, and check our low prices.

SHOWROOM: 22 Front Street, Worcester, MA 01614

1-800-752-0050

In Mass. Call....

1-508-756-6452

SALES AND QUOTES (outside Mass.):

1-800-752-0050

SHIPPING AND TECHNICAL SERVICE:



Creative Computers

ORDERS ONLY: **800-872-8882** OUTSIDE CALIF. **213-370-2009** INSIDE CALIF. **213-542-2292** CUSTOMER SERVICE OR ORDER STATUS
VISA, MasterCard, American Express, Discover, International Phone and Mail Orders, Educational, Corporate and Aerospace Purchase Orders Accepted.
4453 Redondo Beach Blvd., Lawndale, CA 90260 Mon.-Sat. 8 a.m.-6 p.m. PST FAX: 213-214-0932

HOT NEW PRODUCTS

VIDEO & AUDIO:

- Forms In Flight II
- Photon Paint II
- Music X
- Caligari
- The Performer
- Movie Setter
- MidVU
- C-Zar
- Comic Fonts
- Pro-Sound Designer
- MIDI Magic
- Zetrop
- Photon Cell Animator

GAMES:

- Double Dragon
- Designasaurus
- Baal
- Trump Castle
- Operation Wolf
- Bubble Bobble
- Rastan
- Dragon's Lair
- TV Sports Football
- Lords of the Rising Sun
- Universal Military Simulator
- Advanced Dungeons & Dragons
- Kingdoms of England
- Hostage
- Test Drive 2

Downhill Challenge

- Rampage
- Evil Garden
- Artic Adventure

BUSINESS PRODUCTIVITY:

- Page Stream
- Works Platinum
- Pen Pal
- Tax Break
- Desktop Budget
- Pro-Net
- Professional DataRetrieve
- Professional Draw
- Aegis Draw 2000
- Superbase Personal 2
- Superplan

EDUCATIONAL:

- My Paint
- Utilities:
- B.A.D. (hot floppy and hard disk accelerator)

HARDWARE:

- INTRUDER ALERT
- AMAC Emulator (Macintosh emulator)
- Spirit Deluxe MIDI
- Vault-30

PLEASE CALL FOR PRICES

SOFTWARE

3-D GRAPHICS	36.13	• AUDIO MASTER II	64.95
3-DEMOM	71.95	• AUTODRAW	31.16
4 X 4 OFF ROAD RACING	32.46	• AWARD MAKER PLUS	19.95
4TH & INCHES CONSTRUCTION	9.95	• AWARD MAKER SPORTS	19.95
4TH AND INCHES	29.24	• AZTEC 68/AM-D	194.95
64 EMULATOR 2, THE	49.95	• AZTEC C PROFESSIONAL	129.95
A-TALK III	25.99	• AZTEC DSK CORK SPEC	36.92
AAARGH!	23.95	• A.A.S. DISK OPTIMIZER	32.48
AC BASIC COMPILER	134.06	• BAAL	22.95
AC FORTRAN	199.00	• BAD CAT	30.25
ACCOUTANT, THE	186.95	• BALANCE OF POWER	34.95
ADRIUM	51.96	• BALANCE OF POWER (BOOK)	25.95
ADVENTURES OF SINBAD	32.46	• BARBARIAN	25.95
AEGIS ANIMATOR	87.95	• BARD'S TALE	35.95
AEGIS DRAW 1.4	52.95	• BARD'S TALE CLUE BOOK	10.95
• AEGIS DRAW 2000	181.95	• BARD'S TALE II	41.95
AESOP'S FABLES	19.95	• BARD'S TALE II CLUE BOOK	10.50
ALGEBRA I	36.95	• BARD'S TALE HINT DISK	13.95
ALGEBRA II	36.95	• BASIC GRAMMER SERIES	19.46
ALIEN FIRES	24.95	• BATTLE SHIP	19.46
ALIEN SYNDROME	32.46	• BBS-PC	62.32
ALL ABOUT AMERICA	38.95	• BECKER TEXT	62.32
ALTERNATE REALITY	27.95	• BENCHMARK C LIBRARY	64.95
		• BENCHMARK IFF LIBRARY	64.95
		• BENCHMARK MODULA-2	129.95
		• BENCHMARK SIMPLE LIBRARY	64.95

MIDGET RACER



HOT NEW ACCELERATOR FOR ALL AMIGAS

- 68020 processor.
- Optional math co-processor up to 33 Mhz 688821
- 50% average speed increase without math co-processor.

\$349.00

ALSO: Sculpt Animate 4D

\$399.95

PACKAGE DEAL

\$979.00

INCLUDES: 1. SCULPT ANIMATE 4D; 2. MIDGET RACER; 3. 68882-20 CO-PROCESSOR; 4. 20 OR 24 Mhz CRYSTAL OSC.

AMIGA DOS EXPRESS	19.95	BETTER DEAD THAN ALIEN	21.95
AMIGA FONTS (NTF)	59.95	BIONIC COMMAND	25.97
ANALYTIC ART-GRAPHICS	37.48	BLACK CAULDRON	28.95
ANALYZE 2.0-Spreadsheet	93.73	BLACK JACK ACADEMY	29.95
ANDROMEDA MISSION	25.95	BLACK LAMP	22.00
ANIMAL KINGDOM	32.46	BLACK SHADOW	22.95
ANIMATE-3D	99.95	BLOCKBUSTER (1 MED VER)	32.46
ANIMATION	62.95	BLOCKBUSTER	32.46
ANIMATION EDITOR	38.95	BOBO	23.36
ANIMATION EFFECTS	32.46	BOOMERANG	32.46
ANIMATION MULTIPLE	32.46	BREACH	25.95
ANIMATION STAND	32.46	BREACH SCENARIO DISK	16.95
ANIMATOR'S APPRENTICE	184.95	BRIDGES 3.0	24.10
ANNALS OF ROME	24.95	BRUSH WORKS	20.95
ANTI-VIRUS	25.95	BRUSH WORKS 2	19.95
ARAZOK'S TOMB	38.95	CAD PARTS FOR INTRUDER	16.50
ARCADE ACTION PACK	34.95	CALCULUS	36.95
• ARENA	32.95	• CALIFORNIA GAMES	32.48
• AREX	32.95	• CALLIGRAPH	84.95
ARKANOID	19.95	• CAPE 68K ASSEMBLER 2.0	58.47
ART COMPANION	19.95		
ART GALLERY FANTASY	23.36		
ART OF CHESS	22.95		
ASHA'S FONTS	58.95		
ASSEMPRO	71.95		
ATREDES (BBS)	97.46		

CAPITALIZATION SERIES	19.46	KAWAI K-1 ED/LIB	92.97
CAPONE	25.95	KAWAI K-5 ED/LIB	92.95
CAPTAIN PIZ	32.46	KCS	154.95
CARRIER COMMAND	30.95	LEXICON ED/LIB	92.95
CASINO FEVER	25.95	MT-32 ED/LIB	92.95
CB TREE PLUS	64.95	MATRIX 5 ED/LIB	92.95
• CEM 008 1.3 WORKBOOK	24.95	• DRAGON'S LAIR	48.50
CELEBRITY COOKBOOK	22.95	DREAM ZONE	32.46
CENTERFOLD SQUARES	19.95	DRUM STUDIO	32.47
• CHIRON 5	25.95	• DUNGEON MASTER	32.46
CHESSMASTER 2000	32.46	DUNGEON MASTER HINT DSK	12.95
CHRONO LITTLE	19.95	DYNAMIC DRUMS	49.95
CITY DESK	33.95	DYNAMIC STUDIO	139.00
CITY DESK ART COMPANION	19.95	DYNAMIC-CAD	299.00
CITY DESK BUNDLE	99.95	EARL WEAVER BASEBALL	34.95
CLIMATE	24.95	EARL WEAVER STATS	12.95
CLIP ART #48 (EA)	12.95	EASY LOANS	24.95
COMBAT COURSE	25.95	EBON STAR	25.96
• COMIC FONTS (NEW & NICE)	50.95	EMERALD MINES	14.95
• COMIC SETTER	64.96	EMETIC SKIMMER	25.95
COMIC SETTER (FUNNY DATA)	22.95	EMPIRE	34.32
COMIC SETTER (SUPERHERO)	22.95	ENCORE	45.95
• COSMIC BOUNCER	19.95	EUROPEAN SCENERY DISK	17.95
CRASH ACADEMY	25.95	EXCELLENCE	159.00
CRAZY GARRET	25.96	EXPLORER	32.47
CRAZY CARS	25.95	EXPRESS COPY	29.95
CROSSWORD CREATOR	34.95	EXPRESS PAINT 3.0	90.95
• CUBEMASTER	8.95	EXTEND	25.95
CUSTOMS SCREENS	43.73	FACE II	21.95
CYBORG ED PROF.	64.95	FAERY TALE ADVENTURE	31.95
DARK CASTLE	25.95	FAERY TALE GUIDEBOOK	7.95
DARK CASTLE	49.95	FALCON	32.46
• DATA RETRIEVE PROF.	211.95	• FAMILY TREE	32.46
DEATH SWOOP	19.95	FANCY 3D FONTS	46.95
DECIMAL DUNGEON	32.46	FANTASYVIEW	42.95
• DEEP SPACE	9.95	FERRARI FORMULA ONE	33.95
DEN 5	25.95	FINAL ASSAULT	32.46
DEFENDER OF THE CROWN	62.32	FINAL MISSION	19.95
DEJA VU	34.95	FIRE PRINT	41.95
DELUXE ART PARTS #1	21.95	FIRE N' FORGET	25.95
DELUXE ART PARTS #2	21.95	FIRE ZONE	23.95
DELUXE HELP CALLIGRAPHER	22.71	FIRE-BRIGADE	32.46
		FIREPOWER	16.95

We carry OVER 100 items
The best NEW products
The LOWEST PRICES

NEW PRODUCTS ARRIVE DAILY.
CALL FOR UNLISTED ITEMS.

DELUXE HELP FOR DIGIPAIN	21.84	FIRST LETTERS & WORDS	33.00
DELUXE HELP FOR PAINT II	21.84	FIRST SHAPES	33.00
DELUXE HELP FOR PHOTON	21.84	FISH	29.95
DELUXE HELP PAGE SETTER	22.95	FLEET CHECK	25.96
DELUXE MAPS	16.95	FLIGHT PATH 237	16.95
DELUXE MUSIC 2.0	69.95	FLIGHT SIMULATOR II	37.46
DELUXE PAINT ART & UTIL	21.95	FLOW	62.32
DELUXE PAINT II	89.95	FONTS AND BORDERS	22.95
DELUXE PHOTO LAB	99.95	FOOTMAN	21.95
DELUXE PRODUCTION TUBES	139.95	• FORMS IN FLIGHT II	184.95
DELUXE VIDEO 1.2	89.95	FOUNDATIONS WAST	33.62
DEMONSTRATOR	21.95	FRACTION ACTION	32.46
DES CARTES	22.95	GALACTIC CONQUERER	29.95
DESIGN DISK	22.74	• GALAXY FIGHT	8.95
ARCH SCULPT or VSCAPE	22.74	GALAXY 2.0	45.46
FUTURE SCULPT or VSCAPE	22.74	GALAXY 3.0 (SCULPT)	45.46
HUMAN SCULPT or VSCAPE	22.74	GAMES, THE WINTER EDITION	32.46
MICROB SCULPT or VSCAPE	22.74	GETTYSBURG	38.95
• DESIGNMASTER	32.46	• GFA BASIC 3.0	98.95
DESKTOP ARTIST	27.46	GOLF	45.95
• DESKTOP BUDGET	45.95	GLOBAL CONQUEROR	27.46
DESTROYER	25.95	GOLD SPELL II	29.95
DEV DISK (ASSORTED UTIL)	7.95	GOLDEN PATH	29.95
DEVELOPERS TOOLKIT	36.95	GOLDRUNNER II	25.95
DISTANT ARMIES	65.95	GOM 3.0 (SOFTWARE ONLY)	27.95
DIGI-PAINT	41.95	GRABBIT	20.95
Digi-View Upgrade	13.95	GRADE MANAGER	38.95
• DIRECTOR'S TOOLKIT	24.95	GRAND SLAM TENNIS	31.25
DIRECTOR, THE	45.95	GRATIS STUDIO	38.95
DISCOVERY EXPANSION DISKS	12.97	GREAT STATES II	25.95
DISCOVERY/MATH	25.00	• GREETING CARDS	32.46
DISCOVERY/SPELL	25.00	GUILD OF THIEVES	30.95
DISCOVERY/TRIVIA	25.00	HAMMEL	25.95
DISCRETE MATHEMATICS	36.95	HARDBALL	28.95
DISK MECHANIC	58.50	HARRIER COMBAT SIMULATOR	32.95
DISK PRO PLUS	18.95	HEAD CRASH	32.46
DISK TO DISK	34.95	HEROES OF LANCE HINT DISK	13.95
DISK WICK	32.46	• HEROES OF THE LANCE	27.95
DISKMASTER	37.95	HISORT BASIC PROF.	103.95
DISK MASTER	29.95	HIT DISK VOL I	32.46
DOCTOR TERM PROFESSIONAL	74.95	HOLE IN TALK	25.99
DOMINOES	16.95	HOLLYWOOD POKER	26.95
DOES TO DOES	37.95	HOME BUILDERS CAD	129.95
• DOUBLE DRAGON	27.95	HOSTAGE	29.95
DOUG'S MATH AQUARIUM	51.95	HOT & COOL JAZZ	21.95
DOUG'S COLOR COMMANDER	19.46	HUNT FOR RED FOOTBOY	34.95
DR. TIPS	92.95	• HYPER	25.99
0-50 ED/LIB	92.95	ICON PAINT	58.95
BACH SONGBOOK	17.95	IMPACT-BUSINESS GRAPHICS	62.46
D-50 ED/LIB	92.95	IMPOSSIBLE MISSION II	32.46
COPYNET	155.38	INTERCHARGE CONVERSION	31.22
C2 CARTRIDGE	51.95	INSTANT TOOLS	62.03
CZ RIDER	92.95	INNOVATIVE MUSIC 1.2	33.00
D-110 ED/LIB	92.95	INTELLITYPE	35.95
D-50 ED/LIB	92.95	INTERCEPTOR	37.95
DR. DRUMS	92.95	INTERCHANGE	29.95
DR. KEYS	17.95	INTERCHANGE OBJECTS #1	16.95
DXT ED/LIB	92.95	INTERCHANGE TSLV MODULE	12.96
EQO-APADE EQO-1	92.95		

INTERFON	75.36	MICROLAWYER	37.95
INTERNATIONAL SOCCER	25.96	• MIDVU	29.95
INTROCAD	49.95	• MISSION CON-BAT	31.16
INVESTOR'S ADVANTAGE	64.95	MODELER 3.0	65.00
• INVISION	99.95	MOLEMAN	39.95
IT'S ONLY ROCK & ROLL	21.95	MONEY MENTOR	64.95
J FORTH	77.96	• MOVIE SETTER	64.95
JET	37.46	MULTI-FORTH	59.95
JET SET FONT SET	32.50	MULTI-PREFS	19.45
JINKER	25.95	MURAL PRINTER	29.95
• JOKER POKER	22.48	MUSIC MOUSE	51.95
KAMPFGRUPPE	41.95	MUSIC STUDENT	37.95
KARA FONTS	54.95	MUSIC STUDIO	34.95
KARATE KID II	25.95	• MY PAINT	32.48
KEY TO C	22.95	NAG PLUS 3.0	49.95
KICK-WORK 1.3	22.95	NEWSLETTER FONTS COLOR	29.95
KIDTALK	27.95	OBELITERATOR	25.95
KIKUGI	18.95	OFFSHORE WARRIOR	25.96
KINDERAMA	32.46	OGRE	32.46
KINDWINDS	64.95	ONLINE 2.0	43.56
KING OF CHICAGO	34.95	OPERATION CLEAN STREETS	25.95

SPECIAL HOT PRODUCT! DELUXE PAINT III . . . \$99.95

KING'S QUEST I	32.95	ORGANIZE	62.32
KING'S QUEST II	32.95	OTG DSM (DISASSEMBLER)	43.95
KING'S QUEST III	32.95	OUT RUN	32.46
KNIGHT ORC	30.95	P O W	25.95
LANCELOT	27.95	PAGE FLIPPER	31.23
LASER UPI FONTS VOL I	31.95	PAGE FLIPPER PLUS F/X	103.95
LASER UPI PLOT 1.2	39.95	• PAGE STREAM	129.95
LASER UPI PRINT 1.2	71.95	PAGESETTER	93.72
LASER UPI UTIL VOL I	31.95	PALADIN	25.95
• LATTICE "C" 5.0 COMPLETE	189.00	PALADIN (QUEST DISK 1)	16.86
LATTICE "C" 5.0	84.00	PCAD PRIMO CIRCUIT LAYOUT	199.95
LAZERSCRIPT	28.10	PCLO+ PRIMO CIRCUIT LAYOUT	36.95
LEADER BOARD DUAL PACK	22.72	PERFECT SCORE	54.95
LEADER BOARD TORNAL DISK	13.95	• PERFORMER (ELAN)	38.95
LEADER BOARD GOLF GAME	27.00	PHANTASIE	27.47
LEARNING CURVE	51.95	PHANTASIE 3	24.95
LEARNING THE ALPHABET	19.46	PHANTASM	22.95
LEATHER GODDESSES	32.46	• PHASAR-FINL MENT	62.48
LEATHERNECK	25.95	PHOTON CELL ANIMATOR	99.95
LEISURE SUIT LARRY	26.40	PHOTON PAINT	64.96
LEXCHECK	41.95	PHOTON PAINT EXP DSK	19.95
LIFE CYCLES AMIGA	19.46	PHOTON PAINT TRANS. CNTR	194.95
LIGHTS! CAMERA! ACTION!	59.95	PHOTOSYNTHESIS	97.95
LINKWORD DUTCH	20.55	PINBALL I.Q.	19.46
LINKWORD FRENCH	20.55	PIRATER PLAGUE	25.96
LINKWORD GERMAN	20.55	PIKEMATE	45.95
		PLANE PROBE	19.95
		PLATOON	29.21
		POKER SOLITAIRE	22.95
		POKER QUEST	32.46
		PORTS OF CALL	29.95
		POWER WINDOWS 2.5	58.47
		POWERSTYX	22.95
		PRE CALCULUS	36.95
		PRESIDENT IS MISSING	25.95
		PRIME TIME	25.95
		PRINTMASTER PLUS	13.23
		PRO MIDI STUDIO	130.95
		• PRO VIDEO PLUS	184.95
		PROBABILITY THEORY	36.95
		• PROFESSIONAL DRAW	129.95
		• PROFESSIONAL PAGE	229.00
		PROJECT D	31.95
		PROMISE: SPELLING CHECKER	34.95
		PROSCRIPT	32.95
		PROWRITE 2.0	78.10
		PUNCTUATION SERIES	19.46
		QUADRILAIEN	19.95
		QUARTERBACK	45.95
		QUESTOR II	32.46
		QUICK MERGE	37.95
		QUICK TETTES	29.95
		QUIZ MASTER	49.95

FORMS IN FLIGHT II



Forms in Flight II (\$79.50)

LINKWORD GREEK	20.55	QUICK MERGE	37.95
LINKWORD ITALIAN	20.55	QUINTETTES	29.95
LINKWORD PORTUGUESE	20.55	QUIZ MASTER	49.95
LINKWORD RUSSIAN	20.55		
LINKWORD SPANISH	20.55		
LINT (SIMPLE)	63.70		
LION'S CALLIGRA FONTS	58.95		
LITTLE RED HEN	19.95		
LOGIC WORKS ADVANCED	189.95		
LOTTERY MAGIC	19.95		
LURKING HORROR	25.95		
M INTELLIGENT MUSIC	142.48		
MAGELLAN	119.00		
MAGICAL MYTHS	32.46		
MAJOR MOTION	25.96		
MANIAX	16.95		
MARAUDE II-DUPLICATION	27.47		
MARBLE MADNESS	33.00		
MASTER NINJA	30.95		
MASTERING CLI	25.95		
MASTERPIECE FONT, 20-DSKS	167.95		
MATCH IT	25.95		
MATH MAGICAL	25.49		
MATH TALK	31.95		
MATH TALK FRACTIONS	26.95		
MATH WIZARD	32.46		
MATH-AND-ART	64.95		
MAVIS BEACON TYPING	27.47		
MAXPLAN 500	93.95		
MAXPLAN PLUS	124.95		
MEAN 18 COURSE DISK	14.96		
MEAN 18 COURSE DISK II	14.95		
MEAN 18 GOLF	22.95		
MEDIALINE FONTS	22.95		
MENACE	19.98		
METACOMO ASSEMBLER	68.95		
METACOMO PASCAL VER 2.0	92.95		
METACOMO SPLIT	92.95		
METACOMO TOOLKIT	34.95		
METASCOPE DEBUGGER	59.95		
MICROFICHE FILER	69.95		



Boing! Mouse

Professional Optical 3-button mouse for your Amiga.

- Optical technology eliminates friction and momentum coefficients for super-precise handling.
- No moving parts for increased reliability.
- Middle button makes it the only mouse compatible with A2024 software and X Windows.
- Compatible with ALL Amiga computers.

SPECIAL PRICE!
LIMITED TIME ONLY! \$99⁹⁵

R.R. A&SOP'S FABLES.....	19.95
RAW COPY 1.3.....	38.95
REACH FOR THE STARS.....	27.95
READ & RHYME.....	31.95
READ-A-RAMA.....	22.45
REALM OF THE WARLOCK.....	22.74
REBEL CHARGE CHICKAMANGA.....	39.95
REEL FISHIN'-GONE FISHIN'.....	30.88
RETURN TO ATLANTIS.....	34.95
ROAD RAIDERS.....	16.21
ROADWARR 2000.....	27.47
ROADWARR EUROPA.....	29.95
ROADWARRS.....	23.95
ROB READER UGLY DUCKLING.....	19.45
ROBBEY.....	16.21
ROCK CHALLENGE.....	25.99
ROCKET RANGER.....	32.46
ROCKFORD.....	23.95
ROMANTIC ENCOUNTER.....	25.95
SAMPLEWARE-DIGITAL.....	16.95
SAMPLEWARE-GRAB BAG.....	16.95
SAMPLEWARE-ORCHESTRAL.....	16.95
SAMPLEWARE-ROCK.....	16.95
SANTA PARADISE & FIUMACCIO.....	19.95
SARAGON III.....	35.95

SUPERBASE.....	93.73
• SUPERBASE PERS. II.....	94.46
• SUPERBASE PROF. 3.....	209.95
• SUPERMAN (EPIC/ARCADE).....	99.95
• SUPERSTAR ICE HOCKEY.....	32.46
• SWORDS OF SODAN.....	32.46
• SYMPHONY SONGS (EACH VOL.).....	15.95
• SYNTHIA.....	59.95
• SYSTEMS MONITOR.....	28.95
• T-SHELL.....	32.46
• TAKE STOCK.....	32.46
• TALES FROM ARABIAN NIGHTS.....	32.46
• TALKING ANIMATOR.....	39.00
• TALKING COLORING BOOK.....	18.95
• TANGLOO.....	25.95
• TARGIS.....	28.95
• TATE FONTS.....	45.95
• TAX BREAK.....	51.95
• TECHNOPOP.....	32.46
• TELE TYPE.....	29.95
• TELE WARS II.....	25.95
• TELEGRAMS.....	23.95
• TERA QUESTOR.....	25.95
• TERRAIN FOR TURBO SILVER.....	19.95
• TERRORPODS.....	25.95

VIDEO VISIONS 2.....	12.95
• VIDEOCASE 3D.....	124.95
• VIDEOCASE 3D.....	99.95
• VIP VIDEOS.....	32.46
• VIRUS (GAMES).....	19.46
• VOCABULARY IMPROVEMENT.....	25.95
• W-SHELL.....	31.95
• WAR & MIDDLE EARTH.....	36.99
• WARLOCK.....	22.71
• WEXTRAS.....	21.95
• WESTERN GAMES.....	31.95
• WHO FRAMED ROGER RABBIT.....	29.95
• WILLOW.....	25.95
• WINDOW PRINT II.....	22.95
• WINTER CHALLENGE.....	19.95
• WINTER GAMES.....	27.46
• WORD MASTER.....	32.46
• WORD PERFECT.....	179.00
• WORD PERFECT LIBRARY.....	84.95
• WORLD CLASS LEADER BOARD.....	25.97
• WORLD GAMES.....	27.46
• WORLD TOUR GOLF.....	27.45
• WRITE 'N FILE.....	59.95
• Y-CAK.....	32.95
• Y-CAK MCKRACKEN.....	29.95
• ZANY GOLF.....	27.95
• ZERO GRAVITY.....	19.46
• ZING KEYS.....	51.95
• ZINGO.....	31.95
• ZIETROPE.....	85.95
• ZOOM.....	21.95
• ZORD TRILOGY.....	47.95
• ZORD SOUNDS VOL. 1.....	21.95
• ZUMA FONTS VOL. 1 THRU 4.....	68.95
• ZYNAPS.....	23.95

NEW FROM CENTAUR: THE SILENT DRIVE \$159

FEATURES: • CSI 3200 • Clickless • Small compact design • Metal case
• Compatible with all Amiga computers • Low power consumption • Hinged dust cover • Drive disable switch • 1-year warranty.
ALSO AVAILABLE: CSI 2200 internal drive for Amiga 2000—100% compatible with same mechanism as Commodore 2010 \$149.00

HARDWARE

SCARY MOUNTAIN SPACE ALIENS.....	25.95
SCENERY DISK #1 EAST COAST.....	18.72
SCENERY DISK #7 EAST COAST.....	18.71
SCHEMATIC CAPTURE.....	19.95
SCRABBLE.....	27.46
SCRIBBLE.....	62.32
SCUPLT 3-D.....	69.95
• SCUPLT ANIMATE 4-D.....	34.95
• SIB: CINNAMARE BEER.....	14.95
• SEASONS AND HOLIDAYS.....	21.95
• SECONDS OUT.....	19.46
• SECURITIES ANALYST.....	49.95
• SEVEN CITIES OF GOLD.....	14.95
• SEX VIKENS.....	25.95
• SHADOW GATE.....	31.95
• SHAKESPEARE.....	146.95
• SHANGHAI-STRATEGY GAME.....	27.46
• SHERLOCK.....	27.00
• SILENT SERVICE.....	25.95
• SINBAD & FALCON.....	34.95
• SKY BLASTER.....	19.95
• SKY CHASE.....	26.95
• SKYFOX II.....	27.45
• SLYNDON.....	14.95
• SMOOTH TALKER.....	33.95
• SNAKE PIT.....	24.95
• SOCIAL STUDIES.....	19.46
• SOFTWOOD FILE 5G.....	78.21
• SOLITAIRE ROYAL.....	22.71
• SONIX (A&S).....	49.95
• SORCERER LORD.....	23.95
• SOUND OASIS.....	64.95
• SOUND LAB.....	209.95
• SOUNDQUEST.....	92.95
• D-10 MASTER.....	92.95
• D-110 MASTER.....	92.95
• D-50 MASTER.....	92.95
• DYT MASTER.....	92.95
• DXT-II MASTER.....	109.95
• ESO/ESO-80 MST.....	92.95
• GENERIC MASTER.....	77.95
• K-1 MASTER.....	92.95
• M-1 MASTER.....	92.95
• M-32 MASTER.....	92.95
• TEXTURE.....	92.95
• TX-802 MASTER.....	92.95
• TX-912 MASTER.....	92.95
• SOUNDCASE PATTERNS SPLAT.....	35.95
• SOUNDCASE UTILITIES I.....	35.95
• SOUNDCASE UTILITIES II.....	42.95
• SOURCE LEVEL DEBUGGER.....	49.96
• SPACE CUTTER.....	19.95
• SPACE HARRIER.....	32.46
• SPACE MATH.....	29.95
• SPACE PORT.....	27.38
• SPACE QUEST II.....	32.46
• SPACE RACER.....	19.46
• SPACE SCHOOL SIMULATOR.....	22.95
• SPACE STATION OBLIVION.....	32.46
• SPACEQUEST.....	33.00
• SPELLBOUND.....	25.95
• SPELLER BEE.....	31.25
• SPELLING IMPROVEMENT.....	25.95
• STAR WARS EMPIRE STRIKES.....	30.25
• STARFLEET I.....	29.95
• STARGLIDER.....	30.95
• • STARGLIDER II.....	25.95
• STARRAY.....	19.95
• STELLAR CONFLICT.....	28.95
• STELLAR.....	25.95
• STOCK MARKET-THE GAME.....	16.95
• STRIP POKER.....	27.46
• STRIP POKER DATA M4.....	12.95
• STRIP POKER DATA M5.....	12.95
• STRIP POKER II.....	25.95
• STUDIO FONTS V1 (COLOR).....	29.95
• STUDIO MAGIC.....	64.95
• SUB BATTLE.....	24.95
• SUMMER CHALLENGE.....	16.95
• SUPERBACK.....	51.95

68020-12 CPU/PROC.....	170.00
68030-16/20 CPU/PROC.....	570.00
68881 CRYSTAL DISC 16MHZ.....	5.00
68881-16 MATH COPROC.....	300.00
68881-20 MATH COPROC.....	300.00
68882-20 MATH COPROC.....	500.00
68882-25 MATH COPROC.....	620.00
ALCOTIN SAMPLER 500/2000.....	89.95



GVP GREAT VALLEY PRODUCTS

For Amiga 2000:
IMPACT HC/45—48 MB 28ms Hard Card 799.00
IMPACT HC/40Q—42 MB 11ms Hard Card 799.00
IMPACT HC/80Q—84 MB 11ms Hard Card 1199.00
For Amiga 500:
IMPACT A500-SCSI/HD20—20 MB HD 749.00
IMPACT A500-SCSI/HD45—45 MB HD 995.00
IMPACT A500-SCSI/HD40Q—42 MB
11ms High-Speed Hard Drive 1049.00
IMPACT A500-SCSI/HD80Q—84 MB
11ms High-Speed Hard Drive 1449.00
Quantum 805, 84 MB 11ms 3.5" HD 995.00
Shock mounted, 64KB cache (for 11ms SCSI interface).
Compatible with IMPACT or A2090 boards.
Quantum 405—42 MB version of above drive 599.00

THUNDERBOY.....	22.95
TIME & MAGIC.....	26.95
TIME BANDITS.....	21.95
TOO CADDY.....	32.46
• TOWER TOPPLER.....	32.46
• TRACERS.....	22.95
• TRANSCONTINENTAL RAILROAD.....	25.95
• TRANSPORT.....	22.95
• TRIANGO.....	29.95
• TRIGONOMETRY.....	36.95
• TRINITY.....	25.95
• TRUE BASIC.....	68.95
• TRUE BASIC ARITHMETIC.....	45.95
• TRUE BASIC TRUE STAT.....	32.46
• TRUMP CASTLE.....	25.95
• TURBO PRINT.....	32.95
• TURBO SILVER 3.0.....	189.95
• TV SHOW.....	64.95
• TV SPORTS FOOTBALL.....	34.95
• TV TEXT.....	62.32
• TWILIGHTS RANSOM.....	19.95
• TXED PLUS.....	51.95
• ULTIMA III.....	28.95
• ULTIMA IV.....	38.96
• ULTRA DOS.....	37.95
• UNS CIVIL WAR DATA DISK.....	12.95
• UNS VIETNAM DATA DISK.....	12.95
• UNCLE D CON SOUND TRATION.....	25.97
• UNINITED.....	34.95
• • UNIVERSAL MILITARY SIMULT.....	32.46
• VAMPIRE'S EMPIRE.....	29.95
• FRANKENSTEIN.....	189.95
• FUTURE SOUND A500.....	93.95
• VIDEO VEGAS.....	24.10
• VIDEO VISIONS 1.....	12.95

AMAS MIDI SAMPLER.....	109.95
AMIGEN GENLOCK.....	149.00
AMPLIFIED SPEAKERS 2X50 W.....	84.95
APRO DRAW 12X12 NO CURSOR.....	464.95
APRO DRAW 12X12 W/CURSOR.....	499.95
• B&B OPTICAL MOUSE.....	99.95
• CA-880 FLOPPY DRIVE.....	149.00
• CBM A2300 INT GENLOCK 2000.....	CALL
• CBM A520 COMPOS ADAP 500.....	49.95
• • CBM DOS 1.3 ROM.....	39.95
• CLTD TIMESEVER.....	57.95
• • CMU MIDI (EXT).....	92.78
• COLOR SPLITTER.....	79.95
• CPS 500-POWER SUPPLY A500.....	74.95
• CSA DRAGSTRIP RAM ACCEL.....	723.45
• CSA FASTRACK 68020 ACCEL.....	905.45
• CSI 2200 INT DRIVE A2000.....	149.00
• CSI 3200 AMIGA EXT FLOPPY.....	159.00
• DELUXE MIDI INTERFACE.....	59.95
• DESKJET 128K RAM CART.....	117.95
• DESKJET PRINTER (300 DPI).....	749.00
• • DIO NEW BRD A500/A2000.....	149.00
• DIGI-VIEW.....	143.95
• EASYL 500 TABLET.....	369.00
• EASYL 2000 TABLET.....	369.00
• ECE MIDI 500/2000.....	48.95
• ECE MIDI 1000.....	48.95
• ESCORT 48 MB HD DR A500.....	879.00
• ESCORT 48 MB HD DR A1000.....	859.00
• • FLICKER FIXER (HARDWARE).....	479.00
• FRANKENSTEIN.....	539.95
• FUTURE SOUND A500.....	93.95
• FUTURE SOUND-AUDIOSAMPLER.....	142.20
• GEN ONE GENLOCK.....	739.00
• GOMF 3.0 W/BUTTON.....	49.95
• GVP A2000 AUTOBOOT EPROM.....	29.95
• GVP A500 RAM/ROM MODULE.....	69.95
• HURRICANE 68030 ADAP BRD.....	300.00
• HURRICANE A1000 ACCEL BRD.....	350.00
• HURRICANE A1000 MEM BRD.....	540.00
• HURRICANE A2000 ACCEL BRD.....	540.00
• HURRICANE A2000 MEM BRD.....	540.00
• IMPRINT.....	399.00
• • INTRUDER ALERT.....	124.02
• LASERJET II-D PRINTER.....	2995.00
• LASERJET 2 PRINTER.....	1749.00
• LASERJET 2 RAM 1 MB.....	419.95
• LENS, 16 MM, NO IRIS F1.6.....	21.85
• LENS, 16 MM, W/IRIS F1.6.....	66.25
• LIGHT PEN.....	97.95
• LIVE 500.....	289.00
• LIVE 1000.....	270.00
• • LIVE 2000.....	349.00
• MAGNI 4004 GENLOCK.....	1595.00
• MICROBIT 4 X POP-SIMM BRD.....	74.50
• MICROBIT 8-UP RAM BRD.....	145.00

M.A.S.T. PRODUCTS

MINIMEGS: Expandable, external FAST RAM (up to 2-MB), low power—available for Amiga 500 or 2000
• MINIMEG 512K \$249
• MINIMEG 1 MB \$299
• MINIMEG 2 MB \$749
TINY TIGER: Low cost, high performance, SCSI hard drives for all Amigas—complete—nothing else to buy—
• TINY TIGER 10 MB \$629 (Quantum) \$799
• TINY TIGER 80 MB \$1129
UNIDRIVE \$159
TWIN DRIVE \$269 (special price/limited time only)

DESKJET STAND/ORGANIZER.....	84.95
DESKJET TMS RMN 8 & 10 PT.....	79.95
DESKJET TMS RMN ASCII.....	104.95
DIGI DROID.....	69.95
DISK FILE 30.....	7.95
DISK FILE 80.....	19.95
DUST COVER FOR A500.....	8.95
DUST COVER FOR A2000.....	11.95
DUST COVER, A1000 W/MON.....	13.95
EPXY 500K JOYSTICK.....	14.95
ERGO STICK.....	17.95
FLICKER MASTER.....	13.95
FLOPPY WALLEY.....	7.95
FOUR PLAYER ADAPTER.....	11.95
• FUJI DISKETTES.....	19.95
• GAME PLAY COMPACT DISK.....	12.95
• GENDER BENDER (DIGI-VIEW).....	20.95
• KEYBOARD SKIN A2000.....	19.95
• KEYBOARD SKIN A500.....	19.95
• KEYBOARD SKIN A1000.....	19.95
• KRAFT MAZEMASTER JOYSTICK.....	9.95
• LASERJET 2 TONER CART.....	104.00
• LASERJET 2 8.5 X 14 TRAY.....	134.95
• LASERJET 2 COPIER FTS.....	144.50
• LASERJET 2 ENVELOPE TRAY.....	79.95
• LASERJET 2 LASER CNTRL SW.....	117.95
• LASERJET 2 PLOTTER SOFTW.....	117.95
• LASERJET 20 ENVELOPE TRAY.....	279.95
• LIGHT GUN.....	48.95
• MICHTRON DISK FOLDER.....	10.95
• • MIDI MAGIC.....	97.95
• MIND LIGHT 7.....	164.95
• MOUSE COVER W/GLASSES.....	5.95
• MOUSE MATS.....	6.95
• MOUSE WASH.....	6.95
• PAINTJET BLACK CART.....	23.60
• PAINTJET COLOR CART.....	29.10
• PANASONIC WV1410 CAMERA.....	225.00
• PANASONIC WV1500 CAMERA.....	320.00
• PEOPLE METER BIO FEEDBACK.....	39.95
• PERFECT SOUND DIGITIZER.....	67.95
• PERFECT VISION.....	169.95
• PRO RAM A2000 2/8 MB.....	699.00
• PRO SOUND DESIGNER.....	119.95
• PROCESSOR ACCEL CMI.....	159.00
• PROGEN.....	399.00
• QUANTUM 40 MB DRIVE 11MS.....	599.00
• QUANTUM 80 MB DRIVE 11MS.....	995.00
• • ROLLAND MT-32 TONE MOD.....	549.00
• RUGGEDWRITER HP PRINTER.....	1395.00
• SOUND SAMPLER.....	86.95
• SPIRIT 0 MB FOR A1000.....	249.00
• SPIRIT DELUXE MIDI.....	214.95
• STAR NX1000 PRINTER.....	199.00
• STAR NX1000 RAINBOW.....	279.95
• STARBOARD 2 SCSI MOD.....	100.00
• STARBOARD 2 UPPER DECK.....	80.00
• STARBOARD 2/ASIO OK.....	300.00
• STARBOARD 2/AT1000 OK.....	250.00
• STARBOARD S82000 ADAPTER.....	42.00
• STEREO SOUND SAMPLER STRV.....	87.95
• SUPERSEN.....	992.00
• SUPRA 2400 MODEM.....	149.00
• SUPRA DRIVE 20 MEG A500.....	699.00
• SUPRA DRIVE 20 MEG A1000.....	699.00
• SUPRA DRIVE 30 MEG A500.....	799.00
• SUPRA DRIVE 30 MEG A1000.....	799.00
• TOOL BOX, ESCORT FOR A500.....	170.00
• TRUMP CARD SCSI CNTR 2000.....	168.96
• • TWIN DRIVES EXT 3.5" FDD.....	289.00
• UNIDRIVE 1.5 EXT DRIVE.....	158.00
• VAULT-30 HARD DRIVE 30 MB.....	CALL
• V1 500 VIDEO INTERFACE.....	59.95
• V1 500 VIDEO/RF MOD.....	69.95
• V1 2000 VIDEO INTERFACE.....	69.95
• V1 2000 VIDEO/RF MOD.....	79.95
• X-SPEC 30.....	99.95
• XEROX 4020 INK JET COLOR.....	1140.00
• XEROX 4020 STARTER KIT.....	156.00

PROGRAMMERS BOX:

LATTICE C 5.0.....	\$195.00
LATTICE C++.....	\$345.00
AREXX.....	\$ 32.95
W-SHELL.....	\$ 32.95
GFA BASIC 3.0.....	\$ 90.95

RUGGED W. 16KB +4 FONTS.....	124.95
• SONY DISKETTES, 5.25.....	22.95
• SONY DISK 10 PACK.....	20.95
• TAC-2 JOYSTICK.....	10.95
• TEAK-TECH 120 DISKHOLDER.....	32.95
• TEAK-TECH 60 DISKHOLDER.....	27.95
• TRACKBALL (2 BUTTON MOUSE).....	39.95
• TRANSVECTOR 1000.....	6.95
• TRANSVECTOR 2500.....	41.95
• WINNER JOYSTICK.....	14.95
• XEROX 4020 4-PACK INK.....	19.95

FREE SHIPPING!

CREATIVE COMPUTERS is both a mail order company with a store's support and three store showrooms with mail order prices. Visit one of our showrooms today. You'll be amazed!

3 RETAIL SHOWROOM LOCATIONS TO SERVE YOU

SANTA MONICA & WESTSIDE: 318 Wilshire Blvd., Santa Monica, CA 90401. Tues.-Sat. 11-7 p.m./Sun. 11-5 p.m./Phone: 213-394-7779

LAWDALE & SOUTH BAY: 4453 Redondo Beach Blvd., Lawndale, CA 90260. Mon.-Sat. 11-7 p.m./Phone: 213-542-2292

VENTURA, OXNARD & SANTA BARBARA: 2112 E. Thompson Dr., Ventura, CA 93001. Tues.-Sat. 11-7 p.m./Sun. 12-5 p.m./Phone: 805-652-0325



THE CREATIVE COMPUTERS ADVANTAGE:

- Authorized Amiga Dealer
- The largest dealer of Amiga products in the World
- Three store locations means excellent support
- Amiga-specific—unlike the competition, we don't claim being Amiga specific while selling other brands under another business name
- Authorized service center
- Uniform low pricing and largest selection, no hidden costs or catches
-

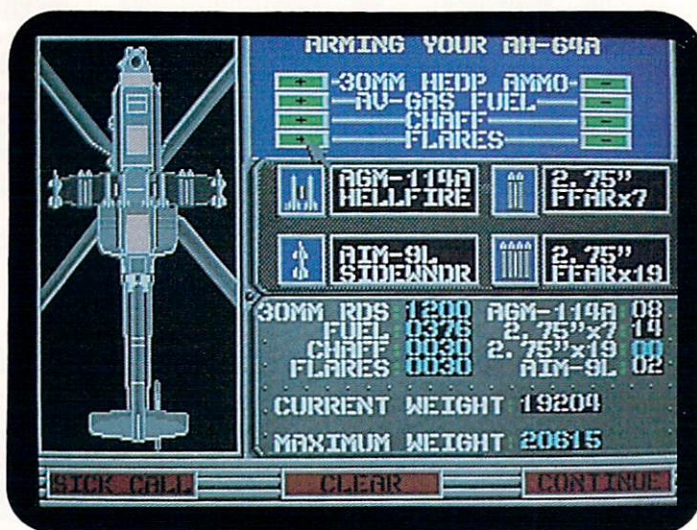
WHAT'S NEW?

You'll need a long extension cord this summer if you want a tan—these products cannot be ignored.

Compiled by Jan Jackson

WHIRLYBIRD WITH A VENGEANCE

HELLFIRE AND sidewinder missiles, folding fin aerial rockets, and a 30mm cannon round out your arsenal in **Gunship**, a 3-D flight-simulation game. You fly documented missions in Southeast Asia, Central America, the Middle East, and Western Europe in an AH-64 Apache—the U.S. Army's attack helicopter. For \$54.95, the game offers multilevel challenges as well as commendations and promotions for successful tours. Mission headquarters is Micro-Prose, 180 Lakefront Dr., Hunt Valley, MD 21030, 301/771-1151. Reader service number 526.



Stop them dead in their tracks.

CHANNELING

WITH **IDS MULTIBOARD** (\$349), you can create your own bulletin board system. Users could communicate privately or teleconference in any mix on 16 public and 16 private channels, access electronic mail and over 40 file libraries and message bases, use a word processor or share private communications on line on your BBS. You can customize your BBS' pull-down menus with MenuMaker, a built-in tool. You can assign individual access privileges to each user for functions such as read,

write, upload and download. IDS MultiBoard provides 535 security levels, with instant carrier loss recovery, baud rate detection and an optional call-back security function. All sysop maintenance functions are integrated and performed automatically. Contact Inter-Core Development Systems, 7 Dover Hill Dr., Nesconset, NY 11767, 516/361-8628. Reader service number 505.

Comports (\$295), a multi-channel serial communications board, features two channels connected on external male connectors, one 25- and one 15-pin, and six channels on two internal connectors. The

RS-232C and the RS-411 drivers and receivers are standard DTE. The A2000 board is auto-configured with up to eight channels per board providing 32 channels that can support IDS MultiBoard. The baud rate is selectable up to 57.6K. Contact Amigo Business Computers, 192 Laurel Road, East Northport, NY 11731, 516/757-7234. Reader service number 506.

ABSOLUTE POWER

HOW WOULD YOU like to have complete control over a municipality? With **Simcity**, you can build your own or choose one of eight cities on the verge of disaster. The game's scenarios include: San Francisco, 1906, just before the great quake; Tokyo, 1957, before a monster attack; and Boston, 2010, just before a nuclear meltdown. You do the planning and zoning. If you must destroy to have a good time, wipe out your city through terrorism, financial mismanagement, or natural disaster. Simcity retails for \$49.95. Take over by calling Maxis Software, 953 Mountain View Dr., Suite 113, Lafayette, CA 94549, 415/376-6434. Reader service number 501.

SEE THE LIGHT

USE **LIGHTBOX** (\$189) to mimic the light table used in conventional animation. You will be able to see your drawings as they progress, as though you were using translucent paper. The program writes standard IFF files and lets you work on any drawing in a sequence at any time. R & DL Productions has the particulars. Contact them at 11-24 46th Ave. #2A, Long Island City, NY 11101, 718/392-4090. Reader service number 519. ►

ESTABLISHED
1968

MONTGOMERY GRANT

AMIGA
WORLD
6/89

OUTSIDE USA CALL
(718)692-0071

FOR CUSTOMER SERVICE
Call: Mon-Fri, 9:30AM-4:30PM
(718)692-1148

Retail Outlet, Penn Station, Main Concourse
(Beneath Madison Square Garden) NYC, N.Y., 10001
Store Hours: Mon-Thurs, 8:30-8/Fri, 8:30-6:30/Sat, CLOSED/
Sun, 9:30AM-7PM

FOR ORDERS & INFORMATION CALL TOLL FREE

1-800-759-6565

OR WRITE TO:

Montgomery Grant
Mail Order Dept.
P.O. Box 58 Brooklyn, NY, 11230

FAX NO. 7186923372
TELEX 422132 MGRANT

ORDER HOURS: Monday-Friday, 9:00am-7:00pm / Saturday - CLOSED / Sunday, 9:30am-6pm
NO SURCHARGE FOR CREDIT CARD ORDERS / WE INVITE CORPORATE & EDUCATIONAL CUSTOMERS
CORPORATE LEASING AVAILABLE

COMMODORE
AMIGA

500

Amiga 500 w/512K RAM
Built-in 3.5" Disk Drive
Mouse

\$529

AMIGA 500 W/1084S
& 1010 DISK DRIVE
\$949



COMMODORE
AMIGA

500

Amiga 500 w/512K RAM
Built-in 3.5" Disk Drive
Mouse

COMPLETE WITH:
1084S RGB COLOR
MONITOR

\$799

All Amiga
Products Come
Complete With
Commodore Amiga
USA Warranty!!

COMMODORE
AMIGA

2000

Keyboard
1MB Expandable to 9MB
Built-in 3.5" Disk Drive

\$1359



COMMODORE
AMIGA

2000

Keyboard
1MB Expandable to 9MB
Built-in 3.5" Disk Drive

COMPLETE WITH:
1084S RGB
COLOR MONITOR

\$1629

AMIGA 500

RGB COLOR PACKAGE

Amiga 500 w/512K RAM
Built-in 3.5" Disk Drive
RGB Color Monitor
Mouse
FREE Software

\$729

AMIGA
AMIGA PERIPHERALS

A-1010 DISK DRIVE.....\$159
A-501 EXPANSION MODULE IN STOCK
A-1084S RGB MONITOR.....\$279
A-1680 MODEM.....\$99.95
A-2300 GENLOCK.....\$279
A-2088 B BRIDGE CARD.....\$479
NEW A-2286D AT
BRIDGE CARD.....\$1029
ALL OTHER AMIGA PERIPHERALS
& ACCESSORIES IN STOCK!

AMIGA
2000

RGB COLOR PACKAGE

A-2000 Computer w/Keyboard
3.5" Disk Drive
RGB Color Monitor
FREE Mouse & Software

\$1559

AMIGA
AMIGA 2000 HD

1MB Ram Built-in 3.5" Disk
Drive 40MB Hard Drive
Keyboard Mouse System
Software Amiga Basic

\$1999

PRINTERS

STAR
NX-1000.....\$169.95
NX-1000.....\$299.95
RAINBOW.....\$219.95
NX-2400.....\$299.95
NX-1000C.....\$179.95
NX-1000C.....\$179.95
RAINBOW.....\$229.95

PANASONIC
10801-II.....\$159.95
10921.....\$299.95
KXP-1524.....\$499.95
KXP-1595.....\$409.95
KXP-1124.....\$314.95
KXP-1180.....\$184.95
KXP-1191.....\$249.95

DICONIX 150
PRINTER FOR
LAPTOPS
\$299.95

PANASONIC
KXP-4450
LASER
\$1399

CITIZEN
MSP-15E.....\$329.95
MSP-40.....\$289.95
MSP-45.....\$369.95
MSP-50.....\$349.95
TRIBUTE
124.....\$389.95
TRIBUTE
224.....\$569.95

NEC
P2200.....\$349.95
P5200.....\$499.95
P5300.....\$669.95

HP LASERJET SERIES II
\$1629

1 MB EXPANDER.....\$349
2MB EXPANDER.....\$599
HP DESKJET PRINTER.....\$689
HP LASERJET IID.....\$2895

20MB, 30MB, 40MB, 50MB
60MB, 80MB HARD DRIVES
FOR AMIGA-500 & AMIGA 2000
IN STOCK!

AMIGA 2500

3MB RAM Built-in 3.5" Disk Drive 40MB
Hard Drive Keyboard Mouse Amiga
Basic System Software
\$3149

commodore
C-64C
C-64/C
COMPUTER
\$119

C-64/C DELUXE PACKAGE
COMMODORE C-64/C COMPUTER
COMMODORE 1541-C DISK DRIVE
COMMODORE COLOR PRINTER
12" MONITOR
GEOS SOFTWARE PROGRAM

\$349

SAME PACKAGE
W/COLOR MONITOR
C-1541 II DISK DRIVE
\$459
\$159.95
SPECIAL!!

commodore
C-128 D
C-128 D
COMPUTER
\$399

C-128D DELUXE PACKAGE
C/128D COMPUTER W/BUILT-IN
DISK DRIVE
COMMODORE COLOR PRINTER
12" MONITOR

\$469

SAME PKG. W/1902 RGB
COLOR MONITOR
C-1571 DISK DRIVE
\$219
C-1581 DISK DRIVE
\$179

GO 64
USE YOUR COMMODORE 64 PROGRAMS
ON YOUR AMIGA 500 & 2000 COMPUTER
\$49.95

SANYO PR-3000 A
LETTER QUALITY DAISY
WHEEL PRINTER
\$59.95

AMIGA SOFTWARE

Flight Simulator II.....\$189
WORD PERFECT/AMIGA.....\$159
EXCELLENCE.....\$159
DELUXE PAINT II.....\$99
DELUXE VIDEO.....\$79
AEGIS SONIX.....\$69
AEGIS DIGA.....\$69
AEGIS VIDEOSCAPE 3D.....\$139
AEGIS DRAW 2000.....\$169
NEWTEK DIGI VIEW.....\$139
NEWTEK DIGI PAINT.....\$49
AEGIS DELUXE VIDEO.....\$99

commodore COLT

IBM XT COMPATIBLE
640K 4.77-7 16MHz
2 Floppy Disk Drives
12" High Resolution
Mono Monitor
All Hook-Up Cables &
Adapters
MS DOS & GW Basic
\$669

PC10-1

IBM XT COMPATIBLE
PACKAGE
512K RAM
360K Floppy Drive
12" Monitor
Serial & Parallel Ports
Keyboard
Box of 10 Diskettes
MS DOS/GW Basic
\$499



RUSH SERVICE AVAILABLE-CALL FOR DETAILS

Certified Check, Bank Check, approved P.O.'s, Money Orders, Visa, Mastercard, Am-Ex, Diners Club, Carte Blanche, & COD's accepted. No additional surcharge for Credit Card orders. Non-certified checks must wait 4-6 weeks for clearance. N.Y. residents add applicable sales tax. Prices and availability subject to change without notice. Not responsible for typographical errors. Return of defective merchandise must have return authorization number or returns will not be accepted. IBM PC/XT are registered trademarks of International Business Machines Corp. Please add 5% shipping and handling (minimum \$6.00). APO/FPO orders please add 10% shipping & handling. All APO/FPO are shipped first class priority air. All orders can be shipped Air Express-call for details. D.C.A. #00233

SYNCHRONEITY

WITH **PAGESYNC**, you can create timed interaction between Amiga-based graphics and professional-quality audio. You can control both an animation based upon MIDI signals and can cause a cartoon

to literally play a MIDI instrument. Get back to the drawing board with Mindware, 110 Dunlop St., Box 22158, Barrie, Ontario, Canada L4M 5R3, 705/737-5998. Reader service number 516.



Accompany your animations on a keyboard.

VIVA LA INTERACTIVE VIDEO

ONE PICTURE IS worth a thousand words, says MichTron with **VIVA** (Visually Interfaced Video Authoring). This program will let you set up an interactive situation for training, simulations, technical support, guided tours, or entertainment. You can get this authoring language in three versions. **VIVA Presents** (\$49.95) contains 18 icons for

creating demos and simple presentations. The next step up, **VIVA** (\$99.95), contains all available icon scripting groups except record keeping and artificial intelligence, which are included in **VIVA Professional** (\$599.95). Details are available from MichTron, 576 S. Telegraph, Pontiac, MI 48053, 313/334-5700. Reader service number 518.

COMMUNICATION FROM WITHIN

CONNECT YOUR A2000 with your favorite telecommunication network via **Supramodem 2400zi**, a half-card internal modem that supports asynchronous operation at 2400, 1200, and 300 baud rates. You can create custom configurations and store them in the modem's nonvolatile memory. The unit is compatible with the Hayes AT command set as well as Bell 103/

212A and CCITT V.21/V.22bis protocols. Features include autoanswer and autodial, and an adjustable-volume speaker for monitoring call progress. For \$179.95, you also get a telephone cable, a quick-reference card, and free on-line time for some popular services. Your connection is Supra Corp., 1133 Commercial Way, Albany, OR 97321, 503/967-9075. Reader service number 504.

CURE FOR BOREDOM

THESE BOARDS ARE only out for one thing: speed. The **Hurricane 2800** is both an autobooting SCSI disc controller and synchronous 28MHz memory board. The card includes math coprocessor options up to 33MHz. The companion M2000 memory board is socketed for up to four megabytes of 32-bit fast memory. A complete configuration including a 68030 processor, 25MHz 68882 math coprocessor, and two megabytes of 32-bit memory retails for \$3300. Contact Ronin Research and Development Inc., PO Box 1093, Alameda, CA 94501, 415/769-9325. Reader service number 525.

Great Valley Products' 68030 coprocessors come in four flavors. **Impact A2000-030/16** with a 16MHz clock retails for \$849; the 25MHz **Impact A2000-030/25** is \$999; **Impact A2000-030 RAM/4** (\$1999) is installed with a four-megabyte 32-bit wide DRAM daughterboard expandable for eight megs, and the **Impact A2000-882/25** comes with a 25MHz 68882 math coprocessor for \$689. The boards' asynchronous design allows them to run independently of your system's clock. Call Great Valley Products, 225 Plank Ave., Paoli, PA 19301, 215/889-9411. Reader service number 522.

LILLIPUTIAN PERIPHERALS

FOR BIG COMPUTING in a small space, try **Micromegs** (\$199), a scaled-down alternative to Commodore's A501 internal RAM expander. The board features one-megabit DRAM technology that reduces the length of the on-board conductors, four CMOS RAM chips, and a battery-backed clock.

For a ready-to-go SCSI hard-drive system, take a look at **Tiny Tiger Performance**

Plus. It's available in four capacities: 45 (\$899), 90 (\$1199), 135 (\$1469), 180 (\$1649) and features a 24K ring buffer and a 20 millisecond access time. The **Tiny Tiger Budget Series** includes a 30-megabyte Seagate ST138 for \$659 and a 50-megabyte Seagate ST157 for \$799. Race to the phone to call M.A.S.T., 3881 Benatar Way, Chico, CA 95928, 916/342-6278. Reader service number 512.

POSITIVELY PROGRESSIVE

PROGRESSIVE Peripherals wants you to expand your A2000. Try the **Megaboard 2000** with 256K chips and one or two megabytes of fast RAM. A Megaboard 2000 with two megabytes of RAM retails for \$599.95.

If you're in the market for a hard drive, **The Vault** is available from 20 to 120 megabytes for your A500 or A2000. A 20-megabyte Vault with control-

ler, software and cables retails for \$599.95.

For real-time digitizing, the **FrameGrabber 256** (\$699.95) lets you display 256 shades of gray and up to 16 images on the screen simultaneously.

The **Baud Bandit** (\$49.95) telecommunications program supports an unlimited number of phone books of 200 entries each. Direct your inquiries to Progressive Peripherals & Software, 464 Kalamath St., Denver, CO 80204, 303/825-4144. Reader service number 523. ►



InterComputing Inc.

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

In business since 1984; Amiga support since 1985
Member of Dallas Better Business Bureau

We are a service oriented business
offering discount prices

FAX: 1-214-660-3695

Customer Service and Order Status call: 1-214-988-3500

COMPLETE PRODUCT LISTING AVAILABLE

Call toll free: **1-800-622-9177**

HARDWARE

MEMORY EXPANSION

Increase your Amiga's memory capacity! More and more titles are requiring 1 megabyte just to run!

The new enhanced chip set from Commodore is right around the corner which will allow graphics data to access up to 1 megabyte of memory. So let's face it, 1 megabyte of memory is clearly going to become the standard in the very near future.

Here are a few products that already require expanded memory in order to run on your Amiga:

Deluxe Paint III	Broadcast Titler
Photon Paint 2.0	X-CAD
Dragon's Lair	Professional Draw

FOR THE AMIGA 500:

A501 with 512k and clock	179.95
M501 with 512k and clock	179.95
Starboard II 0k	239.75
Starboard II 512k	399.75
Starboard II 1Meg	599.75
Starboard II 2Meg	795.00

FOR THE AMIGA 1000:

Starboard II 0k	239.75
Starboard II 512k	399.75
Starboard II 1Meg	599.75
Starboard II 2Meg	795.00

FOR THE AMIGA 2000:

8 UP Dip Memory Cards	
With 0k	145.75
With 2Meg	595.00
With 4Meg	995.00
With 6Meg	1395.00

Drives

FData-10 ext. Drive	139.75	HardFrame SCSI Card	239.75
FData-20 ext. TwinDrive	249.75	Starboard SCSI Module	97.75
int. 3.5" Drive A2000 only	145.75	Quantum 80MB Drive	875.00
AIR-Drive	169.75	Supra 20MB HDisk	649.00
Cal.Access CA-880	169.75	Supra 30MB HDisk	749.00

Video / Graphics

A-Pro Draw 12x12	499.75
Amiga Live A 500	299.75
Amiga Live A 2000	329.75
Amiga Live A 1000	219.75
Color Splitter	85.75
Digi View 3.0 NTSC	139.75
Easyl 500	299.75
Easyl 1000	349.00
Easyl 2000	349.00
Flicker Fixer	499.00
Mitsubishi Multisync Monitors for use with FlickerFixer :	
13" Screen size	549.75
16" Screen size	1349.75
20" Screen size	1895.75
Panasonic 1410 Kit	249.75
Perfect Vision	175.00
Super Gen	699.75
X-Specs 3D	97.75

SOFTWARE

Graphics & Video

Aegis Draw 2000	179.75
Animate 3D	99.75
Animation Multiplane	56.75
Animation Apprentice	199.75
Butcher 2.0	21.75
Calligrapher	87.75
Comic Setter	66.75
Deluxe Paint 2.0	94.75
Deluxe Productions	144.75
Director	44.95
Fantavision	39.95
Forms in Flight II	77.75
Interchange	29.75
Intro CAD 2.0	49.75
Lights, Camera, Action	52.75
Modeler 3D	72.50
Pageflippor Plus F/X	99.75
Photon Paint	66.75
Pxmate	49.75
Pro Video Plus	199.75
Sculpt 3D	69.75
Sculpt 4D	399.75
Terrain Disk	19.75
TV Show NTSC/PAL	62.95
TV-Text	62.95
Turbo Silver	129.75
Video Effects 3D	129.75
Video Titler	99.75
Videoscape 3D	119.75
Window Print II	22.75
X-CAD	349.75
Zoetrope	99.75

Miscellaneous

Epyx 500XJ	17.50
Mouse Pad	6.95
Modem Cable A500/2000	9.95
Multifunction Card	69.75
Phasar Gun	46.75
Processor Accelerator	149.50
Sony 3.5" DS/DD Disks	18.75
Supra Modem 2400 baud	
with cable	149.75

Sound / Midi

CMI Midi w/ Sync-Out	69.95
ECE-Midi w/ RS-232 thru	44.75
Future Sound Sampler	129.75
Soundscape Sampler	79.50
Perfect Sound A500/2000	59.75
Perfect Sound A1000	59.75
Midi Cable 5ft	8.75
Midi Cable 8ft color coded	11.95
Midi Gold for A2000 internal	69.95

NEW PRODUCTS

Deluxe Paint III	109.75
Photon Paint 2.0	109.75
Page Stream	139.75
Professional Draw	139.75
GFA Basic 3.0	99.75
"M"	154.75
B.A.D.	32.75
The Works! Platinum Edition	169.95
KCS Level II	229.95
Broadcast Titler	199.95

Music

Audio Master II	69.75
Dr. T's DX-Heaven	99.75
Dr. T's Kawai K1 Libr.	99.75
Dr. T's KCS 1.6	166.75
Dynamic Drums	47.75
Dynamic Studio	129.75
Midi Recording Studio	44.95
Music Mouse	49.75
Sound Quest Casio CZ	84.75
Sound Quest D-110	99.75
Sound Quest D-50	99.75
Sound Quest DX-7	99.75
Sound Quest DX-7 II	117.75
Sound Quest Generic	84.75
Sound Quest MT-32	99.75
Soundsc. Pro Midi Studio	124.75
Synthia	66.75
Texture	99.75

Utilities

Arexx	32.75
Disk Mechanic	56.75
DOS-2-DOS	42.75
EZ-Backup	32.75
Face II	19.75
Project D	32.75
Quarterback	44.95

Programming & Languages

A/C Basic Compiler	129.75
A/C Fortran (AB-Soft)	179.75
Aztec C Developer	199.75
Aztec C Professional	145.75
Aztec Source Level Debug.	59.75

Desktop Publishing

Comic Setter	66.75
Font Set I	24.75
Laserscript	29.75
Newsletter Fonts	29.75
PCM-Fonts Vol.1-3	27.50
Page Setter	89.75
Professional Page	239.75
Shakespeare	149.75
Studio Fonts	29.75
Zuma Fonts 1.2,3,4 each	24.75

Business

BEST Management System	299.75
Cygnus ED	69.50
Excellence	189.75
MaxiPlan 500	99.75
Maxi Plan Plus	129.75
Microfiche Filer II	112.75
Money Mentor 2.0	59.75
Phasar 3.0	66.75
Prowrite 2.0	72.50
Scribble 2.0	57.95
Softwood File II (GS)	79.75
Superbase Personal II	99.75
Superbase Professional	199.75
TexEd Plus	54.75
Wordperfect	197.75

Benchmark Modula-2	134.75
DSM Disassembler	42.75
Lattice 5.0	219.75
Lattice-C ++	395.00
Lint	69.00
MCC-Pascal	79.95
Power Windows 2.5	56.75

Flexible Data Systems

FDATA-20 Disk Drive

Fully compatible with your Amiga system, the FData 20 is very quiet and comes with an extra long cable. It is housed in a sturdy metal case and has it's own external power supply. Twice the storage of single drive units!

ONLY **249.75**

FDATA-10 Disk Drive Still the best price & performance drive for your Amiga
139.75

TRADE UP!

We will trade in your Amiga 500 or 1000 towards a new Amiga 2000

Call for details.

We also have a large selection of

GAMES

Write for our complete catalog.

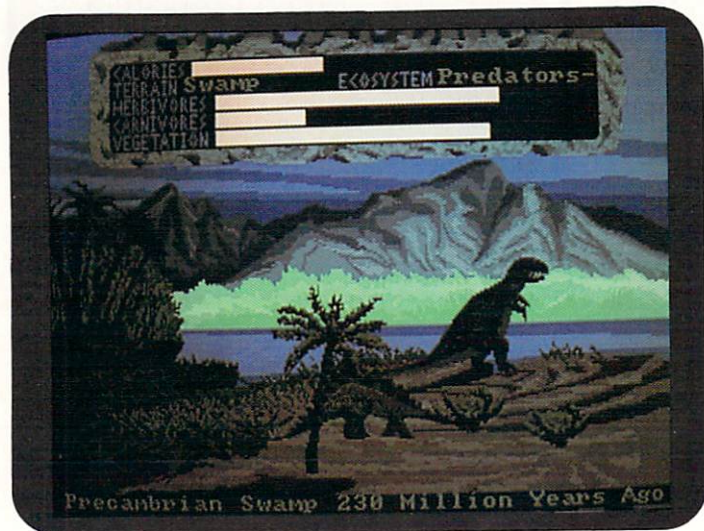
As always we have the most 'customer friendly' terms: S/H \$3.95 in cont. USA; Minimum order is \$30.00; MASTERCARD & VISA with NO credit card fee; in Texas add 7% Sales Tax. We ship to APO addresses, RMA# required on all returns. 18% restocking charge. All prices subject to change without notice.

DINOWARE

WALK THROUGH THE Jurassic forest, Precambrian swamps and the Utah plains with your very own dinosaur.

Designasaurus (\$49.95) lets kids of all ages build a dinosaur and help him survive against starvation and danger-

ous predators. You can also print him out in his natural habitat for posters or T-shirts. Go back in time with Britannica Software, 345 Fourth St., San Francisco, CA 94107, 415/546-1866. Reader service number 520.



Stroll with *Tyrannosaurus rex*.

ALL FOR ONE AND ONE FOR ALL

BUDGETEER WILL HELP you prepare a budget for your home office or small business. Record and chart expenses then print reports or display your wealth in living color with an assortment of graphs, 36 bar charts, and four pie charts. You can load two files

into memory at any time, to compare data. For \$39.95, you get 68 expense and four credit categories. Throw out your pencils and call Prakticon Inc., 27 Hutchings Ct. N.E., Medicine Hat, Alberta, Canada T1C 1G3, 403/526-4765. Reader service number 521.

IF YOU HUM A FEW BARS

EVEN UNACCOMPLISHED, frustrated musicians can make music with **Harmony**. Hum or articulate vowel-based sounds into a microphone, click the mouse button to set the time and meter, and you have composed a new musical creation. Harmony will help you orches-

trate your piece by adding supporting voices. You can assign 8SVX instruments to each track as well, and save your scores in Harmony or SMUS formats. The program retails for \$199.95. Your music professor is Impulse Inc., 6870 Shingle Creek Parkway 112, Minneapolis, MN 55430, 612/566-0221. Reader service number 517.

MAKE SENSE AND LOOK GOOD DOING IT

ELAN PERFORMER curtails the disk swapping and software loading usually involved when displaying imagery from different programs. For \$59, you can access and display graphics and animations in Anim, RIFF, IFF, HAM, and RGB formats in a single presentation. The program features real-time interactive

cutting and splicing capabilities. You can separate animations into their component frames, export them for editing, and then re-compress them in any sequence. Get your act together and call your agent, Elan Design, PO Box 31725, San Francisco, CA 94131, 415/621-8673. Reader service number 507.

GENERAL ASSEMBLY

DEVPAC AMIGA VERSION 2 is the latest release of HiSoft's assembly-language development tool. You get a combined 68000 macro assembler coupled with a full-screen editor, and a disassembler and debugger. A German language

version is available. Devpac Version 2 retails at \$99.95, an upgrade is \$50. HiSoft's (Bedford, UK 0525 718181) U.S. distributor is MichTron, 576 S. Telegraph, Pontiac, MI 48053, 313/334-5700. Reader service number 508.

PICTURE PERFECT

HAMANDEL (\$39.95), a fractal arts program, lets you calculate Mandelbrot Set and Julia Set pictures with up to 256 color shades. Create sequences of up to 100 Mandelbrot Set images with set magnification of 6.66 percent with **AutoMAG**. This cell animator module lets you make animation sequences that use the HAM graphics mode for each individual ILBM standard image. Your images will be compatible with IFF standard techniques for combination with other HAM artwork using paint programs and ray-tracing packages. The AutoMAG can be purchased for \$20 as a stand-alone program for use with HAMandel. You can purchase HAMandel plus the AutoMAG Module for \$59.95 from MegageM, 1903 Adria, Santa Maria, CA 93454, 805/349-1104. Reader service number 509.

MORE IS BETTER

PRICED AT \$299, the **Dual Serial Board** hardware and software combination gives you an integrated, multiple RS-232 serial port and lets you run three or more serial devices simultaneously. This dedicated board has two AT-compatible nine-pin D connectors and occupies a single slot on your A2000 motherboard. For more information, call ASDG, 925 Stewart St., Madison, WI 53713, 608/273-6585. Reader service number 524.

OR ELSE...

YOUR ONLY ADVANTAGE is an overhead view of the action as you control a six-person special-forces team assigned to rescue terrorist-held hostages at an embassy in **Hostage**. The ransom is \$44.95 and instructions are available from Mindscape Inc., 3444 Dundee Rd., Northbrook, IL 60062, 312/480-7667. Reader service number 523. ■

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
- ▼ Instructions for each Order
- ▼ FREE Phone Support

So Easy to Order

- ▼ FREE Membership
- ▼ FREE 800-# for Orders
- ▼ FREE 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.
- ❑ **#23 Monopoly** - Enjoy great graphics and sound while playing three tough computer opponents.
- ❑ **#37 Business Programs** - Included are an address book, an amortization program, a talking mail manager, and a label printer.
- ❑ **#27 Amoeba Invaders** - A better Space Invaders!
- ❑ **#140 Virus Killer** - Everyone needs this! Makes it easy to detect and eliminate known viruses.
- ❑ **#115 Word Processor** - Lots of features.
- ❑ **#134 Applications** - Label maker/printer, grocery list maker, and AMIGazer - a star viewing program.
- ❑ **#142 Q-Bert** - Like the popular arcade version.
- ❑ **#139 Bull Run** - Great Civil War strategy board game, with impressive graphics and sound.

THE BEST OF THE REST

BUSINESS/HOME

- ❑ **#116 Business II** - VC-Spreadsheet, HP-10c calculator, and several diversions for when the boss isn't looking!
- ❑ **#117 Business III** - DataBase, a bunch of great new fonts, RSLClock-great clock utility, AmigaSpell.

LANGUAGES

- ❑ **#9 FORTH** - Two versions of the FORTH programming language.
- ❑ **#50 XLISP** - A version of LISP, the artificial intelligence language. Includes documentation.

COMMUNICATIONS

- ❑ **#4 Communications** - Starter and Aterm are both included. Both run from Workbench or CLI and are comparable to communications packages selling for \$50+. Full control of baud rates, phone directory, all protocols, auto chop of files, and many other extras. Works well with the Avatex 1200 modem and others. Source code included.
- ❑ **#90 Modem Madness!** - Terminals include StarTerm, ATerm, and Kermit. Telecommunication utilities such as Archive are also here. Other types of programs and utilities are also included in the price of admission.

UTILITIES/APPLICATIONS

- ❑ **#60 AmigaBasic** - Two programs that are truly of commercial quality. Cell-Animate and Graphit. Some Deluxe Paint picture files are also included.
- ❑ **#97 Tutorial Disk1** - A disk full of information and programs to instruct Amiga Programmers and users. Several C & ASM source files are included.
- ❑ **#98 Tutorial Disk2** - More of the best of Amiga Information.
- ❑ **#101 Utilities** - Many new utilities like Timeset - a time setting utility and DirCopy-a great copier (very quick), and about a dozen more. Some new fonts are also included on this disk.
- ❑ **#105 Potpourri I** - This disk contains several different kinds of programs, some of the highlights are: PopCLI2-evokes a new CLI window at the press of a button; PSound-sample sound recorder and editor; 3-D Breakout; DiskCat-catalogs and organizes disk files; IconMaker-makes icons for most programs so that they can run from Workbench; FKey-template maker.
- ❑ **#129 Amiga Utilities II** - A hard disk backup; Target-sounds a gunshot whenever the left mouse button is pressed; DPaint Tutor; WinSize-change window size from CLI easily, and lots more.
- ❑ **#130 Videomaker Utilities** - This disk is packed with utilities to make your desktop videos easier to produce and more professional looking.

- ❑ **#133 DOS Helper** - A program designed to help you with the AmigaDOS commands. Can be activated from icon of the CLI. Supports multitasking, so that you can refer to it when you need it. As usual, there are other good programs included on the disk.
- ❑ **#135 Applications II** - Long Movie-plays several IFF pictures in fast succession, creating animation. QuickBase-a mail manager DBase. Persmail-a DataBase for keeping records of friends, family, associates, customers or employees. MORE.
- ❑ **#146 Calendar** - A very good personal calendar for birthdays, holidays, meetings, bills and other events. Excellent graphics. Calendar program also has a diary. Other programs include some graphics and Checkbook.
- ❑ **#150 Textcraft+ Demo** - A demo of a very good word-processing program of high quality. Menu driven. Has a lot of help to show you how. Textcraft+ also has a Speller Check available.

SOUND/MUSIC

- ❑ **#18 Future Sound Demo** - Another great sound demo of digitized sound. Includes the wicked witch of OZ, breaking dishes, sea gulls, car crash, ducks, others.
- ❑ **#30 Super Sounds** - Great digitized sounds from movies like Star Trek, 2001, James Bond movies, Star Wars, and Starman. Is it real or is it the Amiga?!!
- ❑ **#77 Instruments** - Turn your keyboard into 25 different musical instruments.

SLIDE SHOWS

- ❑ **#1 Norman Rockwell** - 17 beautiful digitized Rockwell paintings in this self-running slideshow presentation. You've got to see these!
- ❑ **#55 EA Demo and Polyscope** - More great graphics for your enjoyment.
- ❑ **#67 DPSlide8** - Over 30 slides of all sorts on this self-running slideshow.
- ❑ **#94 Diga-View** - This one shows the digitizing process in stages. Several good pictures are included. Other programs also included.
- ❑ **#95 DigaSlide11** - Another in the great series of slideshows with great artwork. Self-running with over 25 pictures.
- ❑ **#108B Juggler** - Famous demo that shows the beautiful graphics of the Amiga and just how powerful this program is. It is easier to run than 108A, but only has the one demo on it.

GAMES

- ❑ **#38 Basic GrabBag2** - Around 25 programs of various types. Many of these are must-haves. At less than \$20 each, you can't go wrong!
- ❑ **#44 Games3** - More great games including Life, Vegas Slot Machine, Reversi, others.

- ❑ **#52 Basic Games** - Tons of ABasic games - discover some treasures!
- ❑ **#61 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 Missile Command, 2-D Triclops, Cosmo-asteroids clone, BrakeOut, Yatzee, Hack and more.
- ❑ **#121 Backgammon** - A great game from David Addison.
- ❑ **#122 Solitaire** - Two versions by David Addison.
- ❑ **#123 Cribbage** - Take on the computer or a friend.
- ❑ **#124 Milestone** - A great computer version of Miles Bourne by the author of Monopoly for the Amiga, David Addison.
- ❑ **#125 Othello** - A great 3-D version of this popular game.
- ❑ **#128 Space Games** - Cosmoroids (like asteroids) and Gravity Wars highlight this disk just full of games.
- ❑ **#137 Blackjack** - A full-featured game which allows pair-splitting, double-down, etc. Bandit-play the slot machines without going to Vegas!!! More.
- ❑ **#141 Dominoes** - Dominoes game with great graphics. Also Tic Tac Toe, Drawing and Molecules programs.
- ❑ **#147 Jackland/Graphics** - Adventure clue game. Also some great pictures (graphics), a useful utility called Quickbase, and a fun program called Thingies which you will enjoy!!!
- ❑ **#148 Boulder Dash** - Very popular game with excellent graphics and has several challenging levels. This disk is full- It has Othello, Life3 and many useful utilities.
- ❑ **#151 4 in a Row** - A fun, but challenging game you play against the computer. There is an excellent Demo "MandFXP-D3", a utility or 2 and the fun TARGET - A weirdo thingy.

MISCELLANEOUS

- ❑ **#88 Amiga Basic Programs** - Over 50. Games, utilities, applications, entertainment, and finance. Also included is a program that allows you to use IFF files in your Amiga Basic programs.
- ❑ **#119 mCAD** - A full-featured computer-aided design program.
- ❑ **#136 Graphics2** - Border Set-useful for desktop publishing and video, making cards, coupons or menus, and your own artwork. Xicon-allows you to run AmigaDOS commands or programs from Icon.
- ❑ **#144 Christmas Animations** - 10 beautiful scenes and graphics with sound. Great scenes include: Lit Candle, Elves, The Christmas Tree, The Manger, Season's Greetings, Holly Wreath, Chimney Smoke, Church Bells, and Walking Home.
- ❑ **#145 Animations 3** - More Great Animations. 3 very good demos plus 3 workbench pictures and Blobs.

Software Excitement!

P.O. Box 5069 • Central Point, OR 97502

VISA ORDER TODAY MasterCard

1-800-444-5457

GO AMIGO!

THE WORLD'S LARGEST DISTRIBUTOR OF AMIGA™ PRODUCTS

HARDWARE SPECIALS

FEDERAL EXPRESS

GET IT TOMORROW

WITH FEDERAL EXPRESS!

- Order by 1 pm Pacific Time and receive items by 3 pm the next day
- Less than UPS Blue: \$6 for first **two** items, \$3 for each additional
- Some products not eligible (98% **ARE**)
- No CODs with this service
- Immediate backorder notification
- Call for full details
- All other Federal Express services available!

GVP

GREAT VALLEY PRODUCTS

A2000 Hard Cards
42MB: \$799
80MB: \$1239

Other size/brands/models available

TOOL BOX

A2000 Chassis for
your A500 or A1000

In Stock Now!

ATTENTION SHOPPERS!

DON'T FORGET.
GO AMIGO HAS THE BEST PRICES
AS WELL AS THE BEST SERVICE.
WE WILL MEET OR BEAT ANY LEGITIMATE
DEAL ON ANY AMIGA PRODUCT.

HARDWARE... HARDWARE... HARDWARE... HARDWARE

A-SQUARED Live — A1000\$259 Live — A500\$345 Live — A2000Call ACCESS ASSOCIATES Alegra 512KCall AMICORE Transvestor 2500\$44 AMINETICS People Meter\$53 ANAKIN Easy! — A1000\$369 Easy! — A500\$359 Easy! — A2000\$399 APPLIED VISIONS FutureSound (A1000)\$135 Future Sound (A500)\$95 AVATEX 1200e Modem\$85 1200HC Modem\$115 2400 Modem\$199 C. LTD. C View 1 (NTSC)\$39 C View 2 (C/L)\$39 Timesaver (A1000)\$55 CALIFORNIA ACCESS CA-880 3.5" Drive\$159 COMMUNICATION SPECIALTIES Gen OneLowest! CREATIVE MICROSYSTEMS Processor Accelerator (A500/A2000)\$174 (A1000)\$179 Video Interface/RF (A500)Call (A2000)Call CSA Over 30 BoardSale! 68020 BoardsCall Midget RacerHOT DIGITAL CREATIONS SuperGenCall ECE MIDI — A500\$58 MIDI — A1000\$58 MIDI — A2000\$58 EPSON EX-800 w/Color\$499 (Other Models Available) EPYX 500 XJ Joystick\$17 EXPANSION TECHNOLOGIES A1000 Hard Drives: 48MB\$879 32MB\$749	A500 Hard Drives: 48MB\$859 32MB\$729 Escort 1 3.5" Floppy\$149 Tool BoxIn Stock! GO AMIGO! Disk Head Cleaner\$15 30 Disk Case\$10 ImageWriter II CableCall Printer Cable\$20 Modem Cable\$20 Mouse Pad\$10 Sony CablesCall Custom CablesCall GREAT VALLEY PRODUCTS Impact SCSI/RAMCall A2000 Hard CardsCall A500 ProductsCall HAITEK X-Specs 3D\$97 HYPERTEC Deluxe MIDI\$74 INKWELL Light Pen\$99 KETEK Command CenterSale! MAGNI Magni 4000 GenlockIn Stock! M.A.S.T. Unidrive\$169 Twin Drive\$279 MICROBOTICS Starboard II (All Sizes)Call MultiFunction Module\$75 SCSI Module\$103 8 Up (A2000)Call Hard FrameIn Stock! Pop SIMMsCall We have SIM Modules for 8 Up! MICROWAY Flicker Fixer\$469 PAL version available! MIMETICS Amigen Genlock\$149 Audio Digitizer\$85 MIDI Int. (A500/2000)\$45 MOTOROLA 68881 Co-ProcessorsCall Speeds from 12Mhz to 20Mhz NERIKI Neriki GenlockCall OKIDATA Okimate 20 with Plug n' Print\$199	Black Ribbon\$6 Color Ribbon\$7 PACE Carrying Bags for A1000/500/1084Call PACIFIC PERIPHERALS Overdrive\$219 Subsystem 500\$219 Subsystem 500 w/3.5"\$365 PANASONIC WV 1410 Camera/Lens\$239 Variable Iris Lens\$79 1080i PrinterCall 1091i PrinterCall 1124 PrinterCall PHOENIX CPS 500 Power Supply\$84 Sonic Speakers\$89 PRACTICAL SOLUTIONS Mouse Master\$31 PROGRESSIVE PERIPHERALS Frame GrabberCall Pro Gen Genlock\$349 RONIN Hurricanes!Best Price! SAFESKIN Clear Keyboard Covers\$19 SPIRIT TECHNOLOGY 1.5MB for A1000Call Hard Disk InterfacesCall STAR MICRONICS NX1000 Rainbow\$264 SUNRIZE INDUSTRIES Perfect Sound\$69 Perfect Vision\$199 Color SplitterIn Stock! SURFSIDE Master 3A 3.5"\$155 SUPRA 2400 Modem\$154 Hard DrivesCall SYNERGY A500 Hard DrivesCall New Low Prices! TECHNICOVER Cover for A500\$14 Cover for A1000\$17 Cover for A2000\$17 WICO Trackball\$39 VISUAL AURALS Mindlight 7\$178 XEROX 4020 InkJet PrinterCall
--	---	---

ELECTRONIC ARTS SOFTWARE

Aaargh!\$25 Alien Fires\$29 Alternate Reality\$29 Annals of RomeIn Stock! ArturaCall Awesome Arcade Pak\$36 Bard's Tale\$32 Bard's Tale II\$43 Battle Droidz\$26 Black Cauldron\$29 Chessmaster 2000\$30 Chessmaster 2100Soon! Commissioner's DiskCall Cosmic Relief\$27 Deluxe Music\$63 Deluxe Paint II\$84 Deluxe Paint IIISoon! Deluxe PhotoLab\$104 Deluxe Productions\$129 Deluxe Video 1.2\$84 Dinosaur Discovery KitCall Double DragonIn Stock! Earl Weaver Baseball\$35 Empire\$36 Ferrari Formula 1\$36 First Letters and Words\$36	First Shapes\$34 Gettysburg\$42 Global Commander\$29 Heroes of the LanceIn Stock! Hot & Cool Jazz Disk\$19 Hunt For Red October\$36 Instant Music\$32 Instant Music Data\$19 Intellitype\$35 Interceptor\$35 Kampfgruppe\$46 Kid Talk\$34 Lancelot\$29 Leisure Suit Larry\$35 Mad Libs\$16 Marble Madness\$32 Master DetectiveCall Master Ninja\$21 Math Talk\$34 Math Talk Fractions\$34 Mavis Beacon\$33 Phantasia\$31 Police QuestIn Stock! Pub Games\$26 Puzzle StorybookCall Questrom II\$38	Quizam\$25 Reach For The Stars\$33 Rebel ChargeIn Stock! Reel Fish'n\$32 Return To Atlantis\$36 Roadwar 2000\$32 Roadwar Europa\$31 Roadwars\$26 Rockford\$26 Rubicon AllianceCall Scrabble\$19 Seasons & Holidays\$29 Skyfox II\$29 Smooth Talker\$36 Sorcerer\$34 Speller Bee\$34 Thexder\$26 Time & MagicIn Stock! Wizard WarsCall Wrath of Nicodemus\$29 Zany GolfIn Stock! <p>This section includes products from First Byte, SSI, and other companies whose products are distributed by Electronic Arts!</p>
--	--	--

VISIT OUR RETAIL STORE SOON!

NOW SHIPPING BY FED-EX!

ABACUS AssemPro \$72 BeckerText \$114 DataRetrieval \$59 DataRetrieval Professional \$149 TextPro \$59 Amiga Machine Lang. \$24 Amiga Tricks & Tips \$17 Many other books with disks available!	AVANT-GARDE Benchmark Modula-2 \$134 Benchmark C Library \$71 Benchmark IF Library \$71 Benchmark Simplified \$71 BAUVILLE Award Maker Plus In Stock Award Maker Sports Disk \$20 Dream Zone \$31 B.E.S.T. INC. General Ledger \$65 Business Budgeter \$41 Business Mgmt. 2.0 \$319 Business Payroll Call BETHESDA Gridiron In Stock Wayne Gretzky Hockey In Stock BLANK SOFTWARE Sound Lab Amiga \$239 BLUE RIBBON BAKERY Who What Where When \$67 BRITANNICA Designasaurus \$34 BRODERBUND Downhill Challenge \$24 Fantasy Zone \$41 Operation Clean Streets \$28 Sky Chase \$28 Space Racer \$21 BROWN-WAGH Express Paint (New Ver.) Call MidMagic \$98 Pen Pal \$79 Softwood File II sg \$24 Stellar Conflict \$29 TV Show \$74 TV Text \$69 Wordplex \$25 Write and File \$79 Zuma Fonts Call BUENA VISTA Roger Rabbit \$31 BYE BYE BYE Animate 3D Call Sculpt 3D \$37 Sculpt-Animate 4D \$419 Tate Fonts In Stock C.L.T.O. Jet Set \$35 Jet Set Font Sets Call CAPCOM Bionic Commando \$28 Tiger Road \$27 CENTRAL COAST SOFTWARE Disk 2 Disk (New Version) \$37 Dos 2 Dos \$37 Quarterback \$54 CINEMARE Defender of the Crown \$31 King of Chicago \$31 Lords of the Rising Sun In Stock Rocket Ranger \$33 SDI \$31 Simba \$33 TV Sports \$33 Three Stooges \$33 COMMAND SIMULATIONS Blitzkrieg/Ardenne \$42 CONQUEST All Titles On Sale! COSMI Defcon 5 \$28 President is Missing In Stock Super Huey \$17 CREATIVE SOLUTIONS Analytic Art \$77 CRYSTAL ROSE Analytic Art \$42 DATA EAST Platoon In Stock DATA RESEARCH Key to C (V. 2.0) \$25 DELTA RESEARCH J-Tech (New Version) Call DESIGN LABS Fine Print \$36 DIGITAL CONCEPTS Torch 2081 \$18 DIGITEK Amegas \$24 Clever & Smart \$24 CyberComplex \$35 Final Mission In Stock Gunshot \$24 Hole In One \$25 Hollywood Poker Call Paranoia Complex Call Power Sticks In Stock Sky Blaster In Stock Spin World Call Thunder Boy \$26 Vampire's Empire \$30 DISC COMPANY Critic's Choice \$178 Critic's Choice 2.0 Call Publisher's Choice \$139 SuperBack \$19 DISCOVERY SOFTWARE Arkadon \$23 Better Dead Than Alien \$23 GrabIt \$24 Hybris \$26 Marauder II \$25 Sword of Sodan In Stock Virus Infection Protection \$32 Zoom \$20 DISK-COUNT SW Spelling Tutor \$21 Vocabulary Tutor \$21 DONAR Star Wars In Stock DR. Patch Editors Call KCS \$177 KCS Level II In Stock The Copyist \$149 EAGLE TREE SOFTWARE Butcher 2.0 \$25 Distant Armies Call EASEWARE Home Builder's Cad \$139 Home Builder's Choice In Stock EAST/WEST Take Stock \$34 EIDERSOFT Amiga Karate \$24 Casino Fever \$29 Pro Sound Designer Call ELAN Invasion (New Version) Call (Requires Live!) Call Performer Call ELIPSY Encore \$45 EMERALD INTELLIGENCE Magellan \$129 EPY Battleship In Stock California Games In Stock Devonshire \$37 Dive Bomber \$37 Four By Four \$31 Games, Winter Edition \$34 Mind Roll \$22 Skate Wars \$22 Space Station In Stock Street Cat \$34 Super Battle \$34 Under Sea Commando Call ESCAPE SEQUENCE Photosynthesis \$108 ETHOS Poker Solitaire \$24 EZ SOFT EZ Backup \$36 FINALLY Disk Animation In Stock B Paint \$27 FIRST ROW HoneyMoons Call Prime Time In Stock Twilight Zone \$29 FREE SPIRIT Media Line Fonts In Stock Securities Analyst \$56 Sex Victims From Space \$29 Ultimate Dos Utils \$46 FTL Dungeon Master Call FULLER COMPUTING Project D (New Version) \$37 GIMPEL SOFTWARE Lint \$85 GOLD DISK Comic Setter \$74 Comic Setter Data Disks Call Design 3D In Stock Desktop Budget \$40 Desktop Transcript \$47 Font Set 1 \$26 Gold Spell 2 \$34 Movie Setter In Stock Page Setter \$94 Professional Draw In Stock Professional Page 1.1 \$40 GRANDMA SW Nap Plus \$54 GRAND SLAM Pacmania \$27 GRAPHIC EXPRESSIONS Mastering CLI \$29 HAITEK A Dumps \$44 Amic Term \$44 Haicac \$44 HASH ENTERPRISES Animation: Editor \$40 Animation: Effects \$35 Animation: Flipper \$40 Animation: Multipane In Stock Animation: Rotoscope In Stock Animation: Stand \$35 Animator: Apprentice Call Apprentice Libraries Call HILTON ANDROID Aesop's Fables \$19 Chicken Little \$19 Little Red Riding Hood \$19 Three Little Pigs \$19 Ugly Duckling \$22 HI SOFT DevPac Amiga In Stock HYPERTEK GOMF (Latest Version) In Stock GOMF 3.0 w/Buttons \$54 IMAGE TECHNOLOGY Kikugi \$20 IN COGNITO Altered Prof BBS \$99 Kingdoms of England Call Realm of the Warlock \$25 Snake Pit In Stock Targis In Stock IMPULSE Turbo Silver \$124 Terrain Data Call INFINITY SOFTWARE Galileo 2 \$49 Go Call Grand Slam Tennis \$36 Hot Licks \$34 Shakespeare v1.1 \$39 INNOVATION Broadcast Titrer In Stock Video Effects 3D \$142 INOVATRONICS InovaTools \$65 Power Windows 2.5 \$53 INTELLIGENT MEMORY Emmetric Skimmer Call Garrison II Call TurboPrint \$38 INTELLIGENT MUSIC M \$149 INTERACTIVE WORKSPACES Caligrapher 1.06 \$69 Lion's Calligraphers \$32 Newsletter Fonts \$32 Studio Fonts \$32 INTERPLAY Battle Chess \$34 INTRACORP Trump Castle \$28 JOK IMAGES Pro Video Plus \$199 Font Libraries for PV+ (ea.) \$79 JHM SOFTWARE Easy Titrer \$34 KAR KaraFonts \$54 KFS SOFTWARE The Accountant \$189 KINGSOFT Emerald Mines \$18 Emerald Mines II In Stock Fortress Underground \$16 KONAMI Boot Camp \$31 Contra \$31 Jackal \$31 Rush n' Attack \$31 LAKE FOREST LOGIC Disk Mechanic \$60 LAMPLIGHTER Amix Call doProfessional In Stock LATITUDE C \$349 C 5.0 \$199 Compiler Companion \$78 Other Products Call LIGHTNING PUBLISHING The Big Picture \$23 LOGOTRON Prospector \$34 LYNN'S LUNA C WB Extras \$25 MAGIC BYTES Pink Panther \$34 MAGNETIC IMAGES Clip Art Disks 1-8 (Each) \$15 Gold of the Realm \$28 MANX Library Source \$199 Amec C-Dev \$101 Amec C-Prof \$149 Source Level Debugger \$57 MASTERTRONIC Feud \$18 Kickstart 2 \$17 Metropolis \$21 Ninja Mission \$18 Sidewinder In Stock Space Ranger \$18 War in Middle Earth In Stock MERIDIAN SOFTWARE Demonstrator \$27 Zing! \$49 Zing! Keys \$36 Zing! Spell \$57 METACOMCO SCI Pascal (New Version) Call Macro Assembler \$45 Shell \$79 Toolkit \$35 METACOMCO Metascope \$79 METRON T Shell \$34 MICHTON AB Zoo In Stock Airball \$28 Castman \$24 Karate Kid II \$115 MICRODEAL AMAS In Stock Hit Disk I In Stock HiSoft BASIC \$115 Insanity Fight \$29 INTERNATIONAL SOCCER Leathernecks \$28 Major Motion \$27 Slagade Call Snake Pit \$29 Tanglewood \$27 Tetra Quest \$27 Time Bandits \$28 Zero Gravity \$21 MICRO ENTERTAINMENT Golden Pyramid Call MICRO ILLUSIONS Black Jack Academy \$29 Craps Academy \$26 Pictionary Data Disks In Stock Ebonstar \$29 Fairy Tale \$34 Galactic Invasion \$19 Land of Legends \$219 Music X \$219 Photon Paint II \$99 Photon Paint Expansion \$23 Photon Vid. Transporter Call Photon Vid. Del Animator \$51 Planetary \$29 Romantic Encounters \$29 Tracers \$27 Turbo \$19 MICRO MAGIC Forms in Flight 2.0 \$80 MICRO MASTER Family Tree \$34 MICROPROSE Gunship Call Kennedy Approach \$30 Silent Service \$24 MICROSEARCH City Desk \$110 Head Coach \$39 MICROSMITHS TxDed Plus \$57 MICRO SYSTEMS SOFTWARE Analyze 2.0 \$74 BBS PC \$106 Chrono Quest \$37 Deep Space \$21 Fire Brigade \$33 Menace \$24 Obliterator In Stock Star Ray Call Terrordogs \$28 The Works! Platinum \$199 MIMETICS 3 Demons \$72 Pattern Splitter \$130 SoundScope \$130 Utilities 1 \$40 Utilities 2 \$40 MINDSCAPE Space Fighter \$28 Balance of Power \$31 Balance of Power 1990 In Stock Blockbuster \$27 Blocker \$27 Captain Blood Call Combat Course In Stock Dea Vu \$32 Harrier Combat \$35 Hostage In Stock Ice Hockey \$33 Indiana Jones \$28 Indoor Sports \$35 Into Egypt's Nest \$33 Joker Poker \$33 Perfect Score SAT \$52 Road Raider \$27 Shadowgate \$33 Thunder Blade \$34 Uninvited \$31 Willow \$28 MINIWARE Chrono 5 In Stock Holmes Call Des Cartes \$24 PageFlicker F/X \$101 Ludicrous \$24 Phantasm \$24 Space School Simulator \$24 Synapse In Stock Transpute \$24 MY MICRO BAD In Stock NEW HORIZONS SOFTWARE Flow \$69 ProWrite 2.0 \$75 ProForms (each) \$26 ProScript \$33 NETWET Dig-Paint \$45 Dig-Droid \$74 Dig-View 3.0 Call Dig-View Gold In Stock NEW WAVE Sound Oasis In Stock Dynamic Drums \$59 Dynamic Drums \$144 OMNITRON Beach \$29 Beach Scenario \$19 Paladin \$22 Paladin Scenario \$19 OPCODE SYSTEMS Music Mouse \$49 ORIGIN SYSTEMS Auto Duel In Stock Mobius \$38 Ogre \$25 Ultima III \$29 Ultima IV \$39 OTG DSM Disassembler \$44 OXXI A-Talk III In Stock Amiga 500 \$99 MaxiPlan Plus \$127 Nimbus 1 \$99 Tax Break I In Stock PEACOCK SYSTEMS CB Tree \$79 POLYBOLD SOFTWARE Crossword Creator \$35 Dominoes \$18 Four In One \$22 POOR PERSON SOFTWARE Thinker In Stock PRECISION SOFTWARE Pro Sound Designer In Stock Superbase Personal II \$99 Superbase Professional 3 \$229 SuperPlan \$102 PROFESSIONAL SOFTWARE Fleet Check \$30 PROGRESSIVE PERIPHERALS Access 64 \$25 Climate \$25 DiskMaster \$40 DR Team Pro \$79 Jet \$63 Mathamation Call MicroLawyer \$42 Pixmap \$54 PROLIFIC SOFTWARE ProASM Call Pro Board \$425 Pro Net \$425 PSYGNOSIS Aquaventure Call Arena \$15 Baal In Stock Balistix \$22 Barbarian \$27 Captain Jack In Stock Chrono Quest \$34 Deep Space \$21 Fire Brigade \$33 Menace \$24 Obliterator In Stock Star Ray Call Terrordogs \$28 QUESTREK Mission Conbat In Stock RAINBOW Black Lamp \$19 Carrier Command \$33 Corruption In Stock Silicon Dreams \$25 Space Cutter \$20 StarGlider \$20 StarGlider II In Stock Univ. Military Sim In Stock UMS Data Disks Call Virus \$21 READY2SOFT 64 Emulator 2 \$39 Bomb Busters \$23 Cosmic Bouncer In Stock Dragon's Lair In Stock Gamedyne \$22 Rock Challenge In Stock Scary Mutants In Stock ROB VIDEO CREATIONS DeluxeHelp Call Available for Deluxe Paint II Call DigPaint, PageSetter, Photo Call UMS Data Disks Call RIGHT ANSWERS GROUP The Director Toolkit \$49 Director Toolkit In Stock SCORPION Black Shadow \$25 Foundation Waste \$24 Ludicrous \$24 Phantasm \$24 Space School Simulator \$24 Synapse In Stock Transpute \$24 SEDA SOFTWARE Money Mentor \$74 SEGA Alien Syndrome In Stock Out Run In Stock Phoenix \$33 Space Harrier \$33 SEVEN SEAS SOFTWARE Color Commander \$21 Doug's Math Aquarium \$59 SILVER SOFTWARE Fractal Music \$15 Proten Music \$17 SLIPPED DISK Lotto Game \$19 SOFT CIRCUITS I Debog \$76 SOFTKING Final Trip \$18 Power Pack (3 Games) Call Space Fight \$18 Vader \$18 SOFTLINK MultiPrets \$28 Shufft \$28 SOFT LOGIC PageStream In Stock SW ADVANTAGE Investor's Advantage \$79 SW INTEGRATIONS Oriental Art \$29 SOFTWARE TERMINAL The Epic In Stock Telegames \$26 Telegame \$29 Telegame II In Stock SOFTWARE VISIONS Designer Databases Call Microfile Plus \$115 SOUND QUEST Patch Editors Call Texture (For Real!) Call SPECTRUM HOLOBYTE Falcon \$34 Solitaire Royale \$22 Tetris \$25 STAR SOFT Formula One \$21 Frost Byte \$21 Seconds Out Boxing \$21 Stock Market Game \$19 Santa Parviva In Stock SUBLOGIC European Scenery In Stock Flight Simulator 2 \$32 Flight Scenery In Stock Jet \$32 Mathamation Call Scenery Disk 7 or 11 \$18 Scenery Disk 9 Call SUNRISE INDUSTRIES Desktop Artist \$23 ProASM \$75 SUNSMILE SOFTWARE Extend \$29 Home Inv Manager \$27 SYNOPSIS Interchange \$40 Interchange Object \$15 InterFont \$82 TAURUS X-Cad \$425 Acquisition Call TOP SOFTWARE Menace \$24 THE OTHER GUYS Promise \$39 Match It \$29 Reason \$29 Synthia \$75 THREE SIXTY Dark Castle \$29 Warlock \$24 TIGRESS Dusk \$36 TITUS Crazy Cars \$27 Fire & Forget \$27 Off Shore Warrior In Stock TRUE BASIC Developer's Toolkit \$39 Runtime Package \$109 True BASIC \$74 Libraries (Each) \$39 TS MEDIA Boom Aid In Stock UNICORN Adv. of Simbad \$35 Aesop's Fables \$42 Arabian Nights \$35 Arabian Nights \$35 Fraction Action \$33 Kiderama \$33 Logic Master \$33 Magic Myths \$36 Fantasy \$35 Read & Rhyme \$33 Word Master \$35 UNISON WORLD Art Gallery 1 or 2 \$20 Fonts & Borders Call Print Master Plus \$33 VEGA Amikit \$29 VIDEO VISIONS Data Disk for PageFlicker Call WILLIAM HAWES Alex \$39 W-Shell \$39 WORDPERFECT CORP. WordPerfect \$179 WordPerfect Library Call
---	--

Our objective is to carry every product for the Amiga — and sell them at the best prices. Our policy is to be as competitive as possible on all product prices. If you find a lower price, please give us a call. It is no longer close to possible for us to list all the products we carry. If you don't see it listed, please call.

Products are new and in stock.

Products have not been released at press time.

Products have been reduced in price.

All other products are normally in stock (as well as hundreds more).

Orders Only: **800-BE-AMIGA™**

In California: **800-843-2842**

Customer Service: **415-364-9714** Now on CompuServe:

Facsimile (FAX): **415-365-2073 71230, 2412**

Send Mail Orders to: **GO AMIGO** 2682D Middlefield Road, Redwood City, CA 94063
(Money Order, Cashier's Check, or Qualified P.O. only. California residents add sales tax.)

SHIPPING INFO: Software Shipping rates are \$2.50/item using UPS Ground service (max. \$7.50) or \$4.50/item using UPS 2nd Day Air Service (max. \$13.50). For Federal Express shipping rates, see opposite page. Call for hardware rates. APO, Mail, foreign shipping extra. Call for more info. **RETURN & REFUND POLICY:** All returns must have an RMA-#. Call Customer Service to request an RMA-#. Defective merchandise under warranty will be repaired or replaced. Returned product must be returned postage prepaid with all original packaging. We do not offer refunds for defective products or products that do not perform satisfactorily. We make no guarantees for product performance. Any money back guarantees must be handled directly with the manufacturer. **OTHER POLICIES:** We do not charge your card until the product actually ships. Purchase order customers must have credit application on file. No surcharge for VISA and MasterCard. When ordering with credit card, PLEASE include expiration date and name of bank! Call Fridays for unannounced specials.

Amiga is a trademark of Commodore-Amiga. Go Amigo is in no way associated with Commodore-Amiga. Delivery subject to product availability • Prices subject to change • Circle 26 on Reader Service Card

HORS D'OEUVRES

Hints, tips and techniques

from your fellow Amiga users.

RUNNING SPEEDUP

I'VE GOT A tip that can greatly speed up batch files. In my startup sequence I have to load three background tasks: Gomf2.2, PopCli, and MclK (a clock). If I run them like this:

```
C:RUN DF0:Gomf2.2
C:RUN DF0:PopCli
C:RUN DF0:MclK
```

my drive starts to thrash and grind because of the conflicts between the three processes, and it takes a long time for all three to load. But if I copy them to RAM: first, and then run them from RAM:, I achieve a significant speed increase:

```
C:COPY DF0:Gomf2.2|PopCli|MclK
RAM:
C:RUN RAM:Gomf2.2
C:RUN RAM:PopCli
C:RUN RAM:MclK
C:DELETE RAM:Gomf2.2 RAM:
PopCli RAM:MclK
```

This trick works even if you have to run only one program (unless it is the last command in the batch file). By the way, if you specify the full path names of commands, they work faster because the CLI doesn't have to go looking for them all over your disk. (Two tips for the price of one. What a bargain!)

Michal Todorovic
Santa Barbara, CA

HYBRIS EXTRAS

FOR FANS OF Discovery's arcade game Hybris, I have learned that there is a "back door" to the game. To activate the back door, boot your Hybris disk as nor-

mal, then let the game go into the demo. When the High Scores list appears, type the word "commander" (without the quotes), then press either the mouse button or joystick button to start the game. You should now be in the game with the following extras active:

F1-F6	Change ship add-ons from normal (f1) to super (f6)
F7	On/off toggle for F1-F6
F8	Not used (?)
F9	Automatically finish current stage
F10	Toggle invincibility on/off

When the game first starts, press F7 to turn on the extras, and you're ready to go.

B. Williams
Wichita, KS

CLI PROGRAMS FROM WORKBENCH

I HAVE GIVEN lectures at several conventions and users groups, and a question I'm commonly asked is "How can I make a CLI program run with an icon?"

There are a lot of programs available, especially in the public domain, that weren't written to run under the Workbench environment. Here is an easy way to get many of them to run under Workbench.

First, you need to create the icon. Do this by calling in IconEd from the System drawer of your Workbench disk. Draw a TOOL type icon, and save it to disk with the same name as the program you want it to run (IconEd will append the ".info" for you). Then leave IconEd and go to the Workbench.

Now open the disk where you've saved your icon, and select it, then select INFO from the Workbench menu. Click on the ADD gadget of the TOOL TYPES box, and then click inside the box to bring up

the cursor. Now type in the following (all on one line):

```
WINDOW=CON:0/0/640/200/
MY-WINDOW
```

and then click on SAVE. Now you only have to double click your new icon from Workbench to make the program run. If you have many programs to convert to Workbench, make a standard icon and copy it to each program name (e.g., copy ICON.info, GAME1.info, etc.).

You must remember to give the icon the same name as the program you want it to run before you call in INFO from the Workbench menu, or it won't open.

Jai Mayers
FutureScape Software
Bowie, MD

SWORD OF SODAN TIP

HERE'S A TIP for fans of Discovery Software's Sword of Sodan. On round #9, after you are on the beast, walk it back to the worm doing loops. The beast will then eat the worm piece by piece. Now walk it forward until two walls appear and water starts to rise. You must then keep jumping (for you and the beast to get air) until the beast sinks, and then you can pass.

Rich Benson
Chesterland, OH

If you have an idea you'd like to share with our readers, send it to Hors d'oeuvres, AmigaWorld Editorial, 80 Elm St., Peterborough, NH 03458. If your idea gets published, you'll receive an AmigaWorld surprise gift. ■

VISA
MASTERCARD
DISCOVER
NO SURCHARGE

COMPUTER MART

800-443-8236

INFORMATION
409-560-2826

New Low Price
SUPRA 2400 MODEM
\$129.00
HAYES COMPATIBLE
300/1200/2400 BAUD

SOFTWARE

3-DEMON	68.00
3D FANCY FONTS	48.00
AAARGH	21.00
AC BASIC	135.00
AC FORTRAN	198.00
AGIS DRAW 2000	168.00
ALTERNATE REALITY	25.00
ANALYTIC ART	38.00
ANALYZE 2.0	62.00
ANDROMEDA MISSION	25.00
ANIMATE 3D	95.00
ANIMATOR APPRENTICE	187.00
ARCHITECTURAL DESIGN	22.00
AREXX	30.00
ARKANOID	25.00
ASSEMBLY	69.00
ATANK III	60.00
ATREDES BBS PRO.	90.00
ATREDES TERMINAL	30.00
AUTO DUEL	34.00
AWARD MAKER	32.00
AWE. ARCADE VOL. 1	35.00
B.A.D.	30.00
BARD'S TALE II	37.00
BATTLE CHESS	30.00
BBS-PC	92.00
BENCHMARK MODULA 2	138.00
BENCHMARK LIBRARIES	69.00
BLITZ. ON THE ARDENNE	37.00
BREACH	28.00
BRIDGE 5.0	22.00
BUBBLE BOBBLE	26.00
BUBBLE GHOST	25.00
BUTCHER 2.0	23.00
CALIFORNIA GAMES	27.00
CALLIGRAPHER	74.00
CAPE 68K ASSEMBLER	59.00
CAPONE	35.00
CAPTAIN BLOOD	31.00
CARRIER COMMAND	28.00
CENFOLD SQUARES	20.00
CHESSMASTER 2000	31.00
CHRONOQUEST	24.00
CITY DESK	95.00
COMICSETTER	66.00
COMICSETTER DATA DISKS	22.00
CRITICS CHOICE	150.00
CYBER COMPLEX	21.00
CYGNUS ED PRO	60.00
DARK CASTLES	28.00
DATARETRIEVE	53.00
DECIMAL DUNGEON	32.00
DEFCON 5	28.00
DELUXE HELP DISKS	22.00
DELUXE MUSIC 2.0	69.00
DELUXE PAINT II	86.00
DELUXE PHOTO LAB	98.00
DELUXE PRINT II	57.00
DELUXE PRODUCTIONS	138.00
DELUXE VIDEO 1.2	86.00
DESIGN 3D	60.00
DESTROYER	27.00
DETONATOR	25.00
DEVPAK ASSEMBLER	60.00
DIGA	51.00
DIGI PAINT	41.00
DIRECTOR	44.00
DIRECTOR TOOLKIT	28.00
DISCOVERY DATA DISKS	14.00
DISCOVERY MATH	28.00
DISC. SPELL	28.00
DISC. TRIVIA	28.00
DISK MASTER	48.00
DISK MECHANIC	55.00
DOS TO DOS	32.00
DOUGS MATH AQUARIUM	51.00
DR. TS SOFTWARE	CALL

DRAGON'S LAIR	39.00
DRUM STUDIO	30.00
DUNGEON MASTER	24.00
DYNAMIC DRUMS	51.00
DYNAMIC STUDIO	138.00
EARL WEAVER BASEBALL	35.00
EMERALD MINES	13.00
EMERALD MINES II	28.00
EMPIRE	35.00
EMPIRE STRIKES BACK	24.00
ENCHANTER	21.00
EUROPEAN SCENERY DISK	18.00
EXCELLENCE	174.00
EXPRESS PAINT 3.0	78.00
FA INTERCEPTOR	35.00
FACC II	24.00
FAERY TALE ADVENTURE	35.00
FAERY TALE HINT BOOK	10.00
FALCON	30.00

HOT LICKS	32.00
HUMAN DESIGN	22.00
HUNT FOR RED OCTOBER	35.00
HYBRIS	24.00
INDOOR SPORTS	35.00
INOVATOOLS #1	55.00
INSANITY FIGHT	28.00
INTELLITYPE	35.00
INTERCHANGE	32.00
INTERFONT	72.00
INTERNATIONAL SOCCER	24.00
INTROCAD	51.00
INVESTOR'S ADVANTAGE	66.00
JACK NICHOLAS GOLF	30.00
JET	36.00
JET SET UTILITIES	24.00
JEWELS OF DARKNESS	21.00
JINXTER	28.00
JOE BLADE	21.00
KAMPFGRUPPE	39.00
KARATE KID II	28.00
KARATE KING	19.00
KARTING GRAND PRIX	19.00
KINDERAMA	32.00
KINDWORDS	63.00
KING OF CHICAGO	35.00
KINGDOMS OF ENGLAND	30.00
LANCELOT	26.00
LAS VEGAS	19.00
LATTICE C 5.0	204.00
LAZERSCRIPT	29.00
LEADER BOARD DUAL PACK	21.00
LEATHER GODDESSES	26.00
LEXCHECK	27.00
LIGHTS. CAMERA. ACTION	51.00
LINKWORD LANGUAGES	19.00

ONLINE	45.00
OPERATION CLEANSTREETS	24.00
OPTICS	66.00
ORGANIZE	63.00
OUTLINE	32.00
OUTRUN	29.00
P.O.W.	28.00
PACBOY	19.00
PAGE STREAM	138.00
PAGEFLIPPER + F/X	94.00
PAGESSETTER	94.00
PALADIN	28.00
PERFECT SCORE	55.00
PERSECUTORS	13.00
PHANTASIE III	28.00
PHASAR 3.0	56.00
PHOTON CELL ANIMATOR	104.00
PHOTON PAINT	66.00
PHOTON PAINT 2.0	90.00
PHO. PAINT SURFACE DISK	18.00
PIONEER PLAGUE	24.00
PIXIMATE	44.00
PLATOON	28.00
PLUTOS	21.00
PORT OF CALL	32.00
POWER WINDOWS 2.5	62.00
PRINTMASTER +	32.00
PRO ASM	66.00
PRO BOARD	355.00
PRO MADI STUDIO	125.00
PRO NET	355.00
PRO SOUND DESIGNER	98.00
PRO VIDEO PLUS	179.00
PRO. DATARETRIEVE	195.00
PROFESSIONAL PAGE	240.00
PROJECT D	32.00
PROMISE	34.00
PROMISE 2.0	78.00
Q.BALL	21.00
QUADRILIENS	18.00
QUARTERBACK	48.00
QUESTRON II	32.00
RAW COPY	36.00
ROAD RAIDERS	24.00
ROADWAR 2000	28.00
ROADWAR EUROPA	31.00
ROCKET RANGER	35.00
ROGER RABBIT	27.00
ROMANTIC ENCOUNTER	28.00
RUSH'N ATTACK	28.00
SARGON III	35.00
FS SCENERY DISK	18.00
SCRIBBLE 2.0	63.00
SCULPT 3D	66.00
SCULPT 4D	419.00
SEX VIXENS	24.00
SHANGHAI	28.00
SILENT SERVICE	28.00
SILICON DREAMS	21.00
SINBAD & FALCON	35.00
SKY CHASE	27.00
SKYFOX	14.00
SLAYGON	28.00
SONIX	49.00
SOUND QUEST	CALL
SOURCE LEVEL DEBUGGER	56.00
SPACE QUEST	35.00
SPACE STATION OBLIVION	29.00
SPELLBOUND	25.00
SPELLER BEE	35.00
STARGLIDER II	32.00
STELLAR CONFLICT	28.00
STELLARYX	24.00
STREET CAT	27.00
STRIP POKER II	24.00
STUDIO MAGIC	63.00
SUB BATTLE	27.00
SUPERBASIC	48.00
SUPERBASE PERSONAL	95.00
SUPERBASE PRO	207.00
SUPERPLAN	95.00
SUPERSTAR ICE HOCKEY	39.00
SWORD OF SODAN	30.00

SYNTHIA	69.00
TARGIS	24.00
TAX BREAK	48.00
TECNOPOP	29.00
TELEGAMES	22.00
TELEWARS	28.00
TERRORPODS	28.00
TEST DRIVE	33.00
TEXTPRO	53.00
THAI BOXING	14.00
THE ACCOUNTANT	190.00
THE THREE STOOGES	35.00
THE WORKS PLATINUM	178.00
THEXDER	26.00
THUNDER BOY	21.00
TIME AND MAGIK	26.00
TIME BANDITS	28.00
TRACER	22.00
TURBO SILVER	115.00
TV SPORTS FOOTBALL	29.00

CM 65 MEG A500/A1000	879.00
CM 65 MEG A2000	799.00
CM 85 MEG A500/A1000	966.00
CS-1 COPY STAND	51.00
CVIEW 1	35.00
CVIEW 2	35.00
DELUXE MIDI INTFC	63.00
DIGI-DRID	62.00
DIGI-VIEW 3.0	139.00
DIGI-VIEW GOLD	139.00
ECE MIDI	50.00
EPYX 500 XJ JOYSTK	14.00
ERGOSTICK JOYSTK	18.00
EXP. TECH HARD DRIVE KIT	286.00
FLASH CARD A2000 SCSI	186.00
FLICKER FIXER	510.00
FLICKER MASTER	12.00
FRAMERGRABBER	529.00
FUTURE SOUND	136.00
GEN ONE GENLOCK	699.00



CALIFORNIA
ACCESS CA-880
NEW LOW PRICE
149.00

GVP™

High Speed
A2000 HardCards
40 MEG 11ms \$799
80 MEG 11ms \$1199

FAMILY TREE	30.00
FANTAVISION	38.00
FERRARI FORMULA I	35.00
FINE PRINT	30.00
FIRE POWER	16.00
FIRST LETTERS & WORDS	35.00
FIRST SHAPES	35.00
FLIGHT PATH 737	19.00
FLIGHT SIMULATOR II	36.00
FLIPSIDE	38.00
FLOW	65.00
FORMS IN FLIGHT II	72.00
FORTRESS UNDERGROUND	19.00
FRACTION ACTION	32.00
GALILEO 2.0	44.00
GETTISBURG	42.00
GIZMOS 2.0	44.00
GNOME RANGER	14.00
GOLD RUNNER	28.00
GOLD SPELL II	29.00
GOLDEN PATH	32.00
GOMF 3.0	24.00
GOMF 3.0 W/ BUTTON	51.00
GRABBIT	21.00
GRADE MANAGER	52.00
GRAPHIC STUDIO	38.00
GREAT STATES II	25.00
GRID START	19.00
HACKER II	28.00
HALLEY PROJECT	31.00
HARDBALL	28.00
HARRIER COMBAT SIM.	28.00
HARRIER MISSION	19.00
HEAD COACH	35.00
HEROES OF THE LANCE	26.00
HITCHHIKERS GUIDE	21.00
HOLE-IN-ONE MIN. GOLF	22.00
HOLLYWOOD POKER	22.00
HOLMES!	35.00
HONEYMOONERS	25.00
LION'S FONTS	54.00
LRDS OF THE RISING SUN	31.00
LOTTERY MAGIC	18.00
LURKING HORROR	28.00
M	155.00
MAGELLAN	117.00
MANIC INVADERS	19.00
MARBLE MADNESS	35.00
MASTER TYPE	28.00
MATH MAGICIAN	28.00
MATH TALK	35.00
MATH TALK FRACTIONS	35.00
MATH WIZARD	32.00
MAVIS BEACON TYPING	35.00
MAXIPLAN 500	94.00
MAXIPLAN PLUS	126.00
MEAN 18	28.00
MENACE	28.00
METACOMCO PASCAL 2.0	81.00
MICROBOT DESIGN DISK	22.00
MICROFICHE FILER PLUS	108.00
MICROLAWYER	38.00
MIDI MAGIC	92.00
MIKE THE MAGIC DRAGON	16.00
MIMETICS UTILITIES I	40.00
MINI PUTT	24.00
MISSION CON-BAT	29.00
MISSION ELEVATOR	32.00
MODELER 3D	88.00
MOEBIUS	41.00
MONEY MENTOR	61.00
MOVIE CLIPS	21.00
MOVIESSETTER	63.00
MULTI-FORTH	56.00
MUSIC MOUSE	50.00
MUSIC STUDENT	35.00
MUSIC STUDIO	35.00
OBLITERATOR	28.00
OF THE FLESH	24.00
ONE ON ONE	14.00

TXED PLUS	51.00
ULTIMA IV	41.00
UNINVITED	35.00
UNIV. MILITARY SIM.	30.00
V.I.P.	30.00
VIDEO EFFECTS 3D	130.00
VIDEO TITLER	88.00
VIDEO WIZARD	42.00
VIDEOSCAPE 3D	127.00
WARLOCK	21.00
WAYNE GRETZKY HOCKEY	30.00
WILLOW	24.00
WINTER GAMES	14.00
WITCHCRAFT	28.00
WORDPERFECT	145.00
WORLD CLASS LEADER BD	28.00
WSHELL	30.00
X-CAD	414.00
ZAK MCKRACKEN	28.00
ZOETROPE	84.00

HARDWARE

8 UP 0K	169.00
8 UP W/1 MEG	399.00
8 UP W/2 MEG	655.00
8 UP W/4 MEG	CALL
8 UP W/8 MEG	CALL
ADAPTEC 4000	126.00
ADAPTEC 4070	170.00
AIR DRIVE EXT.	159.95
AIR DRIVE INT.	139.95
AMIGEN GENLOCK	147.00
APRODRAW 12 X 12	480.00
BUS EXPANDER	485.00
C LTD REPLACEMENT KYBD	98.00
C LTD HARD DRIVES	CALL
CALIFORNIA ACCESS	149.00
C LTD A500 512K 0K	CALL
C LTD CORONA SCSI	CALL
C LTD SCSI 500	156.00
C LTD SCSI 1000	180.00
C LTD SCSI 2000	119.00
CM 20 MEG A500/A1000	639.00
CM 20 MEG A2000	539.00
CM 40 MEG A500/A1000	799.00
CM 40 MEG A2000	749.00
GO 64	36.00
GO 64 INTERFACE CABLE	15.00
GVP 20 MEG HARDCARD	575.00
GVP 30 MEG HARDCARD	698.00
GVP 45 MEG HARDCARD	816.00
GVP AUTOBOOT EPROM KIT	29.00
GVP FD2010 FLOPPY	135.00
GVP IMPACT A500	CALL
GVP A500 RAM MODULE	66.00
GVP SCSI/AM A2000 0K 1M 294.00	
GVP SCSI/AM A2000 0K 2M 324.00	
GVP SCSI/AM A2000 2M	750.00
HARDFRAME 2000	257.00
HD-6A HARD DRIVE CASE	125.00
INBOARD 0K A1000	216.00
INBOARD 512K A1000	386.00
INBOARD 1 MEG A1000	556.00
INBOARD 1.5 MEG A1000	726.00
INBOARD 0K A500	239.00
INBOARD 1 MEG A500	546.00
INBOARD 2 MEG A500	853.00
KICKSTART ELIMINATOR	120.00
M501 512K A500 EXP. 0K	65.00
MIDI GOLD A500	58.00
MIDI INSIDER A2000	65.00
MIDI STAR	216.00
MODEM CABLE A1000	15.00
MODEM CABLE A500/A2000	15.00
MOUSE MASTER	27.00
MOUSE PADS	9.00
NEC PINWRITER 2200	432.00
PERFECT SOUND	66.00
PERFECT VISION	189.00
PRO GEN GENLOCK	384.00
PROCESSOR ACC	149.00
PRORAM 2 MEG A2000	599.00
PRORAM 8 MEG W/2 MEG	675.00
SCSI CABLES	25.00
SEAGATE ST157N 48 MEG	510.00
SEAGATE ST225N 20 MEG	345.00
SEAGATE ST251N 40 MEG	440.00
SEAGATE ST277N 65 MEG	510.00
SEAGATE ST138N 30 MEG	394.00
SEAGATE ST296N 85 MEG	635.00
STARBOARD SCSI CONT.	102.00
SI COLOR SPLITTER	74.00
STARBOARD II 0K	260.00
STARBOARD II 512K	435.00
STARBOARD II 1 MEG	605.00
STARBOARD II 2 MEG	944.00
SUPER GEN GENLOCK	699.00
SUPRA 2400 MODEM	129.00
BRICK A500 POWER	102.00
TIME SAVER	55.00
TOOLBOX A1000 3 AMP	214.00
TOOLBOX A1000	144.00
TOOLBOX A500 1 AMP	152.00
TRUMP CARD CONT.	165.00
VI-2000RF	78.00
VI-500RF	78.00
WV-1410 W/LENS.CABLE	238.00
X-SPECS 3D	94.00

Expansion Technology ToolBox

2 Slot Expansion uses A2000 Cards for
your A500 or A1000

Starting as low as **\$144**

SHIPPING INFO: Software rates are \$2.10/item (Max \$8.00) UPS Ground or \$4.00/item (Max \$14.00) UPS 2nd Day Air. Call for Hardware shipping info. REFUND & RETURN POLICY: Defective merchandise under warranty will be

BRIWALL

Our Fourth Year
In Business!
We Know How
To Service
Our Customers!

SOLID PRODUCTS & SOLID SUPPORT

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

24 HOURS — TOLL FREE

1-800-638-5757

OUTSIDE USA CALL 1-215-683-5433

SATISFACTION
GUARANTEED

No Surcharge On
Charge Orders

Friendly Service

Customer Service

Business Hours

M-F, 9-5 EST

ACCESSORIES

10' Midi Interface Cable	15
Amiga Monitor or Dsk Drv Extensn	19
Cable Connector BNC M/RCA F	2
Composite Video Cable RCA M/M 6'	3
Control Center	79
Copy Stand with Lights	65
ECE Midi 1000	49
ECE Midi 500/2000	49
Gender Changer/Parallel Adapter	21
Ink-Black Cart.-Canon 1080A	12
Ink Color Cart.-Canon 1080A	18
Ink 2oz Bottle	
Black, Cyan, Magenta, Yellow	40
Ink 5.2ml Syringe	
Black, Cyan, Magenta, Yellow	5
Ink Adapters for Canon PJ1080 et al	2
Joystick-Bat Handle	22
Joystick-Ergo Stick	22
Joystick-Super 3 Way	25
Lightpen for Amiga	89
Modem-Mini A1000	79
Modem-Mini A500/A2000	79
Modem-Supra 2400 w/o cable	139
Modem Cable 500/2000 6 feet	17
Monitor Cable Amigen to 1084	21
Mouse-Boing Optical	95
Okimate Plug N Print-Amiga 500	75
Paper Canon PJ1080A Roll	8
Paper H.P. Paint Jet	30
Printer Cable 500/2000	
Parallel Printer 6 ft.	18
Printer Cable 500/2000	
Serial Printer	16
Ribbons - All Types	call
Ribbon Renew-Re-Ink w/no Equip	5
Star NX1000R Color Ribbon	9

BOOKS

1001 Things to do with Amiga	11
3D Graphics Programming +	17
AMIGA C for Beginners +	15
Amiga C Advanced Prgrmmers +	22
Advanced Amiga BASIC Book	15
Machine LangProgGdeCompt	17
Amiga BASIC Inside & Out Book +	20
Amiga DOS Inside & Out Book +	17
Amiga DOS Manual	20
Amiga DOS QUICK Ref Manual	12
Amiga DOS Reference Manual	19
AmigaDiskDrives Inside&Out +	24
Amiga Machine Language Book	17
Amiga Programmer's Guide	15
Amiga System Progrmr's Guide	27
Amiga Tips & Tricks Book	17
Amiga for Beginners	15
More Amiga Tips & Tricks +	17
ROM KernRef, Inclds & Auto*	27
ROM KernRefExe&Lib&Devic	28
Hardware Manual*	18
Elementary Amiga BASIC Book	13
Inside Amiga Graphics	15
Inside the Amiga With C	21
Disks for Books +	12

GENERAL BUSINESS

Acquisition v1.3	\$189
Analyze 2.0	69
Becker Text	99
Citydesk v2.0	129
Data Retrieve	52
Data Retrieve Professional	199
Easy Ledgers*	199
Excellence	179
Family Tree (Your)	35
Flow	65
Haicalc	39
KFS Accountant	195
Kindwords	69

Magellan	139
MaxiPlan Plus	129
MaxiPlan 500	99
Microfiche Filer	69
Microfiche Filer Plus	125
Microlawyer	39
Nag Plus v3.0	49
Pen Pal*	99
P.H.A.S.A.R.v3.0	69
Page Setter	90
Page Stream	135
Prowrite v2.0	75
Professional Pages 1.1	249
Publisher Plus	64
Reason	249
Security Analyst	65
Shakespeare	149
Shakespeare Personal 2	105
Superbase Professional v3.0	235
TX ED Plus	59
Word Perfect	189
Word Perfect Library	99
Works - Platinum Edition	189

EDUCATIONAL

Adventures of Sinbad	\$ 32
Aesop's Fables	32
All About America	39
Animal Kingdom (Wonders of)	32

Blackjack Academy	27
Breach	27
Bridge 5.0	25
Bubble Ghost	27
California Games	29
Capone	27
Captain Blood	36
Carrier Command	32
Centerfold Squares	24
Chessmaster 2100*	36
Chrono Quest	36
Clue: Master Detective*	29
Craps Academy	32
Defender of the Crown	33
Double Dragon	29
Dragon's Lair	39
Dungeon Master	29
Earl Weaver Baseball	35
Empire	36
F18 Interceptor	36
Faery Tales	32
Falcon	35
Ferrari Formula One	36
Fire Power	19
Flight Simulator 2	35
Fourth & Inches	29
Galileo 2.0	49
Gone Fish'n	35
Grand Slam Tennis	36
Guild of Thieves	29

TV Sports Football	36
Test Drive	27
Three Stooges	33
Time & Magic	29
Twilight Zone	29
Ultima IV	39
Universal Military Simulator	35
Video Vegas	25
Virus	25
War of Middle Earth	36
Wizard Wars*	32
Zach MacCrakin	29
Zany Golf	33
Zoom	20

CREATIVITY/GRAPHICS

Analytic Art	40
Animate 3D	99
Animation Effects	39
Animation Flipper	45
Animation Stand	39
Animator	69
Award Maker Plus	35
Broadcast Titler	199
Business Card Maker	37
Calligrapher v1.05	79
Celebrity Cookbook	27
Comic Setter	69
Comic Setter Clip Art EACH	25

Zuma Fonts-each	25
-----------------	----

SOUND/MUSIC

Deluxe Music Construction	\$ 65
Dr. T Copyist II	219
Dr. T Drums	20
Dr. T KCS v16a	165
Dr. T MT32 Voices	39
Dr. T Midi Recording Studio	49
Dynamic Drums	52
Dynamic Studio v2.4	135
Instant Music	19
M Intelligent Music	139
Midi Magic	99
Model A Midi Interface	49
Music-x*	195
Perfect Sound A1000	65
Perfect Sound A500	65
Pro Sound Designer	115
Sonix	52
Sound Oasis	65
Sound Sampler	85
Soundscape Pro Midi Studio	129
Studio Magic	65
Synthia	65
Texture	99

UTILITIES/LANGUAGES

64 Emulator 2/Amiga 500	\$ 52
64 Emulator for Amiga 1000	52
A Talk Plus	52
AC/BASIC v1.3	135
AC FORTRAN	199
Amiga Workbench 1.3	24
Amikit	34
Ami... Alignment	39
Amiga DOS Toolbox	42
Arrexx	35
Assempro	64
Aztec C Developer Compiler	195
Aztec C Professional Compiler	129
Aztec C Source Level Debugger	99
BBS PC	99
Benchmark Modula 2	129
Benchmark Modula 2-Simp A Lang	69
Benchmark Modula 2-iff Library	69
Butcher 2.0	25
C.A.P.E. 68K v2.0	59
CLI Mate	27
Cygnus Ed	69
DOS 2-DOS	39
DSM	49
Developer's Pak 2	69
Diga v1.0	52
Disk 2-Disk	35
Diskmaster	39
FACC II	25
GOMF V3 with Hardware Switch	49
Gomf v3.0	27
Grabbit	20
Inova Tools	52
Lattice C++	339
Lattice C MS-DOS/AmigaDOS Complr	359
Lattice C V 5.0 Developer Pack	205
Mac Emulator*	call
Power Windows 2.5	59
Project D v1.1	35
Quarterback	45
Raw Copy v1.3	59
Super Back	59
True BASIC Libraries EACH	35
True Basic 2.0	69
UltraDOS	39
Virus Infection Protection	33
W Shell	35

Products marked with * were not released at time
ad was prepared. Please call for firm price and
availability.

AMIGA

IT IS OUR POLICY to advertise and carry the best products
available at the best prices possible. OVER 700 PRODUCTS in stock now and
more arriving daily!! IF YOU DON'T SEE IT LISTED, PLEASE GIVE US A CALL.

Decimal Dungeon	32
Dinosaur Discovery Kit*	29
First Letters/Words	30
First Shapes	30
Fraction Action	32
Ghostly Grammar	32
Kid Talk	30
Kinderama	32
Linkword: French	24
Linkword: German	24
Linkword: Italian	24
Linkword: Spanish	24
Math Talk	30
Math Talk Fractions	30
Math Wizard	32
Math-amation (College)	55
Mavis Beacon Typing	36
Perfect Score SAT	55
Puzzle Storybook (The)*	29
Read & Rhyme	32
Read A Rama	32
Smooth Talker	30
Speller Bee	29
Surgeon	34
Word Master	32

ENTERTAINMENT

AAArgh	\$ 25
AD&D Heroes of the Lance	29
Annals of Rome*	27
Arkanoid	20
Awesome Arcade Pak	36
Balance of Power 1990	36
Barbarian	28
Bard's II: Destiny Knight	39
Bard's Tale I	33
Bard's II: Clue Book	12
Battle Chess	36
Battle Tech	36
Ballistix	27

Hardball Baseball	29
Hole In One Miniature Golf	26
Hybris	27
Ice Hockey-Super Star	35
Ice Hockey: Wayne Gretsky	35
Jet	35
King of Chicago	33
Kings Quest III	36
Knight Orc	29
Lance-A-Lot	29
Last Inca *NEW*	32
Leaderboard World Class	29
Life & Death (surgical game)*	35
Lord of the Rising Sun	36
Marble Madness	36
Mean 18 Golf	27
Oblietator	28
Out Run	36
POW	29
Phasar Gun	42
Pioneer Plague	29
Platoon	33
Port of Calls	36
President's Missing (The)	29
Question 2	36
Reach for the Stars*	29
Rocket Ranger	36
Roger Rabbit	33
Romantic Encounters - Dome	27
Rubicon Alliance*	24
SDI	33
Scrabble	29
Sex Vixens from Space	29
Sex Vixens Hint Sheets	5
Shadow Gate	33
Shangai	27
Space Quest 2	36
Space Station Oblivion	36
Star Fleet 1	39
Star Glider 2	32
Stellar Conflict	27
Strip Poker II	29
Sword of Sodan	34

Deluxe Paint v3.0	109
Deluxe Photo Lab	99
Deluxe Video 1.2	86
Digi-Paint	40
Digiview 3.0	139
Digiview Gold for A500/A1000	139
Director	49
Draw 2000	159
Express Paint V3	69
Fantavision	49
Flipside	25
Graphics Studio	39
Home Builder's CAD	135
Icon Paint	29
Images	29
Intro CAD	52
Invasion by Elan Design	99
Lights, Camera, Action	59
Masterpiece Amiga-Fonts/Clip Art	165
Modeler 3-D	69
Movie Setter	69
Page Flipper	39
Page Flipper Plus FX	99
Perfect Vision	185
Photon Paint	44
Photon Paint v2.0	109
Photon Paint Surface Disk	25
Photon Video Cel Animator	99
Photon Video Transport Controller	195
Pixmate	45
Printmaster Art Galleries EACH	22
Printmaster Plus	33
Pro Video Plus	199
Sculpt/Animate 4D	389
Sculpt 3D	69
TV Show	65
TV Text	65
Turbo Silver	139
Ultra CAD*	169
Video Scope 3D 2.0	139
Video Titler 1.1	99
X-Specs	92
Zoetrope	89

Let us put a custom package deal together for you!

Please Call M-F, 9-5EST

Actual shipping costs on hardware

HARDWARE

DRAM 256Kbx1-150ns	10
DRAM 256Kbx4-100ns	33
DRAM 256Kbx4-120ns ZIP	30
DRAM 1Mbx1-100ns	23
Ext. Floppy 1"x4"x8" pass thru	145
Int. A2000 Floppy-Chinon	99

DRAWING TABLETS

Easy! 1000	369
Easy! 500	329
Easy! 2000	369
A Pro Draw 12x12 w/cursor	499

GENLOCKS

AmiGen	149
Gen/One	675
ProGen	369
Magni 4004	1389
SuperGen	669

MIDI/SOUND

A.M.A.S.	115
Golden Hawk A2000 Int. Midi	75

SCSI DRIVES

Micropolis 158MB 5.25	1200
Seagate 32MB 3.5	415
Seagate 48MB 3.5	549
Seagate 64MB	515
Quantam 40MB ProDrive	589
Quantum 80MB ProDrive	969

PRINTERS

Canon PJ1080A Color Ink Jet	519
Canon Bubble Jet 360 dpi B/W	call
Hewlett Packard DeskJet300dpiB/W	749
Hewlett Packard Paint Jet Color	1150
NEC LC890 Postscript LED	3495
Okimate 20	155
Star NX 1000R Rainbow Color	259
Xerox 4020 Color Ink Jet	1139

VIDEO

Color Splitter	75
CMI VI-500 Video Adapter for A500	68
CMI VI-500RF Video Adapter	88
Flicker Fixer for A2000	479
Mitsubishi DiamondScan 14	579
Mitsubishi DiamondScan 16	call
Mitsubishi DiamondScan 20	call
NEC Multisync 3D	call
Panasonic WV 1410 Camera	189
Rainbow 16mm Lens w/Variable Iris	49
Perfect Vision	169

AMIGA

1084S Stereo Monitor	Call
2058 MemoryBoardw2MB-8MBmax	call
2090A Autoboot Controller	call
2300 Genlock	call
2620 68020/68851 w2MB	call
2286 AT Bridgeboard	call
2088 XT Bridgeboard	call
501 A500 Memory Exp. w/clock	call
Amiga 500	call
Amiga 2000, 2000HD or 2500	call

A SQUARED

Live! 1000	249
Live! 500	285
Live! 2000	319

DIGITRONICS

RC4 A2000 Memory Board OK	199
RC4 A500 Mmry Brd w/caselpwr	280
RC4's w/RAM	call

GREAT VALLEY

A2000 2/0 SCSI Controller	299
A2000 2/0 w2MB	call
A2000 2/0 w40MB Quantum	815
A2000 2/0 w80MB Quantum	1249
A2000 40MB Quantum HrdCrd	799
A2000 80MB Quantum HrdCrd	1159
A500 30MB HrdDrv	759
A500 40MB Quantum HrdDrv	1020
A500 80MB Quantum	1429
A500 2/0 w2MB	call

IVS

Trumpcard	159
Trumpcard Quantum 40S	call
Trumpcard Quantum 80S	call
Trumpcard w/32MB	499
Trumpcard w/48MB	619
Trumpcard w/64MB	649
Trumpcard w/158MB	1359
Trumpcard 500	219
Trumpcard 500 w/32MB	559
Trumpcard 500 w/48MB	679

MAST

MicroMags	165
MiniMags 500 or 1000 w/512KB	325
MiniMags 500 or 1000 w/1MB	485
MiniMags 500 or 1000 w/2MB	795
Tiny Tiger 30MB	629
Tiny Tiger 40MB	799
Tiny Tiger 50MB	769
Tiny Tiger 80MB Quantum	1129
TwinDrive	259
UniDrive	149

MICROBOTICS

8-up OK	145
8up w/2MB 8MB max	525
HardFrame 2000	239
StarBoard II OK	269
StarBoard II 512K	call
StarBoard II 1MB	call
StarBoard II SCSI module	99

MIMETICS

Frame Buffer	call
Frame Grabber	call

PACIFIC

Subsystem 500	249
---------------	-----

PHOENIX

Exp. Chassis A500 or 1000	175
Exp. Chassis w/pwr A500 1000	253
22MB HrdDrv A500 or 1000	579
48MB HrdDrv A500 or 1000	829

PROGRESSIVE

ProRAM 2000 OK	249
ProRAM 2000 2MB	call
Framegrabber	539

RONIN

68030	call
68020	call
Memory	call

SPIRIT

Spirit Inboard A1000	240
Spirit Inboard A1000 w/512K	385
Spirit Inboard A500 SIN	265

SUPRA

A2000 Internal Modem	call
Hard Drives	call

THE LAST INCA

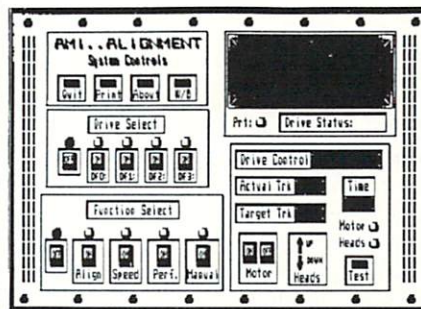


THE LAST INCA

Brand-new graphics/text adventure that only the most skillful warriors can survive. Are you the chosen one?

OUR PRICE \$32

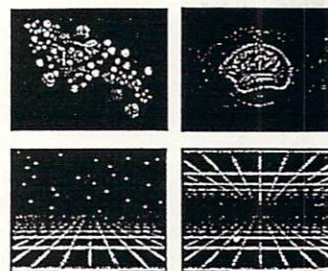
Ami...Alignment



Treat your drives with respect!
A full-featured diagnostic & alignment system.

OUR PRICE \$39

MEDIA LINE Font & Art Disks



Fonts Vol 1, Fonts Vol 2, Clip Art or
Video of Animation Backgrounds

EACH JUST \$24

SPECIAL — ALL 4 JUST \$89

(Offer good until 6/30/89)



GREAT VALLEY PRODUCTS INC.



IMPACT A2000 S044

44 MB Removeable Cartridge Winchester Disk Drive
Autoboot from a FFS Partition
Automatic "Diskchange" Command
25 ms ave. access time
1:1 Interleave Capability
SCSI Interface

Impact A2000-030/16 - Impact A2000-030/25

4 MB/8 MB Daughterboard
Sockets for Boot EPROMS
Built-in hard disk controller
Socket for 68881/82 FPU
Asynchronous Design

BRIWALL

SOLID PRODUCTS & SOLID SUPPORT

PO Box 129/58 Noble Street
Kutztown, PA 19530

Toll-Free 24 Hour Order Line 1-800-638-5757

24-Hour Order Line Outside USA

1-215-683-5433

24-Hour FAX Line - 1-215-683-8567

Customer Service - 1-215-683-5433

Technical Support - 1-215-683-5699

PLEASE COME VISIT US!

Monday - Friday 9AM-6PM EST

Saturday 9AM - 12 Noon EST



Write or Call for our

GREAT AMIGA OR C64/C128 CATALOG

Circle 132 on Reader Service card.



Synergy 500

Autoboot SCSI controller for the Amiga 500 with all necessary software, including a hard disk backup utility. An optional RAM board may be housed in the injection molded case.

Synergy 500 \$219

Case for 2-5.25" HH w/power and fan 79

Synergy 500/Case/32 MB 3 1/2" 629

Synergy 500/Case/48 MB 3 1/2" 749

Synergy 500/Case/65 MB 5 1/4" 779

Synergy 500/Case/158MB 5 1/4" 1485

Also Available:

Over Drive \$199

Over Drive w/3 1/2" 32 MB 539

Over Drive w/3 1/2" 48 MB 659

**Pacific
Peripherals**

SHIPPING POLICY: All ORDERS received before 3PM EST will normally be shipped within 2 business days. Out of stock items will be shipped by the same shipping method as original order, normally within 3 or 4 business days. All UPS shipments are sent SIGNATURE REQUIRED/NO DRIVER RELEASE. ADD the following shipping charges to your TOTAL software order:

UPS: Ground \$4.00 (cont USA ONLY); Air/Rush \$7.00 (Includes Puerto Rico/Hawaii); Overnight \$12.00 + \$2.50 per item (must be received by 12 NOON).

PRIORITY MAIL: USA \$4.00 (includes AP0/FP0); Canada/Mexico \$6.00; Other Foreign \$4.00 Handling + Actual Shipping + Insurance.

ORDERING INSTRUCTIONS: For your convenience, you can place a phone order 24 HOURS/ 7 DAYS A WEEK on our TOLL-FREE LINE 1-800-638-5757. Outside the USA, please use (215) 683-5433. Price, availability and compatibility checks are also welcome on our order line, Monday thru Friday, 9:30AM-4:30PM EST. AFTER HOURS, Orders Only, Please! When placing an order, please specify your computer model, home & daytime phone number, shipping address, charge card number, expiration date & name of bank.

ACCEPTED PAYMENT METHODS: We welcome payment by PREPAID (by Personal Check or Money Order); MASTERCARD; VISA; SCHOOL PURCHASE ORDERS. COD orders are welcome for established Briwall Customers Only (\$4.00 additional). All payments must be in USA DOLLARS. There is no Surcharge for Credit Cards and your card is NOT charged until we ship!

RETURN POLICY (for software and accessories ONLY): We have a liberal return policy to better service your needs. If within 15 days from the time you receive an item, you are not satisfied with it for any reason, you may return it to us for either a refund, exchange or open credit. REFUNDS ARE SUBJECT TO A 10% RESTOCKING FEE PER ITEM RETURNED (\$5.00 MINIMUM PER ITEM). EXCHANGES/OPEN CREDITS will gladly be issued for the full purchase price of the item. DEFECTIVE Items, Hardware items and Special Order items will be replaced with the same item only.

TECHNICAL SUPPORT (M-F - 9:30AM-5PM EST) We do our very best to help you with your product selections, before you order and after you receive your product. General questions, price, compatibility with your computer, etc. will be handled by our order staff at the time you place your order. BUT, if you have specific, detailed questions about a product, printer, compatibility questions, etc., you will get the most help from our TECHNICAL SUPPORT LINE 215-683-5699.

HELP KEY

Speedy "Gon-wallez" tells you how to put the "Arriba, Arriba" in your Amiga.

By Louis R. Wallace

SO MANY QUESTIONS

Q: *I am going to trouble you with several questions that I have been unable to find answers to.*

1. *Will it ever be possible to expand chip memory? If so, will it cause any compatibility problems with existing software and hardware?*

2. *Will the Amiga ever be able to have screen resolutions (flicker free, I hope) of up to 1024 × 1024? What kind of monitor would be required?*

3. *Are the new coprocessors and accelerators 100% compatible with all software and hardware, or do they require products designed for the 68020 (or even 68030)?*

4. *Will a 32-bit accelerator with 32-bit RAM be able to use the one meg of slower 16-bit RAM already in the A2000? Also, can the accelerator take advantage of 16-bit FAST RAM if it is present? Is there a limit to the amount of 32-bit RAM that can be used by the 32-bit accelerator?*

5. *Is there any advantage (other than speed) to an IBM-AT-compatible Bridgeboard? Can a Bridgeboard use any of the normal Amiga RAM or does it require its own expansion?*

I know this is a lot of questions for one person to ask, but this is

the only single source I know of where I can ask all these questions and hope for a reply.

Chris Ray
Chatsworth, CA

A: Yes, this is a lot for one letter, but they are all serious and legitimate questions, and I am sure that many other Amiga owners have also wondered about these things.

1. Yes, it will be possible to expand your available chip memory from the present 512K limit to 1024K by adding the new Fat Agnus chip from Commodore. For most A2000 owners, this upgrade will require a trip to an Amiga service center, as it isn't something that average users will want to do themselves. (It involves more than just replacing the custom chips.) These chips won't be widely available until the 1.4 version of AmigaDOS is released, and I don't expect that to happen until late this year. In most cases, the extra chip RAM should not cause any undue software compatibility problems, and may well make some packages work better than they do already (especially when multitasking several graphic applications).

2. If all you want is to increase your on-screen resolution to 1024 × 1024, you can already have nearly that level by buying the ultra high-reso-

lution Viking I monitor (\$1995) from Moniterm (see review on p. 14). This will give you a real screen resolution of about 1000 × 800 using a two-bitplane (four-color) display. Currently, there aren't a lot of programs that can take advantage of it, and to be honest, it will need the new Fat Agnus and AmigaDOS 1.4 before you can really make full use of its abilities. But it exists and it's available now.

3. As for the software/hardware compatibility of the new generation of coprocessors and accelerators, the answer depends on which one you are talking about. Last January, I upgraded my A2000 with Commodore's A2620 68020/68881 board with two megs of 32-bit memory. This is one well-designed product, as it allows you to reboot using either the 68020 or the 68000 (for use with those few products that refuse to run with the 68020 active). So far I have encountered only two programs (both games) that refuse to run with it installed. And in almost every instance, programs have been operating significantly faster, in most cases 300–400%. Those that are designed to take advantage of the 68020 and/or 68881 run much faster, but even programs written with just the 68000 in mind perform noticeably better.

4. When in 68020 mode (the default on power up), the computer is able to take full

advantage of all the RAM present. For me that includes the two megs of 32-bit RAM as well as another three megs of standard RAM I have installed. The theoretical limit of 32-bit RAM would be eight megs, because the Amiga can address only nine megs and one comes on the motherboard. However, the A2620 board was designed to hold only four megs of 32-bit RAM directly on the card. (Other boards may well be designed for the full eight megs.)

This ability of the A2620 to address the standard Amiga RAM does not work in both directions, however. If you reboot using the normal 68000 CPU, the 32-bit RAM on the accelerator card is not available.

5. Finally, concerning the Bridgeboards, the two main advantages of the new AT Bridgeboard over the original XT Bridgeboard would be faster clock speed and one meg of RAM on the board (the XT Bridgeboard has only 512K). The Bridgeboard *cannot* use any of the Amiga's RAM for its own data processing, and if you want more than the supplied RAM, you will need to purchase a standard AT RAM expansion card and install it in one of the PC slots in the Amiga. ■

SOFTWARE DISCOUNTERS OF AMERICA

S.D. of A.

USA/Canada Orders—1-800-225-7638

PA Orders—1-800-223-7784

Customer Service 412-361-5291

- Free shipping on orders over \$100 in continental USA
- No Surcharge for VISA/MasterCard
- Your Card is not charged until we ship

ORDER LINE HOURS: Mon.-Thurs. 9:00 AM-9:00 PM Fri. 9:00 AM-7:00 PM Sat. 10:00 AM-4:00 PM Eastern Time.

3 Dynamite **MELBOURNE** Titles



King of Chicago



Sinbad

At New Low
SDA Prices!
Was \$32 Ea.
Now \$16 Ea.



S.D.I.

ABACUS	Videoscape 3D	\$129
Assem Pro	Video Titler	\$89
Becker Text	ANTIC	
Data Retrieve	Bo Bo	\$23
Professional Data Retrieve	Crash Garrett	\$25
Call Text Pro Word Processor	GFA Basic 3.0	\$95
\$49 *Abacus Books in Stock! Call	ARCADIA	
ACCESS	Aaargh	\$23
W.C. Leader Board	Double Dragon	\$26
ACCOLADE	ARTWORK	
Bubble Ghost	Bridge 5.0	\$23
Fast Break	Centerfold Squares	\$19
4th & Inches Football	Linkword Languages	Call
4th & In. Team Const. \$9.88	Strip Poker 2	\$25
Grand Prix	S.P. Data Disk 4 or 5 \$14 Ea.	
Hardball	BAUDVILLE	
Jack Nicklaus Golf	Video Vegas	\$23
Test Drive	BETHESDA	
Test Drive 2: The Duel	Gretzky Hockey	\$32
T. Drive 2 Calif. Scenery \$14	Gridiron	\$19
T. Drive 2 Super Cars	BRODERBUND	
ACTION WARE	Fantavision	\$39
Capone	Operation: Clean Streets	\$25
Phaser Gun	Sky Chase	\$25
P.O.W.	Space Racer	\$19
ACTIVISION	Star Wars	\$25
Battle Chess	BYTE BY BYTE	
Battlehawks 1942	Animate 3-D	\$99
Neuromancer	Sculpt 3-D	\$65
Rampage	CINEMAWARE	
Shanghai	Defender of the Crown	\$32
Zak McKracken	King of Chicago	\$16
AEGIS	Lords of Rising Sun	\$32
Audio Master 2	Rocket Ranger	\$32
Draw 2000	S.D.I.	\$16
Lights, Camera, Action!	Sinbad: Throne of the	
Ports of Call	Falcon	\$16
Sonix	Three Stooges	\$32

ACTIVISION HOME COMPUTER SOFTWARE

Get an authentic
pilot's eye view, from
both sides of 4 WWII
Naval air battles that
turned the tide in the
Pacific.

Battlehawks 1942
List \$49.95

SDA Discount Price \$32



TV Sports Football	\$32
DATA EAST	
Bad Dudes	\$29
Platoon	\$29
DATASOFT	
Hunt for Red October	\$32
Lancelot	\$26
Sorcerer Lord	\$23
Time & Magik	\$26
DESIGNWARE	
Designasaurus	\$32
DIGITEK	
Hole in One	\$25
Hole in One Course Disk	
2 or 3	\$14 Ea.
Hollywood Poker	
(X-Rated, Digitized)	\$23
Vampire's Empire	\$29
Western Games	\$23
DISCOVERY	
Arkanoid	\$19
Better Dead Than Alien	\$23
Grabbit	\$19
Marauder 2	\$25
Sword of Sodan	\$32
Virus Infection	
Protection Program	\$32
Zoom!	\$19
ELECTRONIC ARTS	
Bard's Tale	\$32
Bard's Tale 2	\$39
Chessmaster 2100	\$32

ETHOS	
Poker Solitaire	\$23
FIRST ROW	
Twilight Zone	\$25
FTL	
Dungeon Master	\$25
GAMESTAR	
GFL Champ. Football	\$14
GOLD DISK	
Comic Setter	\$59
Desktop Budget	\$44
Movie Setter	\$59
Professional Draw	\$129
Professional Page	\$249
INFOCOM	
Battletech	\$32
Beyond Zork	\$14
Journey	\$32
Shogun	\$32
Zork Trilogy	\$32
Zork Zero	\$39
INKWELL	
Amiga Light Pen 2.0	\$89
MASTERTRONIC	
Scrabble	\$26
MEDALIST	
Master Ninja	\$19
Twilights Ransom	\$19
MELBOURNE HOUSE	
War in Middle Earth	\$32
MICHTRON	
Goldrunner 2	\$25

Ask your salesperson: "What's on Sale this Month?"

Deluxe Music Const.	\$65
Deluxe Paint 3	\$99
Deluxe Photo Lab	\$99
Deluxe Productions	\$129
Demon's Winter	\$25
Empire	\$32
FA/18 Interceptor	\$32
Ferrari Formula One	\$32
Firezone	\$21
Instant Music	\$14
Intelltype	\$14
Marble Madness	\$14
Reach for the Stars	\$26
Return to Atlantis	\$14
Skyfox 2	\$14
Star Fleet 1	\$36
Weaver Baseball	\$32
Weaver B.B. 88 Stats	\$14
World Tour Golf	\$14
Zany Golf	\$26
EPYX	
Axe of Rage	\$32
Battleship	\$19
California Games	\$32
Curse Buster	Call
Death Sword	\$19
Final Assault	\$19
4x4 Off Road Racing	\$19
Impossible Mission 2	\$19
Mind-Roll	Call
Space Station Oblivion	\$19
Street Sports Basketball	\$14
Sub Battle Simulator	\$19
Technocop	\$32
The Games: Winter Ed.	\$32
Winter Games	\$14
World Games	\$14

HiSoft Pro. Basic	\$99
Insanity Fight	\$25
International Soccer	\$25
Leatherneck	\$25
Major Motion	\$25
Tanglewood	\$25
Time Bandit	\$25
MICROILLUSIONS	
Blackjack Academy	\$25
Craps Academy	\$25
Faery Tale Adventure	\$32
Fire Power	\$16
Photon Paint 2.0	\$95
Romantic Encounters	\$25
MICROPROSE	
Gunship	\$35
Silent Service	\$25
MICROSYSTEMS	
Excellence W.P.	\$159
The Works—Platinum	\$179
MINDSCAPE	
Action Fighter	\$25
Alien Syndrome	\$25
Balance of Power	\$25
Balance of Power 1990	\$32
Blockbuster	\$25
Combat Course	\$25
De Ja Vu 1 or 2	\$32
Harrier Combat Sim.	\$32
Hostage	\$29
Indiana Jones	\$25
Outrun	\$33
Perfect Score SAT	\$49
Road Raider	\$25
Shadowgate	\$32
Space Harrier	\$32

MELBOURNE HOUSE

Tolkien's panoramic
vision of the
cataclysmic struggle
between good & evil
has been skillfully
crafted into a game
of epic proportions.

War in Middle Earth
List \$49.95

SDA Discount Price \$32



Super Star Ice Hockey	\$32
Thunder Blade	\$32
Uninvited	\$32
Willow	\$25
NEWTEK	
Digi-Paint	\$39
Digi-View Gold	\$139
ORIGIN	
Ultima 4	\$39
PAR SOFTWARE	
Express Paint 3.0	\$84
PRECISION	
Superbase Personal 2	\$95
Superbase Profess. 3	\$189
PSYGNOSIS	
Baal	\$19
Ballistix	\$23
RAINBIRD	
Carrier Command	\$29
Starglider 2	\$29
Universal Military Simulator	
\$32	
READYSOFT	
Dragon's Lair	\$39
SIERRA	
Black Cauldron	\$25
Gold Rush	\$25
King's Quest 1, 2 or 3 \$32 Ea.	
Leisure Suit Larry	\$25
Manhunter	\$32
Mother Goose	\$19
Police Quest	\$32
Space Quest 1 or 2	\$32
Thexder	\$23
SOFTLOGIC	
Pagestream	\$129
SPECTRUM HOLOBYTE	
Falcon	\$32

Tetris	\$23
SSI	
Heroes of the Lance	\$26
SUBLOGIC	
Flight Simulator	\$32
Jet	\$32
Scenery Disks	Call
TAITO	
Bubble Bobble	Call
Operation Wolf	Call
Renegade	Call
THREE-SIXTY	
Dark Castle	\$25
Warlock	\$23
TITUS	
Galactic Conqueror	\$29
UNICORN	
Aesop's Fables	\$29
Math Wizard	\$29
Read & Rhyme	\$29
UNISON WORLD	
Art Gallery 1 or 2	\$19 Ea.
Art Gallery: Fantasy	\$19
Fonts & Borders	\$23
Print Master Plus	\$25
WORD PERFECT	
Word Perfect W.P.	Call
ACCESSORIES	
Air Drive Internal	\$119
Air Drive External	\$149
Disk Case (Holds 45)	\$6.88
Disk Drive Cleaner	\$6.88
Epyx 500 XJ Joystick	\$14
Sony 3 1/2" DSD	\$16.90 Bx.
Supra Hard Drives	Call
Wico Bat Handle	\$17
Wico Ergostick	\$19

COSMI

TRIPLE PACK SPECIAL!

SUPER HUEY II

Helicopter Flight Simulator

DEFCON 5

Authentic SDI Simulation

THE PRESIDENT IS MISSING

Interactive Mystery Adventure

Reg. 39.95ea. All three titles for ONLY \$25

P.O. BOX 111327—DEPT. AMW—BLAWNOX, PA 15238

*Please Read The Following Ordering Terms & Conditions Carefully Before Placing Your Order: Orders with cashiers check or money order shipped immediately on in stock items! Personal & Company checks, allow 3 weeks clearance. No C.O.D.'s! Shipping: Continental U.S.A.—Orders under \$100 add \$3; free shipping on orders over \$100. AK, HI, FPO, APO add \$5 on all orders. Canada & Puerto Rico add \$7.50 on all orders. Sorry, no other International orders accepted! PA residents add 6% sales tax on the total amount of order including shipping charges. CUSTOMER SERVICE HOURS: Mon.-Fri. 9 AM-5:30 PM Eastern Time. REASONS FOR CALLING CUSTOMER SERVICE—412-361-5291 (1) Status of order or back order (2) if any merchandise purchased within 60 days from S.D. of A. is defective, please call for a return authorization number. We will not process a return without a return auth. #! Defective merchandise will be replaced with the same merchandise only. Other returns subject to a 20% restocking charge! After 60 days from your purchase date, please refer to the warranty included with the product purchased & return directly to the manufacturer. Customer service will not accept collect calls or calls on S.D. of A.'s 800# order lines! Prices & availability are subject to change! New titles are arriving daily! Please call for more information.

MODEM OWNERS: You can order from our Amiga Shop via the CompuServe, GENie and Q-Link electronic malls.

from p. 22

```

IF search$ = "" THEN
  GOSUB ActivAll
  RETURN
END IF

GOSUB RecSearch
GOSUB ActivAll
RETURN

      REM Error Handling
eHandle:
  GOSUB ActivNone
  IF ERR = 53 THEN
    WINDOW 2
    CLS
    LOCATE 3,1
    PRINT "File Does not Exist."
    PRINT "Choose NEW to create a file."
    PRINT
    INPUT "<Return to Continue> ";ans$
    GOSUB ActivProject
    RESUME res1
  END IF

  IF ERR = 64 THEN
    WINDOW 2
    CLS
    LOCATE 3,1
    PRINT "You entered an illegal file name"
    PRINT
    INPUT "<Return to Continue>";ans$
    GOSUB ActivProject
    RESUME res1
  END IF

  PRINT "Unrecoverable Error"
  PRINT "Error Number ";ERR
  PRINT "Consult your Amiga Basic manual"
  CLOSE
  RESET MENU
  STOP

      REM Open Existing File
OpenF:
  WINDOW 2,"Open", (50,50)-(400,150)
  GOSUB ActivNone
  LOCATE 3,1
  PRINT "Open Data File"
  PRINT
  INPUT "Enter Name of File: ";f$
  PRINT

  IF f$ = "" THEN
    WINDOW CLOSE 2
    GOSUB ActivProject
    RETURN
  END IF

  f$=f$+".adr"
  OPEN f$ FOR INPUT AS #1
  rec = 0
  PRINT "Reading data from file "; f$

  WHILE NOT EOF(1)
    rec= rec +1
    FOR fld = 1 TO 7
      INPUT#1, lst$(rec,fld)
    NEXT fld
  WEND

  CLOSE #1
  GOSUB FSort
  GOSUB ActivAll

  res1:
    WINDOW CLOSE 2
    RETURN

      REM Create New File

```

```

NewF:
  GOSUB ActivNone
  WINDOW 2,"New", (50,50)-(400,150)
  LOCATE 5,3
  PRINT "Create Data File"
  PRINT
  INPUT "Enter name for new file: ";f$

  IF f$ = "" THEN
    WINDOW CLOSE 2
    GOSUB ActivProject
    RETURN
  END IF

  f$ = f$ + ".adr"
  rec = 0
  WINDOW CLOSE 2
  GOSUB AddRec
  GOSUB ActivAll
  RETURN

      REM Activate Project Menu
ActivProject:
  MENU 1,0,1,"Project"
  MENU 1,1,1,"New"
  MENU 1,2,1,"Open"
  MENU 1,3,1,"Quit"
  MENU 2,0,1,"Display"
  MENU 2,1,0,"List"
  MENU 2,2,0,"Forms"
  MENU 3,0,1,"Records"
  MENU 3,1,0,"Add"
  MENU 3,2,0,"Search"
  MENU 4,0,1,"Print"
  MENU 4,1,0,"List"
  MENU 4,2,0,"Labels"

  RETURN

      REM Activate All Menus
ActivAll:
  MENU 1,0,1,"Project"
  MENU 1,1,1,"New"
  MENU 1,2,1,"Open"
  MENU 1,3,1,"Quit"
  MENU 2,0,1,"Display"
  MENU 2,1,1,"List"
  MENU 2,2,1,"Forms"
  MENU 3,0,1,"Records"
  MENU 3,1,1,"Add"
  MENU 3,2,1,"Search"
  MENU 4,0,1,"Print"
  MENU 4,1,1,"List"
  MENU 4,2,1,"Labels"
  MENU 5,0,1,f$

  RETURN

      REM Deactivate All Menus
ActivNone:
  MENU 1,0,0,"Project"
  MENU 1,1,0,"New"
  MENU 1,2,0,"Open"
  MENU 1,3,0,"Quit"
  MENU 2,0,0,"Display"
  MENU 2,1,0,"List"
  MENU 2,2,0,"Forms"
  MENU 3,0,0,"Records"
  MENU 3,1,0,"Add"
  MENU 3,2,0,"Search"
  MENU 4,0,0,"Print"
  MENU 4,1,0,"List"
  MENU 4,2,0,"Labels"
  MENU 5,0,0,f$

  RETURN

```


Order Toll Free **ComputAbility** Order Toll Free 800-558-0003 Consumer Electronics 800-558-0003

AMW-6-89

Hard Drive Kits (A-2000)

Free delivery in the Continental USA

ST-138N 30 MEG.....	479 DEL
ST-157N 49 MEG.....	529 DEL
ST-225N 20 MEG.....	469 DEL
ST-251N 40 MEG.....	539 DEL
ST-277N 60 MEG.....	619 DEL
ST-296N 80 MEG.....	709 DEL

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

Hard Drive Cards (A-2000)

Free delivery in the Continental USA

ST-138N 30 MEG.....	499 DEL
ST-157N 49 MEG.....	549 DEL

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

Hard Drive Cards

For A-2000 equipped with Bridgecard
Free delivery in the Continental USA

ST-138R 30 MEG.....	349 DEL
ST-157R 50 MEG.....	419 DEL

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

AMIGA 500 HARD DRIVE PACKAGES

ST - 138N - 30 Meg	549 Delivered!
ST - 157N - 49 Meg	579 Delivered!

These Packages Include Trumcard 500 enclosure, IVS Trumcard SCSI hd drive Ctrl, Software & free delivery in the contiguous USA

Seagate SUPER SALE

ST-125N 20 Meg - SCSI.....	329
ST-138N 30 Meg - SCSI.....	315
ST-157N 49 Meg - SCSI.....	349
ST-177N 60 Meg - SCSI.....	569
ST-225N 20 Meg - SCSI.....	279
ST-251N 40 Meg - SCSI.....	375
ST-277N 60 Meg - SCSI.....	429
ST-296N 80 Meg - SCSI.....	539

ALL HARD DRIVE PRICES INCLUDE CABLE

Supra 2400 Baud Modem & Cable

••SPECIAL \$145••

Free Delivery to the 48 Contiguous States

Supra Hard Drives

Supra 30 Meg (A500).....	699 DEL
Supra 30 Meg (A1000).....	699 DEL

Hard Drive Prices Include Cable

Modems

Amiga 1680 Modem.....	99
Avatech 1200E.....	69
Avatech 2400.....	139
Supra 2400 Baud.....	129

PANASONIC Printers

1190 NEW NEW NEW.....	189
1191 NEW NEW NEW.....	239
1124 NEW 24 Pin.....	349

STAR Printers

NX-1000.....	175
NX-1000 Rainbow (color).....	229
NX-2400.....	289

MASTER 3A Disk Drive 1010 Compatible \$139

Free Delivery to the Contiguous States

Authorized Amiga Dealer

CALL US!
For All Your
AMIGA
Needs!

MISC. HARDWARE

Ami GEN.....	135
Super GEN.....	669
Magni 4004 Genlock.....	1389
Flicker Fixer.....	455
Perfect Sound.....	69
Onlin FB 354 Internal Drive.....	99 DEL
Perfect Vision.....	175
Color Splitter.....	75
Supra Hard Drive 500/1000.....	CALL
Mouse Master.....	35

Special

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

AMIGA SOFTWARE

1943.....25.95	Centerfold Squares.....18.95	FA/18 Interceptor.....31.95	Invack.....134.95	Pageflapper Plus/FX.....87.95	Shadowgate.....31.95	Trump's Castle.....24.95
4 x 4 Off Road Racing.....14.95	Chessmaster 2000.....28.95	Facc II.....20.95	Jack Nicklaus Golf.....31.95	Pen Pal.....94.95	Shakespeare.....74.95	Turbo Silver 3.0 I.....109.95
4th and Inches.....28.95	Chessmaster 2100.....31.95	Faery Tale Adven.....30.95	JN Courses of 1989.....14.95	Phasor.....57.95	Shinobi.....31.95	TV Show.....64.95
A-Talk 3.....64.95	Chronopaint.....48.95	Falcon.....31.95	Jel.....31.95	Photon Paint 2.0.....94.95	Shogun.....31.95	TV Text.....64.95
A/C Basic.....132.95	Chronoquest.....32.95	Fantavision.....38.95	Joe Blade.....21.95	Photon Paint Surface.....19.95	Side Arms.....25.95	Twilight Zone.....24.95
Action Fighter.....24.95	City Desk 2.0.....114.95	Fast Break.....28.95	Journey.....31.95	Photon Video:Call Anl87.95	Silent Service.....24.95	Ultima 4.....38.95
Adventures of Sinbad.....28.95	Clue Master Detective.....25.95	Federation.....31.95	Jug.....24.95	Photon Video Trans.....180.95	Slm City.....28.95	Ultima III.....24.95
After Burner.....31.95	Colony.....31.95	Ferrari Formula 1.....31.95	Kampfgruppe.....38.95	Pinball Wizard.....22.95	Sinbad.....17.95	Underscore Commando.....31.95
Alien Syndrome.....24.95	Combat Course.....25.95	Final Assault.....14.95	Kind Words V2.0.....64.95	Pioneer Plague.....25.95	Skate Wars.....31.95	Universal Military Sim.....31.95
Alternate Reality: City.....25.95	Comic Sorter.....59.95	Fine Print.....32.95	King Of Chicago.....17.95	Planet of Lust.....24.95	Sky Blaster.....18.95	Vampire's Empire.....28.95
Amiga Tax.....52.95	Funny Figures.....20.95	Fire and Forget.....24.95	King's Quest IV.....31.95	Platoon.....28.95	Sky Chase.....24.95	Vette.....31.95
AmigaDOS ToolBox.....38.95	Science Fiction.....20.95	FIRE ZONE.....22.95	Kingdoms of Eng.....31.95	Police Quest 1 OR 2.....31.95	Sky Fox II.....13.95	Video Effects 3-D.....113.95
Android Decision.....23.95	Super Heroes.....20.95	Flight Simulator II.....31.95	Lancelot.....26.95	Ports of Call.....28.95	Sky Shark.....13.95	Video Fonts.....28.95
Animato 4D.....37.95	Contra.....25.95	European Scenery.....19.95	Leaderboard duo pk.....22.95	Power Windows 2.5.....54.95	Software Field II.....62.95	Video Tilt.....84.95
Animation Editor.....24.95	Crazy Cars.....24.95	Flow.....59.95	Leathemock.....24.95	Precisely.....48.95	Sorcerer Lord.....23.95	VideoScope 3.0 2D.....115.95
Animation Multipane.....52.95	Curse Buster.....19.95	Form In Flight 2.....69.95	Leisure Suit Lamy.....25.95	Print Master Plus.....28.95	Space Harrier.....31.95	VIP Professional.....59.95
Animation Rotoscope.....48.95	Cyber Complex.....21.95	Front Page.....74.95	Leisure Suit Lamy II.....31.95	Art Gallery 1 + 2.....24.95	Space Quest 1 or 2.....31.95	Virus Infect Protection.....28.95
Animator (Aegle).....81.95	Data Retrieve Pro.....179.95	Future Design Disk.....22.95	Life and Death.....31.95	Prison.....24.95	Space Quest 3.....CALL	Vista 3-D.....87.95
Animator Apprentice.....24.95	Data Storm.....24.95	Future Sound 500.....89.95	Lights Camera Action.....48.95	Pro Script.....28.95	Space Race.....19.95	War In Middle Earth.....31.95
Annals of Rome.....23.95	Death Bringer.....24.95	Galileo II.....62.95	Lords of the Rising Sun.....31.95	Pro Video.....177.95	Speedball.....24.95	Wayne Gretzky Hockey.....31.95
Anti Virus.....22.95	Defender/The Crown.....31.95	Games: Winter Ed.....31.95	Lost Dutchman Mine.....31.95	Pro Write 2.0.....69.95	Splworld.....18.95	Who, What, When.....64.95
Architect Design Disk.....22.95	Delta Vu: 1 or 2.....31.95	Gettysburg.....38.95	Magellan 1.....114.95	Pro Draw.....112.95	Star Glider II.....28.95	Willow.....25.95
Arenax.....29.95	Deluxe MLC Ctl.SI 2.0.....61.95	GFA Basic 3.0.....87.95	Magical Johnson.....31.95	Professional Page.....228.95	Star Ray.....29.95	WordPerfect.....179.95
Arkanoids.....18.95	Deluxe Paint II.....97.95	Manhunter - New York.....31.95	Manhunter - New York.....31.95	Practics 1 & 2.....21.95	Star Wars.....24.95	World Class Leader Bc28.95
Artic Adven.....25.95	Deluxe Productions.....128.95	GO.....24.95	Marble Madness.....13.95	Project D+ Backup.....30.95	Strip Poker II.....25.95	World Tour Golf.....13.95
Arturo.....25.95	Deluxe Video V1.2.....84.95	Gold of the Realm.....24.95	Maxi Beacon Typing.....31.95	Pub Games.....25.95	Studio Magic.....59.95	X-Specs.....84.95
Attack on London.....22.95	Deluxe Video V1.2.....84.95	Gold Runner 2.....24.95	Maxi-Plan 500.....92.95	Publisher Plus.....64.95	Sub Battle Sim.....14.95	Zak McKracken.....29.95
Audio Master 2.....58.95	Demon's Winter.....26.95	Gold Rush.....24.95	Maxi-Plan Plus.....123.95	Puzzle Storybook.....25.95	Super Back.....48.95	Zany Golf.....26.95
Award Maker.....32.95	Design 3D.....59.95	Gorff Button.....49.95	Menace.....19.95	Qk.....25.95	Super Star Basketball.....CALL	Zork Zero.....87.95
Awesome Arcade Pk.....32.95	Designasaurus.....30.95	Graball.....18.95	Michon Hill Disk #1.....32.95	Quarter Back.....42.95	Superbase Personal.....46.95	Zynaps.....22.95
Axe of Rage.....29.95	Digadoid.....59.95	Grand Prix Circuit.....31.95	Micro Fiche Filer Plus.....114.95	Question II.....32.95	Superbase Personal 287.95	
B.A.D.....29.95	Digipaint.....38.95	Graphics Studio.....28.95	Micro Lawyer.....34.95	Rampage.....24.95	SuperBase Pro 3.0.....189.95	
Bal of Power 1990.....31.95	Digipaint3.0.....CALL	Hardball.....28.95	Microbot Design Disk.....22.95	Rastan.....25.95	Superman.....87.95	
Bard's Tale.....31.95	DigView Gold.....124.95	Harpoon.....25.95	Midl Magle.....CALL	Raw Copy.....36.95	Superstar Ice Hockey.....31.95	
Bards Tale II.....15.95	Dinosaur Discovery K125.95	Harrier Combat Sim.....31.95	Midl Rec Studio V1.1.....39.95	Real of the Warlock.....21.95	Sword of Sodan.....31.95	
Bards Tale III.....38.95	Disk 2 Disk.....28.95	HEAVY METAL.....26.95	Midl View.....23.95	REEL FISH'N.....29.95	T.V. Sports Football.....31.95	
Battle Chess.....31.95	Disk Master.....28.95	Heroes of the Lance.....26.95	Missile Con Ball.....19.95	Renegade.....25.95	Tangelwood.....24.95	
Battle Hawk 1942.....31.95	Disk Mechanic.....54.95	Hole In One.....21.95	Missile Up Math Gse.....19.95	Return To Atlantis.....13.95	Technopac.....31.95	
Battletech: Cr Hk Inc.....31.95	Dive Bomber.....14.95	Movie Disk.....22.95	Movie 3D.....56.95	Rhyming Notebook.....26.95	Temple of Doom.....31.95	
Berzerk 3.....22.95	Dos 2 Dos.....31.95	Hollywood Poker.....29.95	Movieb.....39.95	Ring Side.....24.95	Tetraquest.....24.95	
Blonic Commando.....24.95	DOUBLE DRAGON.....25.95	Hostage.....29.95	Movie Setter.....59.95	Road Raider.....24.95	Tetris.....20.95	
Black Jack Academy.....24.95	Doug's Math Aqum.....46.95	Human Design Disk.....22.95	Murder / Atlantic.....39.95	Roadwar 2000.....26.95	Text Ed Plus.....48.95	
Boomerang.....25.95	Down Hill Challenge.....22.95	Hunt For Red October.....31.95	Music Studio 2.0.....49.95	Rock Challenge.....25.95	Test Drive 2 - The Duel.....28.95	
Bride of the Robot.....34.95	Dragon's Lair.....33.95	Hydra.....22.95	Music X.....184.95	Rocket Ranger.....31.95	California Chat.....14.95	
Broadcast Tiller.....184.95	Draw A-2000 (Aegle).....159.95	Hyper Dome.....22.95	Night Force.....28.95	Roger Rabbit.....28.95	Supercars.....14.95	
Bubble Bobble.....25.95	Dungeon Master.....46.95	I Luddicr.....22.95	Novelty Fonts.....48.95	Romantic Encl/ Dome.....25.95	Therider.....22.95	
Bubble Ghost.....22.95	Dynamic Drums.....46.95	Impossible Mission 2.....14.95	Off Shore Warrior.....24.95	S.D.I.....17.95	Three Demon.....69.95	
California Games.....31.95	Earl Weaver Baseball.....31.95	Ind Jones/TmpDm.....24.95	On Line Platinum.....58.95	Savage.....24.95	Thunder Blade.....31.95	
Calligrapher.....74.95	Commissioners Disk.....14.95	Indoor Sports.....30.95	Operation Clean Sts.....25.95	Scavenger.....CALL	Time and Magik.....26.95	
Capone.....24.95	MLBPA Stats.....14.95	Instant Fun.....13.95	Operation Wolf.....25.95	Scribble.....26.95	Times of Lore.....24.95	
Phaser Guns.....44.95	Empire.....31.95	Infra Font.....69.95	Outrun.....31.95	Scrabble.....26.95	Titian.....28.95	
Captain Blood.....31.95	Excellence.....158.95	Interchange.....28.95	Page Ransder 3-D.....94.95	Scribble.....26.95	Total Eclipse.....24.95	
Captain Fitz.....19.95	Express Paint 3.0.....79.95	InfraCad.....46.95	Page Sorter.....59.95	Securities Analyst.....49.95	Tower Toppler.....31.95	
Carrier Command.....28.95	F-40 Pursuit Sim.....28.95	Investor Advantage.....59.95	Page Stream.....127.95	Sox Vixens Outer Sp.....25.95	Trials of Honor.....32.95	

EUROPEAN IMPORTS

Arkanoid 2.....	33.95
Custodian.....	28.95
Empire Strikes Back.....	28.95
Incred. Shrink Sphere.....	37.95
LED Storm.....	28.95
Purple Saturn Day.....	33.95
Speedball.....	33.95
Super Hang On.....	34.95
Superman.....	33.95
Tiger Road.....	28.95
Trid "Barbarian + 2".....	43.95

Prices Subject
To Change
As Availability!



Since 1982
ComputAbility
Consumer Electronics
NO CREDIT CARD SURCHARGE

Order Toll Free
800-558-0003
WI ORDERS AND INFORMATION
414-357-8181 FAX 414-357-7814
P.O. BOX 17882 Milwaukee, WI 53217

ORDERING INFORMATION: Specify system. For fast delivery send cashier's check or money order. Personal and company checks allow 14 business days to clear. School P.O.'s welcome. C.O.D. charges are \$4.00. In Continental U.S.A. include \$3.00 for software orders & shipping for hardware, minimum \$5.00. MasterCard and Visa orders please include card #, expiration date and signature. WI residents please include 5% sales tax. HI, AK, FPO, APO, Puerto Rico and Canadian orders, please add 8% shipping, minimum \$6.00. All other foreign orders add 18% shipping, minimum \$18.00. All orders shipped outside the Continental U.S.A. are shipped first class insured U.S. mail. If foreign shipping charges exceed a minimum amount you will be charged the additional amount. All goods are new and include factory warranty. We do not guarantee compatibility & version #s. Due to our low prices all sales are final. All defective returns must have a return authorization number. Please call (414) 357-8181 to obtain an R.A. # or your return will not be accepted. Prices and availability subject to change without notice. Shipping and handling are non-refundable. We ship the latest versions available to us, updates must be handled by end user directly with the manufacturer.

AmigaWorld Back Issues

January 1989—An Amiga starter kit: hardware and software recommendations for building your first system. Programming graphics in C. Index to 1988 articles.

December 1988—Software Buyer's Guide. Programming Superbase Professional. Graphics tips on airbrush painting. AmigaDOS 1.3 overview, part 5.

November 1988—Top 40 games countdown. Identifying and eradicating viruses. Introduction to ARExx. AmigaDOS 1.3 overview, part 4.

October 1988—Programming languages: find the one that's right for you. Roundup of word processors. Digitizing tips. AmigaDOS 1.3 overview, part 3.

September 1988—Database roundup. Tips on video titling and special effects. Programming graphics in Modula-2. AmigaDOS 1.3 overview, part 2.

August 1988—Amiga workstations: science, engineering, and graphics. Introduction to ARP. AmigaDOS 1.3 device handlers. AmigaDOS 1.3 overview, part 1.

July 1988—Reviews of 24-pin and laser printers. Roundup of printer utilities. Comparative review of Modula-2 compilers. Programming video text in Amiga Basic.

June 1988—Assembling and recording on a home MIDI system. Roundup of music hardware and software. Review of Superbase Professional. Programming the Extra Halfbrite mode in C.

May 1988—Introduction to version 1.3 of the Operating System. Reviews of Professional Page and Animate 3D. Tips on programming WordPerfect macros.

April 1988—Telecommunications: on-line services and software. Programming proportional gadgets in C and recursion in BASIC. Setting up a virtual MS-DOS disk with your Bridgeboard and hard disk.

January 1988—Desktop publishing software comparative review. Public-domain software recommendations. Comparative review of Sculpt 3D and VideoScape 3D. Brain surgery and the Amiga.

Each back issue costs \$4.50 plus \$1 for shipping and handling. On orders of 10 or more back issues, there is a flat \$7.50 shipping and handling fee. Quantities are limited and we cannot guarantee that all back issues are available. Orders must be prepaid. Send your orders to *AmigaWorld*, Attn: Back Issue Orders, 80 Elm St., Peterborough, NH 03458.

```

REM Add Data Routine
AddRec:
  GOSUB ActivNone
  WINDOW 3,"Add",(10,20)-(600,180)
  OPEN f$ FOR APPEND AS #1
  startrec = rec

GetData:
ans$=""

IF rec = 100 THEN
  LOCATE 5,8
  PRINT "File is filled to capacity"
  PRINT "Modify DIM statement for larger file"
  GOSUB WriteF
  GOSUB FSort
  WINDOW CLOSE 3
  GOSUB ActivAll
  RETURN
ELSE
  rec = rec + 1
  CLS
  LOCATE 5,4
  PRINT "Enter data"
  PRINT
  INPUT "Last Name: "; lst$(rec,1)
  INPUT "First Name: "; lst$(rec,2)
  INPUT "Street Address: "; lst$(rec,3)
  INPUT "City: "; lst$(rec,4)
  INPUT "State: "; lst$(rec,5)
  INPUT "Zip: "; lst$(rec,6)
  INPUT "Phone: "; lst$(rec,7)
END IF

CLS
LOCATE 5,15
INPUT "Another Record? (Y/N)"; ans$

IF ans$="Y" OR ans$="y" THEN
  GOTO GetData
ELSE
  GOSUB WriteF
  GOSUB FSort
  WINDOW CLOSE 3
  GOSUB ActivAll
  RETURN
END IF

REM Write to File
WriteF:
IF startrec = 100 THEN
  CLOSE #1
ELSE
  FOR x = startrec + 1 TO rec
    FOR fld = 1 TO 7
      WRITE #1, lst$(x,fld)
    NEXT fld
  NEXT x
  CLOSE #1
END IF
RETURN

REM Sorting Routine
FSort:
IF rec < 2 THEN RETURN

Bubble:
Sflag = 0
FOR x = 1 TO rec - 1
  IF lst$(x,1) > lst$(x+1,1) THEN
    FOR z = 1 TO 7
      temp$ = lst$(x,z)
      lst$(x,z) = lst$(x+1,z)
      lst$(x+1,z) = temp$
    NEXT z
    Sflag = 1
  END IF
NEXT x
IF Sflag = 1 THEN Bubble
RETURN

```



```

REM Print Mailing Labels
PrintLab:
  GOSUB ActivNone
  WINDOW 4,"Labels",(100,30)-(350,140)
  LOCATE 5,5
  PRINT "Now Printing Labels..."
  OPEN "PRT:" FOR OUTPUT AS #7

FOR x = 1 TO rec
  PRINT #7, lst$(x,2); " ";lst$(x,1)
  PRINT #7, lst$(x,3)
  PRINT #7, lst$(x,4); " ";lst$(x,5); " ";lst$(x,6)
  PRINT #7,
  PRINT #7,
  PRINT #7,
NEXT x

CLOSE #7
WINDOW CLOSE 4
GOSUB ActivAll
RETURN

REM Print List of Records
PrintRec:
  GOSUB ActivNone
  WINDOW 4,"Print",(100,30)-(350,140)
  LOCATE 5,5
  PRINT "Now Printing the Records..."
  OPEN "PRT:" FOR OUTPUT AS #7

FOR x = 1 TO rec
  FOR fld = 1 TO 7
    PRINT #7, lst$(x,fld); " ";
  NEXT fld
  PRINT #7,
NEXT x

CLOSE #7
WINDOW CLOSE 4
GOSUB ActivAll
RETURN

REM Conduct Binary Search
RecSearch:
  lo = 0
  hi = rec

Loop:
  lookup = lo + INT((hi-lo+1)/2)

  IF search$ = lst$(lookup,1) THEN
    GOTO CheckRec

  ELSEIF search$ < lst$(lookup,1) THEN
    IF hi = lookup THEN
      GOTO EndSearch
    ELSE
      hi = lookup
      GOTO Loop
    END IF

  ELSE
    IF lo = lookup THEN
      GOTO EndSearch
    ELSE
      lo = lookup
      GOTO Loop
    END IF

  END IF

EndSearch:

  WINDOW 5,"NoMatch",(25,25)-(300,125)
  PRINT
  PRINT "No Match Found"
  PRINT
  INPUT "<Return to Continue>"; ans$
  WINDOW CLOSE 5

RETURN

```

ONLY The BEST For AMIGA For LESS!

Authorized AMIGA Dealer
CompuNik Computers Service Center

HARDWARE				GAMES		
GVP 40MB	Hard Drive A500	\$925	ECE MIDI	\$46	Autoduel	\$25
GVP 80MB	Hard Drive A500	1395	Flicker Fixer	465	Arknoid	20
Clt. 40MB	Hard Drive A1000	950	Frame Grabber	515	Balance Power1990	33
Clt. 65MB	Hard Drive A1000	1125	Future Sound Sampler	133	Bard's Tale II	40
Clt. 80MB	Hard Drive A1000	1350	Int. Dr. A500/2000	125	Battle Chess	30
GVP 40MB	H.C. A2000	785	Live A2000 Frame Buffer	330	Better Dead /Allen	25
GVP 80MB	H.C. A2000	1125	Live A500/A1000	265	Black Shadow	22
20 MB SCSI	Hard Drive	369	MIDI Gold	60	Blitzkrieg	33
40 MB SCSI	HD Quantum	579	MY-T-Mouse	45	Bomb Buster	23
80 MB SCSI	HD Quantum	939	NEC LC890 Laser Printer	3250	Breach	27
65 MB SCSI	Hard Drive	595	Panasonic Camera	239	Bureacracy	25
190 MB SCSI	Hard Drive	1725	Spirit 1.5 MB 0K	240	Calif. Games	30
A500 Power Supply		70	Star NX1000 Printer	187	Capone	25
AIR Ext. Dr.		149	Star 2400 Printer	??	Chessmaster 2000	31
AmiGen Genlock		139	Supergen Genlock	649	Cosmic Bouncer	19
Calif. Access Dr.		149	Supra 2400B Modem	135	Dark Castle	25
Digi View Gold		135	Supra 30MB Hard Drive	725	Defender Of Crown	32
Easyl A500/A1000		360	Xerox 4020 Color Printer	1079	Deja Vu	35
Easyl A2000		370	X-Specs 3D Glasses	95	Dragon's Lair	40
					Earl Weaver Baseball	35
					Emerald Mine II	30
					Evil Garden	25
					F/A-18 Interceptor	35
					Falcon	31
					Fury Tale	30

SOFTWARE					
Assembler	\$65	Dynamic Studio	\$135	MicroLawyer	\$39
Amiga WB 1.3	23	Dynamic CAD	290	MIDI Magic	90
3-Demon	68	Excellence	155	Modeler 3D	62
Accountant	175	Express Paint 3.0	85	Money Mentor C	56
Adrum	46	FACC II	24	Move Setter	59
Aegis Animator	80	Fancy 3D Fonts	45	Multi Forth	57
Aegis Draw 2000	175	Fantavision	40	Multi Profs	17
Aegis Images	24	First Letters & Words	32	Music Student	36
Aloha fonts	15	First Shapes	32	News Letter Fonts	27
Amiga Dos Express	20	Flow	57	Micro Base	24
Analytic Arts	38	Font Set I (Gold Disk)	23	Micro Text	24
Animate 3D	94	Fonts & Borders	25	Outline	42
Animation Effects	31	Forms In Flight II	70	Page Flipper +FX	93
Animation Stand	31	Gizmoz 2.0	40	Pagesetter	83
Animation Multipane	55	Gold Spell II	30	Pagestream	129
Animator Apprentice	170	Comf	25	Photon Paint	60
Asha's Fonts	55	Grabbit	20	Photon Cell Anim.	86
ATalk III	62	Grade Manager	59	Photosynthesis	90
Atredes BBS	90	Great States II	24	Pixmate	42
Audio Master II	63	Haicale	29	Pro Video Plus	176
AZTEC C Pro.	145	Home Builders CAD	118	Pro Video Font Sets	75
B.A.D.	32	Home Inventory	25	Professional Page	219
Broucaust Titler	185	Hot Cool Jazz	21	Professional Draw	129
Butcher 2.0	25	Huge Print	30	Prowrite 2.0	70
CAD Parts	15	Impact-Graphics	56	Project D	30
Calligrapher	80	Intellotype Typing	35	Publisher Plus	115
CB Tree	62	Instant Music	\$32	Quarterback	42
City Desk	89	Interchange	30	Raw Copy	36
City Desk Art Comp.	20	Intro CAD	49	SAFE T NET	31
CLI Mate	25	Inventory	65	Sculpt 3D	63
Clip Arts Vols.	12	Investors Advantage	63	Shakespeare	135
CZ Master Editor	69	Invision	129	Sonix	47
Comic Setter	59	Its Rock & Roll	23	Soundquest D-50	23
Comic Setter-Funny	22	Jet Set Font Set	34	Studio Magic	60
Comic Setter-SIFI	22	Kura Fonts	49	Superbase II	90
Comic Setter-Sup. H.	22	Kindwords	59	Superbase Pro.	185
Data Retrieve	47	Kwik Speak I	26	Super Plan	99
Deluxe Help (All)	23	Kwik Speak II	28	Synthia	58
Deluxe Music	65	Lattice C 5.0	175	Tax Break	49
Deluxe Paint II	82	Lattice C++	350	Texture	95
Deluxe Photo Lab	90	Laserscript	28	T Shell	30
Deluxe Production	120	Laserup Fonts Vol.1	26	Textcraft Plus	60
Deluxe Video	88	Laserup Plot	35	Tool Cady	30
Design Disks	22	Laserup Print	65	Transport Cont.	179
DIGA	47	Laserup Util. Vol.1	29	Turbo Silver	120
DIGI Paint	42	Lexicon PCM 70	99	TV Show/Text Ea.	57
Director	42	Linkword Lang. all	23	Video Effects 3D	125
Disk Mechanic	53	LightsCamraAction	55	Video Scape 3D	115
Disk To Disk	32	Lint	65	Video Titler	84
Disk Wick	30	Logic Works	61	W Shell	30
DOS To DOS	35	Magellan	115	Word Perfect	169
DOS Express	19	Mavis Beacon	35	Word Perfect Lib.	80
Dr. T's KCS	155	Maxiplan Plus	115	Write 'N File	60
Dr. T's M.R.S.	41	Marauder II	26	Zoetrope	85
Dynamic Drums	47	Microfiche Filer +	110	Zuma Fonts (All)	25

OUTSIDE CA ORDERS ONLY PLEASE! For Info, Consultation, Tracing orders

800-225-4017 (213) 854-0550

402 S. San Vicente Blvd. Los Angeles, CA 90048 Hrs. 10AM-7PM

Policy: UPS ground \$3.50 per item- 2nd Day Air \$6.00 per item. (SIGNATURE REQUIRED/NO DRIVER RELEASE). NO COD's. Shipping & Handling not included and are non-refundable. Personal Checks allow 20 days to clear. Product subject to availability. Prices subject to change. Add 3% for VISA/MC, 5% A.E. Defective merchandise repaired or replaced with the same item only. Rejected or Returned product subject to 20% restocking fee. No refund for products defective or incompatible or not performing satisfactory. no guarantees for product performance. In CA add sales Tax.

AmigaWorld is a publication of IDG Communications, the world's largest publisher of computer-related information. IDG Communications publishes over 90 computer publications in 33 countries. Fourteen million people read one or more IDG Communications publications each month. IDG Communications publications contribute to the IDG News Service offering the latest on domestic and international computer news. IDG Communications publications include: ARGENTINA'S *Computerworld Argentina*; ASIA'S *Communications World*, *Computerworld Hong Kong*, *Computerworld Malaysia*, *Computerworld Singapore*, *Computerworld Southeast Asia*, *PC Review*; AUSTRALIA'S *Computerworld Australia*, *Communications World*, *Australian PC World*, *Australian Macworld*; AUSTRIA'S *Computerwelt Osterreich*; BRAZIL'S *DataNews*, *PC Mundo*, *Micro Mundo*; CANADA'S *Computer Data*; CHILE'S *Informatica*, *Computacion Personal*; DENMARK'S *Computerworld Danmark*, *PC World Danmark*; FINLAND'S *Mikro*, *Tietoviikko*; FRANCE'S *Le Monde Informatique*, *Distributive*, *InfoPC*, *Telecoms International*; GREECE'S *Micro and Computer Age*; HUNGARY'S *Computerworld SZT*, *PC Mikrovilag*; INDIA'S *Dataquest*; ISRAEL'S *People & Computers Weekly*, *People & Computers Bi-Weekly*; ITALY'S *Computerworld Italia*; JAPAN'S *Computerworld Japan*; MEXICO'S *Computerworld Mexico*; THE NETHERLANDS' *Computerworld Netherlands*, *PC World Benelux*; NEW ZEALAND'S *Computerworld New Zealand*; NORWAY'S *Computerworld Norge*, *PC World Norge*; PEOPLE'S REPUBLIC OF CHINA'S *China Computerworld*, *China Computer Monthly*; SAUDI ARABIA'S *Arabian Computer News*; SOUTH KOREA'S *Computerworld Korea*, *PC World Korea*; SPAIN'S *CIMWORLD*, *Computerworld Espana*, *Commodore World*, *PC World Espana*, *Comunicaciones World*, *Informatica Industrial*; SWEDEN'S *Computer Sweden*, *Mikrodatorn*, *Svenska PC World*; SWITZERLAND'S *Computerworld Schweiz*; UNITED KINGDOM'S *Computer News*, *DEC Today*, *ICL Today*, *LOTUS*, *PC Business World*; UNITED STATES' *AmigaWorld*, *CD-ROM Review*, *CIO*, *Computer Currents*, *Computerworld*, *Digital News*, *Federal Computer Week*, *FOCUS Publications*, *inCider*, *InfoWorld*, *Macintosh Today*, *MacWorld*, *Computer + Software News*, *(Micro Marketworld/Lebhar-Friedman)*, *Network World*, *PC World*, *Portable Computer Review*, *Publisl*, *PC Resource*, *PCGames*, *RUN*, *Windows*; VENEZUELA'S *Computerworld Venezuela*; WEST GERMANY'S *Computerwoche*, *Information Management*, *PC Welt*, *Run*, *PC Woche*, *RUN*.

Manuscripts: Contributions in the form of manuscripts with drawings and/or photographs are welcome and will be considered for possible publication. *AmigaWorld* assumes no responsibility for loss or damage to any material. Please enclose a self-addressed, stamped envelope with each submission. Payment for the use of any unsolicited material will be made upon publication. All contributions and editorial correspondence (typed and double-spaced, please) should be directed to *AmigaWorld* Editorial, 80 Elm St., Peterborough, NH 03458; telephone: 603-924-9471. **Advertising Inquiries** should be directed to Advertising Offices, IDG Communications/Peterborough, Inc., 80 Elm St., Peterborough, NH 03458; telephone: 800-441-4403. **Subscription problems or address changes:** Call 1-800-525-0643 (in CO, 1-303-447-9330) or write to *AmigaWorld*, Subscription Dept., PO Box 58804, Boulder, CO 80322-8804. **Problems with advertisers:** Send a description of the problem and your current address to: *AmigaWorld*, 80 Elm St., Peterborough, NH 03458, ATTN: Sue Maizel, Customer Service Representative.

List of Advertisers

Reader
Service
Number

224	Abacus Software, 16
124	Abacus Software, 61
175	AbSoft, 56
76	ACS Software, 67
7	Actionware, Inc., 53
72	AmiEXPO, 81
*	<i>AmigaWorld</i> , Public Domain Library, 113 InfoMarket, 116, 117, 118 Amiga Tool Chest, 65
82	Anakin Research, Inc., 18
132	Briwall, 104, 105
165	Brown-Wagh Publishing, 79
288	Cape Fear Teleproductions, 117
200,239	Centaur Software, Inc., 10, 11
59, 260	Centaur Software, Inc., 19
146	Communications Specialties, 54
156	CompuNik Computers, 111
148	Computability, 109
41	Computer Mail Order, 85
69	Computer Mart, 103
199	Creative Computers, 92, 93
196	Creative Microsystems, Inc., 89
168	Datel Computers, 75
28	Digital Creations, 47
35	Dr. T's Music Software, 83
210	Elan Design, 63
2	Electronic Arts, 31
262	Flexible Data Systems, Inc., 73
183	Fuller Computer Systems, Inc., 86
26	Go Amigo, 100, 101
150	Gold Disk, CII, 1
245, 127	Great Valley Products, Inc., 5
145, 62	Great Valley Products, Inc., 7
54	Interactive Video Systems, 84
125	InterComputing, Inc., 97
14	Kara Computer Graphics, 4
91	Kinson Products Corp., 77
117	Konyo International, Inc., 80
122	Lightspeed Distribution, 70, 71
181	M.A.S.T., 68
104	Melbourne House, 59
162	MCP Associates, Inc., 90

Reader
Service
Number

140	MichTron, Inc., 9
227	Micro Systems Int'l, 82
129	Micro-Systems Software, Inc., 17
27	MicroSearch, 87
78	Microway, 41
18	Mindware Int'l, 24
*	Montgomery Grant, 95
292	Moonlight Development, 117
38	New Horizons Software, 23
102	NewTek, Inc., CIV
102	NewTek, Inc., CIII
102	NewTek, Inc., 119, 120
284	Pixelations, 117
230	Prespect Technics, Inc., 90
123	Psygnosis/CSS, 45
109	R & DL Productions, 56
79	R & DL Productions, 66
118	Radical Eye Software, 66
282	Rainbows Edge Productions, 117
87	ReadySoft, Inc., 2
113	Redmond Cable Corp., 68
154	RSISystems, 90
275	Safe Harbor, 117
250	Sharp Electronics Corp., 21
128	Software Discounters of America, 107
194	Software Excitement, 99
10	Software Visions, Inc., 33
141	Spectrum Holobyte, 57
206	Sprite Technology, 88
244	Strategic Simulations, Inc., 49
228	SubLOGIC Corporation, 78
219	Syndesis, 82
13	Systems Design Assoc., Inc., 86
56	Taito Software, Inc., 37
144	TENGENT, Inc., 55
134	The Software Shop, 91
170	VidTech International, Inc., 39
64	Word Perfect Corp., 43

* This advertiser prefers to be contacted directly

This index is provided as an additional service. The publisher does not assume liability for errors or omissions.

FYI

As a service to its readers, *AmigaWorld* will periodically publish the names of companies who are having difficulties meeting their customer obligations or who have gone out of business. Readers are advised to contact *AmigaWorld* before dealing with these companies: **AMnews Corp.**, **Computer Best**, **FutureSoft Applications**. If you have any questions or concerns about advertisers in *AmigaWorld*, please contact: **Susan Maizel, Customer Service Representative, AmigaWorld Magazine, 80 Elm Street, Peterborough, NH 03458**. Through our customer service representative, *AmigaWorld* assists readers with problems they may have with advertisers. However, *AmigaWorld* does not assume any liability for advertiser's claims.

The AmigaWorld Public Domain Library offers you disks from four innovative software companies. DevWare produces disks for developers and advanced users. Software Excitement caters to Workbench users. Chiron Conceptions packages disks in which the individual programs are related. SystemEyes sells Fred Fish disks from the original Amiga public domain library.

Each disk listed below is fully tested and organized for easy access. Since the programs are public domain and shareware, neither the distributors nor AmigaWorld guarantee their performance. We do, however, guarantee the disks to be free of manufacturer defects for 90 days.

This month's selections—

From Software Excitement:

SE 27 Amoeba Invaders
An Amiga version of Space Invaders, this is a great game to play while swilling down a couple of beers with your old college buddies. Best thing is you'll never run out of quarters.

SE 116 Business II
Features VC-Spreadsheet and an HP-10c calculator emulation. And of course it includes some less "business-like" items.

SE 119 mCAD
Design an addition to your home, or even your next computer, with this computer-aided design program.

SE 127 Wheel of Fortune
Sorry, Vanna is not included, but you do get a great computer version of the hottest game on TV! Also on the disk is Reversi, a talking Othello clone.

SE 128 Space Games
Gravity Wars and Cosmoroids (an asteroids-type game) highlight this game-player's delight!

SE 131 Packman '87
You haven't played Pac-Man until you've played Packman '87. A must for serious joystick junkies.

SE 134 Applications I
A nice mix of home applications including a label maker and a grocery-list maker. Also included is Amigazer, a home planetarium.

SE 139 Bull Run
Replay the first major battle of the Civil War in this brigade-level simulation. A data base program is also included.

SE 146 Calendar
Keep track of birthdays, holidays, appointments and other important events with this handy organizer. Also included is a checkbook program.

SE 151 4-in-a-Row
Try to beat the computer in this fun and challenging game; sort of tic-tac-toe for the Future Shock generation.

From DevWare:

DW 9 JayMiner Slides
Features 17 hi-res IFF pictures drawn by Amiga designer Jay Miner that show the internals of the Amiga.

DW 25 BlitLab1.2
See exactly how the blitter works with this improved version of BlitLab. Included are a C language file requester, an IFF reader, and graphics programs.

DW 26 StructBrowser
This valuable learning tool lets you explore Intuition structures. Also included are DiskX, a program that lets you explore floppy disks, and Spool1.2, a print-spooling program.

DW 28 AudioTools2
Rob Peck's subroutines for controlling the audio device. Also on this disk are over 20 other helpful utilities such as PopUp, WindowUtil, MemClear, and 3DTerrain.

DW 31 ARP
Replace your large, inefficient AmigaDOS commands with the smaller, faster AmigaDOS Replacement Project commands.

From SystemEyes: (Fred Fish Disks)

FF 1 Dhrystone
The very first Fred Fish disk! Get a copy of the dhrystone benchmark test along with a tutorial on programming requesters, and more.

FF 58 Big View
Displays larger-than-screen IFF pictures using scrolling. Also included are utilities to play Simple MUSIC (SMUS) files, a database program, and more.

FF 97 Juggler
Every Amiga user should have this HAM animation by Eric Graham. Also included are a function plotter, a text-reading program, and more.

FF 164 DiskSalv
An updated version of the most popular Amiga file-recovery program. Also included are Zoo, an alternative to Arc, NewZap, a disk-zap utility, and more.

Note that the entire Fred Fish collection is available from SystemEyes and the AmigaWorld Public Domain Library.

Featured Disk:

FF 148 Escape From Jovi

You must summon all your skill to escape the gravitational clutches of Jovi in this multi-level arcade game. A joystick is required. Also on the disk is a map editor for the commercial game Firepower, a program that adds menu items to the Workbench menu, and a program that encodes and decodes text information. We call this last program the Ollie North Special.

From Chiron Conceptions:

CC 311 Disk Utilities
SuperCat and SuperCat Sort help you keep track of all the stuff you've been accumulating on your disks. Also featured are hard-disk backup programs, a sector editor, and a real-time file compression utility.

CC 644 Graphic Magic Utilities
A "must" disk for the graphically inclined. Create slideshows using wipes, scrolls, and fades, capture screens to disk, show animation files and more with this excellent compilation of graphics utilities.

CC 711 Fun & Games
Star Trek 2.0 is a must for all you Trekkies out there. You also get to do battle with the Mafiosa Brothers in Duell 2.0.

CC 801 Telecommunications #1
Why buy commercial when you can choose from five full-featured telecommunications packages, all on one disk! These programs feature protocol transfer, multiple baud rates, autodial, and more.

CC 804 AMIC Telecommunications
A wonderful shareware telecommunications program that matches the features of the commercial ones. Included are useful utilities such as Unarc, Unzoo, Show, ShowANIM and more.

CC 903 Icon Library
This disk has over 100 icons of different types. Use these in place of your boring Workbench icons, or modify them even further to suit your needs.

CC 907 Great Fonts!
Here are over 40 fonts that you can use with your Amiga software. Sizes range from the tiny to headline, and the mix includes foreign-language and mathematical fonts.

CC 922 RIM-5
A full featured relational database for CLI users. RIM-5 uses B-tree and includes built-in help and a programming language. It is compatible with RIM programs on other systems.

Please send me the following disks for \$7.00 each (plus \$1 handling charge per disk).

Disk ID (Ex. SE134)

☐ Payment Enclosed Total Disks _____ @ \$7.00/each \$ _____
☐ Please charge my Shipping/Handling @ \$1 disk \$ _____
☐ American Express
☐ Master Card ☐ Visa Total Due \$ _____

Account # _____ Expires _____

Signature _____

Name _____

Address _____

City _____ State _____ Zip _____

Please allow four to six weeks for delivery. Foreign Orders, please add \$2 per disk for Air Mail delivery. Payment in US Funds drawn on US Bank. AW49

AmigaWorld Public Domain Library, 80 Elm St., Peterborough, NH 03458


```

CheckRec:
ChUp = lookup
ChDn = lookup

Checkup:
  ChUp = ChUp - 1
  IF ChUp = 0 THEN CheckDown
  IF search$ = lst$(ChUp,1) THEN Checkup
CheckDown:
  ChDn = ChDn + 1
  IF ChDn > rec THEN ChDone
  IF search$ = lst$(ChDn,1) THEN CheckDown
ChDone:
  FirstRec = ChUp + 1
  LastRec = ChDn - 1
  NumMatch = LastRec - FirstRec + 1
GOSUB ShowForm
RETURN

CheckForm:

FirstRec = 1
LastRec = rec
NumMatch = rec
GOSUB ShowForm
RETURN

      REM Display Records as Forms
ShowForm:
GOSUB ActivNone
  WINDOW 4,"Display",(100,30)-(600,180)
  count = 1

  FOR x = FirstRec TO LastRec
    CLS
    LOCATE 2,5
    PRINT "Record "; count; " of "; NumMatch
    PRINT
    PRINT lst$(x,1); " "; lst$(x,2)
    PRINT
    PRINT lst$(x,3)
    PRINT lst$(x,4); " "; lst$(x,5); " "; lst$(x,6)
    PRINT
    PRINT lst$(x,7)
    PRINT
    count = count + 1
    INPUT "<Return to Continue>"; ans$
  NEXT x

WINDOW CLOSE 4
GOSUB ActivAll
RETURN

      REM Display Records as a List
ShowList:
GOSUB ActivNone
  WINDOW 6,"List",(10,20)-(615,170)
  CLS
  PRINT
  PRINT
  count = 0

  FOR x = 1 TO rec
    FOR fld = 1 TO 7
      PRINT lst$(x,fld); " ";
    NEXT fld
    PRINT
    count = count + 1
    IF count = 10 THEN
      LOCATE 15,15
      INPUT "<Return to Continue>"; ans$
      CLS
      PRINT
      PRINT
      count = 0
    END IF

  NEXT x
  LOCATE 15,15
  INPUT "<Return to Continue>"; ans$
  WINDOW CLOSE 6
  GOSUB ActivAll
  RETURN

```

MOVING?

Subscription Problem?

Get help with your subscription by calling our new toll free number:

1-800-525-0643

In Colorado: 1-447-9330

between 9 a.m. and

5 p.m. EST

Monday-Friday

If possible, please have your mailing label in front of you as well as your cancelled check or credit card statement if you are having problems with payment.

If moving, please give both your old address and new address.

AmigaWorld
P.O. Box 58804
Boulder, CO 80322-8804

ATTENTION SUBSCRIBERS

We occasionally make our mailing list available to other companies or organizations with products or services which we feel might be of interest to you. If you prefer that your name be deleted from such a list, please fill out the coupon below or affix a copy of your mailing label and mail it to:

IDG Communications/Peterborough
AmigaWorld
P.O. Box 58804
Boulder, CO 80322-8804

Please delete my name from mailing lists sent to other companies or organizations.

AmigaWorld

Name

Address

City

State

Zip

AmigaWorld, P.O. Box 58804, Boulder, CO 80322-8804

AMIGA WORLD

STEP INTO THE WORLD OF AMIGA...



The Pathway To Your Imagination

For a computer as extraordinary as the Amiga,™ you need a magazine that can match its excellence, AmigaWorld.

AmigaWorld is the only magazine which provides you with ideas and information to get maximum performance from the Amiga's tremendous power and versatility.

Each issue gives you valuable insights to boost your productivity and enhance your creativity.

Whether you choose the Amiga as a serious business tool for its speed and multi-tasking capabilities... or for its superb graphics, drawing, color, (over 4,000 colors), and animation... or for its state-of-the-art music and speech... or for its scientific and CAD abilities, AmigaWorld can help you achieve superior results.

With its timely news features, product announcements and reviews, useful operating tips, and stunning graphics, AmigaWorld is as dynamic as the market covers.

Don't wait! Become a subscriber and save nearly 37% off the cover price. Return the coupon for immediate service, call toll-free 1-800-258-5473.

Save 37% ☐ YES!

I want to discover the full potential of this powerful machine. And save 37% off the cover price. Enter my one year subscription to AmigaWorld for the low price of \$29.97. If I'm not satisfied at any time, I will receive a full refund—no questions asked.

☐ Payment Enclosed ☐ Bill Me

Name

Address

City

State Zip

Canada & Mexico \$38.97, Foreign Surface \$49.97, Foreign Airmail \$84.97 (U.S. Funds drawn on U.S. Bank). Prepayment is required on foreign orders. All rates are 1 year only. Please allow 6-8 weeks for delivery.

4AD67

AmigaWorld

PO Box 58804, Boulder, CO 80322-8804

Amiga is a trademark of Commodore-Amiga, Inc.

InfoMarket



Video Visions

Full Color Quarter-Screen Objects

Now Available in Sets
Volume 3 Features
Award Winning Data



Dealer of select Amiga Products

VIDEO ART SOFTWARE SPECIALISTS

SALES REP FOR AMIGA

VIDEO PRO SERIES SYSTEMS

Also in Super-HI Format Add \$10.

THE MIXED SET = Any 3, 4 or 5 Vol. \$ Discount

THE TITLER SET = Volumes 1, 4, 5, 7 \$79.95

THE ANIMATOR SET = Volumes 2, 3, 6 \$59.95

1/2" Video of all Volumes \$15.00 Refundable toward SETs. Sold separate at \$24.95 ea. + 350 S&H from CV Designs: VV1 = Backdrops, VV2 = 3D Objects, VV3 = Characters, VV4 = Weddings, VV5 = Business, VV6 = Maps, VV7 = Symbols. (2 disks per Volume) Overscan-Hi-Res.

Complete Art Services Call: 617-396-8354

CV Designs, 61 Clewley Road, Medford, MA 02155

??? QUESTION ??? Does High Res Screen Flicker Bother You !!!

Flicker Master tm

Works With ALL AMIGA Models A-500, A-1000, A-2000, A-2500

Only \$17.95 sug list price

Greatly reduces interlace flicker. Works with all AMIGA Monitors.

Ask your Dealer or order Direct.

Dealer Inquiries Invited

T.S.R. Hutchinson Co.
Houston, Texas 77037-3801

110 W. Arrowdale
(713) - 448 - 6143

DISK MAGIC

now shipping . . .

DEALER
INQUIRIES
WELCOME!

The complete disk file management system and perfect hard disk companion. DISK MAGIC blows the competition away with twice as many features and two modes of operation!

Forget the rest and go with the best . . . get

DISK MAGIC!!!

DMH Technologies P.O. Box 1414
Maple Grove, MN 55369 (612)420-5572



Associates, Inc.
Featuring C.Itoh, Precision, Sony, Etc:
3.5", 100% Certified, Lifetime Guarantee

The DISK SPECIALISTS
DISTRIBUTORS

Bulk Disks
Prices per disk
Min: 100 Disks
C.Itoh

SSDD—Blue

DSDD—Blue

DSDD—Rainbow

.95

1.19

1.29

Sony, Precision, other brands available. Call/Write for Disk Pricing & Amiga Product Listings. Prices subject to change w/out notice. S/H—\$5.50 min.; CODs add \$3.00. Educational, Corporate & Dealer inquiries invited. P.O. Accepted. WINTER SALE SPECIAL! Limited Time Offer!

MCP Associates, Inc., PO Box 6260, Dept AW1, L.I.C., NY 11106-1933
Tel: (718) 956-9000 Fax: (718) 956-9028

Exceptional Service & Quality

DEPENDABLE SERVICE FOR YOUR AMIGA!

AMIGA-500 OR AMIGA-1000: **FAST TURNAROUND!**

\$40.00 PLUS PARTS

Send computer with name, address, phone, & describe problem. We'll call with parts estimate, then repair and return to you insured by UPS. Payment can be COD or VISA, M/C. Minimum charge, estimate only is \$30. AMIGA-2000: CALL.

AUTHORIZED COMMODORE
SERVICE CENTER
★ ★ ★ ★ ★
90 DAY WARRANTY
ON ALL REPAIRS

TYCOM Inc.

503 East St.
Pittsfield, MA 01201

(413) 442-9771

Hypertext for the Amiga

Thinker
\$80 Add \$5
for COD

Combines: Outline Processing, Hypertext, Word Processing, Hypermedia, Picture Displays.

30 day guarantee
No credit cards

A complete "Idea Processor" using the latest technology. Hypertext combines writing concepts with database concepts, and Thinker extends this to include links to applications. Click on a link in the text to jump to a new text node or launch and use an application in multitasking mode. Write books, articles, documentation and programs. Organize pictures, reference materials, client lists and appointments.

Poor Person Software, Dept 10, 3721 Starr King Circle
Palo Alto, CA 94306 (415) 493-7234

1988 STATISTICS FOR EARL WEAVER BASEBALL™

as well as . . . 1919, 1952, 1959, 1961, 1969, 1975, 1978, 1987, and more! YES, someone has finally done their homework and researched the present and past years in baseball. Compiling statistics from the American League, the National League, as well as other sources, allows us to say this may very well be as complete as possible. Now you can play all your favorite teams and years over to enjoy them once again. We also include a yearly schedule, so you can play the games as they really were, right on the disk! Included are all the American and National League teams as well as updated ballfields. All teams have been play-tested for accuracy. Disks are available for Amiga computers and cost only \$19.95 per year + \$2.50 shipping.

Please send order to: GMCP or call: NJ res. add 6% sales tax
Suite C2-193 (201) 938-6399 Visa & MasterCard add 4%
162 Hwy 34, Matawan, NJ 07747 CODs, checks & money orders accepted



The AMIGA Specialists

AMIGA Software
AMIGA Peripherals
AMIGA Computers

WE SHIP AROUND THE WORLD

Known internationally for exceptional service.

U.S. overseas personnel

We specialize in APO & FPO shipping!

Ask for our Overseas Military Special Pricing!

Fast delivery, charged when shipped

AX, Discover, VISA, MC, M/O, Certified check

Magni Genlock Distributors

1 Authorized AMIGA Dealer in the Pacific NW!

3826 Woodland Park Ave. N., Seattle, WA 98103 206-547-OMNI 206-547-6664 Fax 206-547-6012



Universal
Systems

We Ship Anywhere

UPS RED & BLUE Available

Visa, MC, Discover, Certified Chk., & COD

7004 175th St. SW, Edmonds, Wa 98020

Your Amiga Source

AMIGA Hardware & Software

Over 700 Titles In Stock

For The Best in Amiga

Products Call US Now!!

Open Sundays, NOON to 5PM PST

1-800-624-3554

FAX 206-672-2442

PELICAN WARE

PO Box 680, South Street

Plattekill, NY 12568

1-800-637-4286, in New York (914) 566-0633

Software and Hardware Products for the Amiga
call or write for free catalog

Finally...Amiga owners can again yell "Fore" because your MEAN 18: Ultimate Golf™ has more courses to play than the other guys!! Now you can order:

U.S. Open Courses I: Sinnecock Hills, Merion, Winged Foot, Bellerive & The Country Club (Brookline).

PGA Championship Courses: Oakmont, Firestone, Pinehurst, #2, Oakland Hills & Southern Hills.

British Open Courses: Muirfield, Sandwich, Carnoustie, Royal Birkdale & Royal Lytham & St. Annes.

PGA Tour Courses I: Doral, Torrey Pines, TPC Sawgrass, Cypress Point & Indian Wells.

Each 3½" diskette has five (5) great courses, just \$20 each disk, US currency. Send your check or money order to

MOONLIGHT DEVELOPMENT,



329 Shoreline Place, Decatur, IL 62521. Please allow 2-3 weeks for delivery.

Mean 18: Ultimate Golf is a trademark of Accolade. AMIGA is a trademark of Commodore-Amiga, Inc.

Circle 292 on Reader Service card.

Make the most of your advertising investment! Reserve your space in the AmigaWorld InfoMarket today! Call Heather Paquette at 1-800-441-4403.

This ad was laid out with Professional Page from Gold Disk, printed on the HP DeskJet using PrintScript, then reduced by half.

Print PostScript files on your non-PostScript printer!

PrintScript

The PostScript interpreter for the Amiga

\$89



Pixelations

Pixelations, Inc.
P.O. Box 547
Northboro, MA 01532 USA
508-393-7866

Dealer inquiries welcome. Visa and MC accepted.

PostScript is a trademark of Adobe Systems, Inc.

Circle 284 on Reader Service card.

3D OPTIONS

CONVERT IFF BITMAPMED PICTURES TO 2D AND 3D OBJECTS!!!

Now You Can Make Use of All Those DPaint and Digitized Pictures in Your Favorite 3D or CAD Package

VIDEOSCAPE 3D, AEGIS DRAW, INTROCAD, MCAD, PROFESSIONAL PAGE, POSTSCRIPT DXF (AUTOCAD...) & More.

TO ORDER CALL

1 800-628-2828 Ext 829

We accept Visa, MasterCard and American Express
Only \$49.95 Or Send Check or Money Order to:

Rainbows Edge Productions

4412 4th Avenue, Suite 2

Brooklyn, NY 11220

All product names are Trademarks of their respective companies

Circle 282 on Reader Service card.



800-544-6599
WI: 414-544-6599

Hardware

68030 GVP 25MHz	CALL
8-Up DIP Brd OK	145.00
AMAS Stereo Digitizer	128.00
Auto Droid	145.00
Color Splitter	79.00
Floppy Drive (A/R ext)	169.95
Floppy Drive (CA-680)	155.00
HardCard 400 (2000) GVP	798.00
HardDrive 400 (SCSI)	580.00
HardFrame 2000	235.00
Impact A500 20 Meg	718.80
Livel 2000	315.00
Livel 500	298.00
Memory Brd. 501 clone	170.00
Memory Brd. Cld 501 OK	50.00
Memory Mod. Supra 2M OK 500	154.00
Mid Gold	67.00
Mini Megs 512K	330.00
Mini Megs 1 Meg	485.00
Mouse, Optical	110.00
Perfect Sound	66.93
SCSI Controller (500) Supra	176.60
SCSI Controller (2000) Supra	205.00
Spirit Board OK	212.56
SubSystem 500	235.00
Tool Box	215.00

Info: 414-544-2066

BBS: 414-544-6567

2414 Pendleton, Waukesha, WI 53188

Visa MC CODs

M-F 9-5 CST

Circle 275 on Reader Service card.

DESKTOP VIDEO GRAPHICS



THE HOW-TO SERIES FOR AMIGA USERS

Learn from professionals in the finest Amiga video graphics training series available. Loaded with expert tips, techniques and demonstrations.

•Tape 1—"Video Graphics Techniques"

•Tape 2—"Color Cycling Animation"

*includes AMIGA demo animation disk

•Tape 3—"Digitizing for Effect"

Any one—\$39.95 (+\$1.55 s/h) or any two for \$75.00. All three only \$99.50 (VHS only). Check or M.O. (for PO money order in US funds) to:

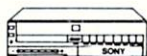
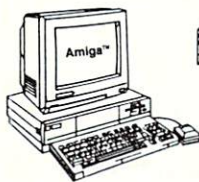
Cape Fear TELEPRODUCTIONS, Inc.

605 Dock St., Dept. W, Wilmington, NC 28401

(919) 762-8028

Circle 288 on Reader Service card.

CONTROL YOUR VCR & CAMCORDER FOR \$349.00



- MediaPhile® Infrared Controller
- Video Editing Software
- Animation Recording Software
- Tape Counter Cable Kit

Interactive MicroSystems, Inc.

80 Merrimack St., Haverhill MA 01830
508-372-0400

Schedule Assistant



- Perpetual Calendar—Enter 99 events per day.
- Print—One click prints any event or appointment list.
- Auto Dialer—Connects YOU, not your modem.
- AREXX Port—Commands any timed event or action.
- Notepad—Click on any word to open text editor.
- Voice and Sound Reminders & much more!

Suggested Retail \$79.95 Ask your dealer or contact:



Gramma

Software For Your Own Good

17730 15th Avenue N.E.

Suite 223

Seattle, Washington 98155

(206) 363-6417

Distant Armies

A Playing History of Chess

Journey to distant times and distant places. Survey the evolution of chess since the invention of *chaturanga* over a thousand years ago in India. Features include both 2D and 3D views, several levels of difficulty, and extensive online descriptions of the rules and history of each game in the set.



Play and learn ten historic forms of chess for \$44.95:

Chaturanga, Shatranj, Burnese, Chinese, Byzantine, Mediaeval, Courier, Turkish, Decimal, and Los Alamos

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

STEP INTO THE 21ST CENTURY

WITH THE

MIND LIGHT

The Light Price*
\$178

Visual Aural Animation
P.O. Box 4898
Arcata, Calif. 95521
(707) 822-4800

*SALE PRICE thru May Reg. \$198

InfoMarket

MASTERPIECE PROFESSIONAL FONT COLLECTION®

20 DISK SET

The Largest Collection Of Fonts And Clip Art Available In A Single Package For The AMIGA.

100 DIFFERENT FONT STYLES

This doesn't mean 10 sizes of 11 fonts. It means 110 DIFFERENT Fonts.

LARGES SIZES • HI-RES

Specially Designed For Video Work. 95% of the fonts are over 100 pt. tall. There are thousands of objects and examples.

PATTERN CLIP ART

141 hi-res DPaint II pages. There are thousands of objects and examples.

BRUSHES

2 Disks Full Of Color Brushes

COLORFONTS

4 Disks Full Of Colorfonts

100 PAGE MANUAL

Full Size Font Printouts

20 DISK SET • ONLY \$199.00

VISA / MC • COD • Company Check

Contact your local AMIGA dealer or order direct from AROCK Computer Software
1306 E. Sunshine, Springfield, MO 65804
1-800-288-AROK

FULL COLOUR AMIGA™ DISK LABELS

- * Available as single labels or as pin-feed
- * Easy to remove
- * Magnificent design (full colour offset)
- * Shipment all over the world by airmail

single labels: \$ 7.50/100 pcs | pin feed: \$ 7.50/100 pcs
\$ 75.00/1000 pcs | \$ 60.00/1000 pcs

Postage \$2.50. No postage on 1000 labels or more. Send Int'l money order or cash to:
N. Praat Romanlaan 7 NL-4527 BD AARDENBURG Holland
Cheques: add \$2.50

TRY BEFORE YOU BUY!

Best selling games, utilities,
and classics plus new releases!

- 100's of titles
- Low prices
- Same day shipping
- Free brochure



RENT-A-DISC

Frederick Bldg. #220
Huntington, WV 25701
(304) 529-3232



Yes We Accept:

Free: Amiga Demo Programs

Have you ever wished you could see a program running before you bought it? We will send you actual manufacturers demos of programs we offer, for free, for you to try on your computer. Send us your name and address, we'll send you a demo program, free:

We ship
anywhere in
the world!

Forethought
P.O. Box 1221
Lewiston, NY 14092

MicroEd

Educational Software K thru ADULT

ALL CURRICULAR AREAS • INCLUDES RELIGIOUS PROGRAMS
SEND FOR A LIST OF OUR SOFTWARE

MicroEd, Incorporated
P.O. Box 24750
Edina, MN 55424
612-929-2242

Public Domain Software Resource

The New Amiga Public Domain Service that lets you **Choose only the programs you want!** Hundreds of programs available. Send now for our free catalog!

PDSResource

PO Box 7175, Loma Linda, CA 92354



Only \$6.00
per Disk.

AutoKick 1.3

For the AMIGA 1000

(500/2000 needs extra equipment)

- NOT copy protected -

Packaged with an extensive manual

Available NOW for \$US29-95

(Including Air Mail)

DigiSoft

12 Dinmore Street, Moorooka,
BRISBANE, Queensland, Australia. 4105
Telephone (617) 277-3255
Visa/Mastercard/Bankcard accepted

Modify your Kickstart to perform software autoconfiguration of contiguous blocks of memory - Perform an internal addmem of another block of fast memory to speed up rebooting - Install a font of your choice in place of Topaz-8 - Speed up your drives - Install Virus protection code - Prevent or reduce the clicking of empty drives - Boot from any external floppy drive.

Coded entirely in assembler

Has a full Intuition Interface - all operations selectable from gadgets

Runs from CLI or WB

PD NUDES 1

THE ULTIMATE AMIGA GRAPHICS DEMO

Public domain collection of nudes fill each 880K disk. Order PD NUDES disk 1, 2 or 3 for \$10 each or all 3 for \$25. You must be 18 or over to order. Send check (cash/money order NOT accepted) to:

Data Foundations, Dept. 100B, 2208 Meloy Rd., Kent, OH 44240



DisQue ADULT PD !!

All Pictures High Quality HAM /IFF

Each Disk has Slide Show or Individual "Point & Click" Viewer

Now Available Disk #'s 1 • 2 • 3 • 4 • 5 • 6

ONLY \$6.95 PER DISK
plus \$2.60 S&H per order
Send To: DisQue
P.O. Box 1161 • Safety Harbor, FL 34695
(813) 725-2254

Specify which disks you would like when ordering and PLEASE include a statement that you are 18 years of age or older

NEW SeXXXxxxxxxxxxxxxxxxxxxxx

The most compelling art models ever digitized. All in full-color IFF-HAM with Player. FOR ADULTS !

ONE DISK \$8.00 - THREE DISK SET \$20

You Must Provide A Signed Statement That You Are 18 or Over.....
DigitalPub-257 - 1029 Peachtree NE Atlanta, GA 30309

The InfoMarket

AMIGAWORLD'S InfoMarket is a great opportunity for those with AMIGA products to reach over 95,000 Amiga owners. AmigaWorld is the only publication with a subscription offer reaching every new Amiga owner, national newsstand distribution by ICD Hearst, and single copy sales in computer stores carrying the AMIGA as well as large bookstores such as B. Dalton and Walden Books.

To reserve your 1/12 or 1/9 page display ad call Heather Paquette at 1-800-441-4403. We accept checks, money orders, MasterCard or VISA.

NEW FEATURES

Here is a partial list of Digi-Paint 3's new features:

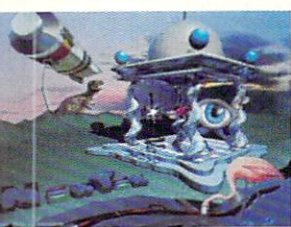
- **Super BitMaps with Auto-Scrolling** — Real-time scrolling on up to 1024 pixels high or wide super bitmaps.
- **Texture Mapping with Anti-Aliasing** — Allows unlimited re-mapping of any brush to any shape with anti-aliasing.
- **Colorize** — Play Ted Turner and add color to black-and-white images or change colors on already colored images.
- **100% Assembly Language** — Makes Digi-Paint 3 the fastest HAM paint program ever!
- **Advanced User Interface** — Greatly simplifies painting by logically placing all the tools at your fingertips — Implemented by renowned Amiga artist Jim Sachs.
- **Variable Dither** — Computed internally at 30 bits per pixel (over one billion colors). Works with any brush re-mapping or warping operations and in all paint modes.
- **Flexible Text Rendering** — Allows for anti-aliased fonts, rainbow fonts and works with all brush warping/transparency controls and paint modes.
- **User-Controllable Transparency** — Allows real time control of the amount of transparency at the edge or hotspot of the brush and the location of the light source during re-paint.
- **Transfer 24** — Digi-Paint 3 comes with Transfer 24 image processing software to give you support of all Amiga resolution and display modes.
- **Other New Features** — Change resolution within program, Coordinates, Undo/Repeat, Overscan (normal and severe), brush rotation and tiling, new drawing and cutting tools, new paint modes, expanded palette, supports ARexx™ keyboard equivalents, X Specs™ 3D compatible and many more.

(left, top) The Texture Mapping and Transparency control can be used for an infinite number of effects.

(left, bottom) This image by premiere Amiga artist Jim Sachs demonstrates the use of Transparency for montage effect.

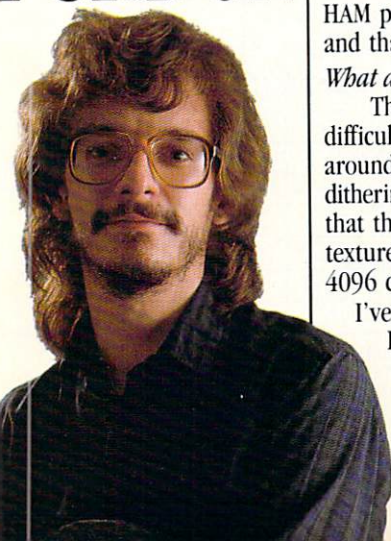
(below, top) Salvador Dali-rained Louis Markoya combines various elements to create impressive original computer artwork.

(below, bottom) The Text Rendering controls give you incredible font power.



Digi-Paint 3's advanced text rendering gives you:
Rainbow Fonts
Warped Fonts
Anti-Aliased Fonts
Transparent Fonts

INTERVIEW WITH JAMIE PURDON



What were your design goals in programming Digi-Paint 3?

I wanted to really explore the power of HAM mode. With all those colors, it's possible to create very sophisticated effects. I wanted to give people the power of high-end graphics workstations. I'm really pleased with the work that Jim Sachs did with the interface, his implementation makes Digi-Paint 3 the easiest-to-use paint program I've ever seen. I coded Digi-Paint 3 entirely in assembly language, because speed is crucial to a paint program. The other HAM paint programs on the market are slow and bulky, and that really gets in the way of being creative.

What are you most proud of?

The real-time Auto-Scrolling is very useful, and was difficult to implement. The dithering routines are the best around because I use 30 bits per pixel accuracy to calculate dithering, which is over 1 billion colors internally. I'm sure that the feature people will like best is the anti-aliased texture mapping. This feature gives you the cleanest warped 4096 color image available on any Amiga paint program.

I've spent the last 2½ years working on Digi-Paint 3.

I'm very proud of the program and am sure it will be successful.

THE 4,096 PRIZE CONTEST

Win a Video Toaster! Yes, by merely upgrading to Digi-Paint 3 and sending in your completed contest entry form, you are entered into the Incredible 4,096 Prize Contest. The Grand Prize winner will be whisked off to NewTek to become the first outside person to visit the Alcatraz Research Laboratory, the #1 Amiga R&D facility whose location is unknown even to many NewTek employees. Besides spending a weekend seeing incredible technological marvels and enjoying the usual and unusual NewTek entertainments, the grand prize winner receives an Amiga 2500 system with the Video Toaster installed. Other winners receive Video Toasters, complete Digi-View Gold digitizing systems, NewTek jackets, or a lifetime supply of cinnamon cats.

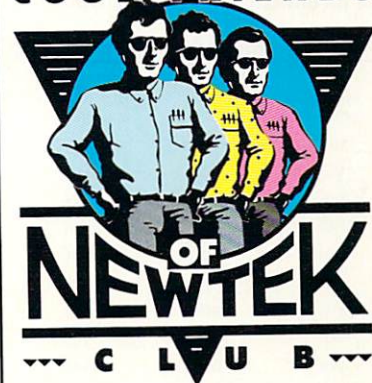
1 GRAND PRIZE — 3 days/2 nights trip for one to NewTek and the Alcatraz Research Laboratory and a complete Amiga 2500 Video Toaster system and thousands of dollars of other prizes, including a lifetime* supply of cinnamon cats.
5 FIRST PRIZES — Video Toaster card for the Amiga 2000 and 150 cinnamon cats.

15 SECOND PRIZES — Complete Digi-View Gold system including camera and copy stand and 75 cinnamon cats.

30 THIRD PRIZES — A NewTek jacket and 25 cinnamon cats.

*For the purpose of this Sweepstakes, 1420 cinnamon cats has been determined to be a lifetime supply. Contest void where prohibited or restricted by law. No purchase is necessary to enter. Entries must be received by 1/19/90. For complete rules and instructions on how to enter, write to NewTek, Contest Rules; 115 West Crane Street, Topeka, KS 66603 and include a self-addressed, stamped envelope.

COOL FRIENDS



Have you ever dreamed of owning a desktop fusion reactor? Have you considered producing your own movie? Are you troubled by such mysteries as why *the fifth dentist doesn't recommend sugarless gum for his patients who chew*

gum? If you can answer yes to any of these questions, and buy any product direct from NewTek, then you are eligible for The Cool Friends of NewTek Club, where scientific inquiry isn't just a good idea, it's the law. As a member, you will receive NewTek Demo Reels, NewTek lifestyle kits, information on new products and other essential items. Be seeing you!

UPGRADE YOUR DIGI-PAINT TO DIGI-PAINT 3

If you own Digi-Paint, you can upgrade to the incredible power of Digi-Paint 3, enter the 4,096 Prize Contest and become a member of the Cool Friends of NewTek all at the same time! Just send us page 56 of your Digi-Paint manual along with a check, money order or VISA/MasterCard number for \$29.95 plus \$6 shipping and handling, and we'll send you a complete copy of Digi-Paint 3, including the box, expanded manual, software (including Transfer 24), contest entry form and CFONC application. Your friends will be suitably envious and respectful. Upgrade offer expires August 31, 1989.

ATTENTION PHOTON PAINT™ EXPRESS PAINT™ DELUXEPAINT™ I or II AND DELUXEPHOTO LAB™ OWNERS!

We don't want you to feel left out of the inevitable march of progress just because you happened to purchase an older, less well-equipped paint program. If you have a copy of DeluxePaint I or II, Deluxe PhotoLab, Express Paint or PhotonPaint, we've made it possible for you to upgrade these programs to Digi-Paint 3. Just tear out page 6 from your paint program's manual and send it to us along with a check, money order or VISA/MasterCard number for \$49.95 plus \$6 shipping and handling; we'll send you a complete copy of Digi-Paint 3, including the box, expanded manual, software (including Transfer 24), contest entry form and CFONC application. Your life will never be the same. Act fast; this offer expires August 31, 1989.

HAM PAINT PROGRAM COMPARISON

The following table shows how Digi-Paint 3 compares to the other HAM paint programs. Only advanced paint programs that utilize all 4096 colors of the HAM mode are compared here; paint programs like DeluxePaint II that use only 32 colors are not included in the comparison.

Feature	PhotoLab™	PhotonPaint™	Digi-Paint 3™
Basic paint features	yes	yes	yes
User Definable Warping	no	no	yes
Transparency w/any mode	no	no	yes
Super BitMaps	yes	no	yes
Auto-Scrolling	no	no	yes
Blur	no	no	yes
Range Paint	no	no	yes
Colorize	no	no	yes
Anti-aliased resize	yes	no	yes
Anti-aliased text	no	no	yes
Image processing	yes	no	yes
Works in 512K	no	yes	yes
Save to any resolution	yes	no	yes
100% assembly language	no	no	yes
Price	\$149.95	\$99.95	\$99.95

Digi-View Gold, Digi-Paint 3, Digi-Droid, Video Toaster, Transfer 24, NewTek Times, Cool Friends of NewTek Club and Alcatraz Research Laboratory are all trademarks of NewTek, Inc. Amiga is a trademark of Commodore-Amiga, Inc. PhotonPaint is a trademark of MicroIllusions, Inc. Express Paint is a trademark of Professional Automation Resources, Inc. Deluxe PhotoLab and DeluxePaint I and II are trademarks of Electronic Arts. This issue of the NewTek Times is copyright © 1989 NewTek, Inc. All rights reserved. Lawyers must have very tiny eyes to read type this size, don't you think?

Circle 102 on Reader Service card



NewTek
INCORPORATED

115 W. Crane St.
Topeka, Kansas 66603

DIGI-VIEW GOLD

NewTek's best-selling Digi-View video digitizer has become Digi-View Gold, completely redesigned for the Amiga 500 and 2000 lines of computers. The hardware plugs directly into the parallel port, and the new circuitry reduces the noise in the system for better quality images. And the Digi-View 3.0 software provides overscan and extra halfbrite support, as well as the line art mode for digitizing logos. Digi-View Gold is the best video digitizer for the Amiga, and the perfect companion to Digi-Paint 3.

VIDEO TOASTER UPDATE

Work proceeds at a feverish pace to bring the Video Toaster to market. As of this writing, major new features have been added to the Video Toaster that will forever alter the way that professional and amateur video is produced. Look for the next exciting edition of the NewTek Times with full details of the Video Toaster!

SHIP TO:

Name (Please Print)

Address Note: UPS Cannot Deliver to a P.O. Box

City, State, Zip Code

Telephone Number

Telephone Orders: (800) 843-8934 or (913) 354-1146

Mail Orders:

- ☐ My check or money order payable to NewTek, Inc. is enclosed.
☐ Please charge my: ☐ VISA ☐ MasterCard

Account #

Expiration Date

Signature

(as printed on card)

ITEM	PRICE	SHIPPING/ HANDLING	TOTAL
Digi-Paint 3	99.95	6.00	
*Digi-Paint Owner Upgrade	29.95	6.00	
*Competitive Upgrade	49.95	6.00	
Digi-View Gold	199.95	6.00	
Digi-Droid	79.95	6.00	
Panasonic WV-1410	279.95	8.00	
CS-1L Copy Stand	74.95	10.00	
Digi-View 3.0 Upgrade	14.95	3.00	
GRAND TOTAL			

(Shipping charge w/in US only.)

Send to NewTek, Inc., 115 W. Crane St., Topeka, KS 66603
Please allow 4-6 weeks for delivery.

*See Upgrade article on this page for more information.

TO RECEIVE MORE INFORMATION



TEAR

out the perforated card.
Please print or type your
name and address where
indicated.

CIRCLE

the numbers on the card
that correspond to the
reader service numbers on
the advertisements that
interest you.

ORDER

a one year subscription to
AmigaWorld by circling 500
on the card.

MAIL

the card with your check,
money order or U.S.
currency to:
AmigaWorld
Reader Service
Management Department
P.O. Box 5170
Pittsfield, MA 01203-5170
Or, you may request billing.

LOOK FOR

your subscription in 10 to
12 weeks.

REMEMBER

to put the proper postage
on the card.

READER SERVICE

☐ Mr.
☐ Mrs.
☐ Ms. Name _____
Title _____
Address _____
City/State/Zip _____
Telephone _____

- A. Do you own an Amiga?
☐ 1. Yes ☐ 2. No
- B. If no, will you purchase one of the following?
☐ 3. Amiga 500 ☐ 6. Other (please specify)
☐ 4. Amiga 2000 ☐ 7. I currently have no purchasing plans.
☐ 5. Amiga 2500
- C. Would you purchase an Amiga magazine which had a bound-in disk of demo programs, tutorials, etc.?
☐ 8. Yes ☐ 9. No
- D. Which software packages will you purchase in the next 12 months? (Please choose all that apply.)
☐ 10. Entertainment ☐ 17. Database Management
☐ 11. Word Processing ☐ 18. Financial Management
☐ 12. Communications ☐ 19. Graphics
☐ 13. Spreadsheets ☐ 20. Education
☐ 14. Home Productivity ☐ 21. Music
☐ 15. Programming

- ☐ 22. Animation ☐ 24. CAD/CAM
☐ 23. Sound/Speech ☐ 25. Other
- E. Which peripherals will you purchase in the next 12 months? (Please choose all that apply.)
☐ 26. Monitor ☐ 32. Gen Lock or Frame Grabber
☐ 27. Dot Matrix Printer ☐ 33. Music Hardware
☐ 28. Modem ☐ 34. Color Printer
☐ 29. Memory Expansion ☐ 35. Laser Printer
☐ 30. 3 1/2" Floppy Drive
☐ 31. Hard Disk Drive
- F. If you are not a subscriber, please circle 499 on this card.
- G. If you would like a one year subscription to AmigaWorld (12 issues), please circle 500 on this card. Each subscription is \$29.97. Canada and Mexico \$38.97. Foreign Surface, \$49.97. Foreign Airmail \$84.97 (U.S. Funds Drawn on U.S. Bank). Orders from outside of North America must be prepaid. Please allow 10-12 weeks for delivery.

June card valid until August 31, 1989.

1	6	11	16	21	201	206	211	216	221	401	406	411	416	421
2	7	12	17	22	202	207	212	217	222	402	407	412	417	422
3	8	13	18	23	203	208	213	218	223	403	408	413	418	423
4	9	14	19	24	204	209	214	219	224	404	409	414	419	424
5	10	15	20	25	205	210	215	220	225	405	410	415	420	425
26	31	36	41	46	226	231	236	241	246	426	431	436	441	446
27	32	37	42	47	227	232	237	242	247	427	432	437	442	447
28	33	38	43	48	228	233	238	243	248	428	433	438	443	448
29	34	39	44	49	229	234	239	244	249	429	434	439	444	449
30	35	40	45	50	230	235	240	245	250	430	435	440	445	450
51	56	61	66	71	251	256	261	266	271	451	456	461	466	471
52	57	62	67	72	252	257	262	267	272	452	457	462	467	472
53	58	63	68	73	253	258	263	268	273	453	458	463	468	473
54	59	64	69	74	254	259	264	269	274	454	459	464	469	474
55	60	65	70	75	255	260	265	270	275	455	460	465	470	475
76	81	86	91	96	276	281	286	291	296	476	481	486	491	496
77	82	87	92	97	277	282	287	292	297	477	482	487	492	497
78	83	88	93	98	278	283	288	293	298	478	483	488	493	498
79	84	89	94	99	279	284	289	294	299	479	484	489	494	499
80	85	90	95	100	280	285	290	295	300	480	485	490	495	500
101	106	111	116	121	301	306	311	316	321	501	506	511	516	521
102	107	112	117	122	302	307	312	317	322	502	507	512	517	522
103	108	113	118	123	303	308	313	318	323	503	508	513	518	523
104	109	114	119	124	304	309	314	319	324	504	509	514	519	524
105	110	115	120	125	305	310	315	320	325	505	510	515	520	525
126	131	136	141	146	326	331	336	341	346	526	531	536	541	546
127	132	137	142	147	327	332	337	342	347	527	532	537	542	547
128	133	138	143	148	328	333	338	343	348	528	533	538	543	548
129	134	139	144	149	329	334	339	344	349	529	534	539	544	549
130	135	140	145	150	330	335	340	345	350	530	535	540	545	550
151	156	161	166	171	351	356	361	366	371	551	556	561	566	571
152	157	162	167	172	352	357	362	367	372	552	557	562	567	572
153	158	163	168	173	353	358	363	368	373	553	558	563	568	573
154	159	164	169	174	354	359	364	369	374	554	559	564	569	574
155	160	165	170	175	355	360	365	370	375	555	560	565	570	575
176	181	186	191	196	376	381	386	391	396	576	581	586	591	596
177	182	187	192	197	377	382	387	392	397	577	582	587	592	597
178	183	188	193	198	378	383	388	393	398	578	583	588	593	598
179	184	189	194	199	379	384	389	394	399	579	584	589	594	599
180	185	190	195	200	380	385	390	395	400	580	585	590	595	600

June card valid until August 31, 1989.

☐ Mr.
☐ Mrs.
☐ Ms. Name _____
Title _____
Address _____
City/State/Zip _____
Telephone _____

- A. Do you own an Amiga?
☐ 1. Yes ☐ 2. No
- B. If no, will you purchase one of the following?
☐ 3. Amiga 500 ☐ 6. Other (please specify)
☐ 4. Amiga 2000 ☐ 7. I currently have no purchasing plans.
☐ 5. Amiga 2500
- C. Would you purchase an Amiga magazine which had a bound-in disk of demo programs, tutorials, etc.?
☐ 8. Yes ☐ 9. No
- D. Which software packages will you purchase in the next 12 months? (Please choose all that apply.)
☐ 10. Entertainment ☐ 17. Database Management
☐ 11. Word Processing ☐ 18. Financial Management
☐ 12. Communications ☐ 19. Graphics
☐ 13. Spreadsheets ☐ 20. Education
☐ 14. Home Productivity ☐ 21. Music
☐ 15. Programming

- ☐ 22. Animation ☐ 24. CAD/CAM
☐ 23. Sound/Speech ☐ 25. Other
- E. Which peripherals will you purchase in the next 12 months? (Please choose all that apply.)
☐ 26. Monitor ☐ 32. Gen Lock or Frame Grabber
☐ 27. Dot Matrix Printer ☐ 33. Music Hardware
☐ 28. Modem ☐ 34. Color Printer
☐ 29. Memory Expansion ☐ 35. Laser Printer
☐ 30. 3 1/2" Floppy Drive
☐ 31. Hard Disk Drive
- F. If you are not a subscriber, please circle 499 on this card.
- G. If you would like a one year subscription to AmigaWorld (12 issues), please circle 500 on this card. Each subscription is \$29.97. Canada and Mexico \$38.97. Foreign Surface, \$49.97. Foreign Airmail \$84.97 (U.S. Funds Drawn on U.S. Bank). Orders from outside of North America must be prepaid. Please allow 10-12 weeks for delivery.

1	6	11	16	21	201	206	211	216	221	401	406	411	416	421
2	7	12	17	22	202	207	212	217	222	402	407	412	417	422
3	8	13	18	23	203	208	213	218	223	403	408	413	418	423
4	9	14	19	24	204	209	214	219	224	404	409	414	419	424
5	10	15	20	25	205	210	215	220	225	405	410	415	420	425
26	31	36	41	46	226	231	236	241	246	426	431	436	441	446
27	32	37	42	47	227	232	237	242	247	427	432	437	442	447
28	33	38	43	48	228	233	238	243	248	428	433	438	443	448
29	34	39	44	49	229	234	239	244	249	429	434	439	444	449
30	35	40	45	50	230	235	240	245	250	430	435	440	445	450
51	56	61	66	71	251	256	261	266	271	451	456	461	466	471
52	57	62	67	72	252	257	262	267	272	452	457	462	467	472
53	58	63	68	73	253	258	263	268	273	453	458	463	468	473
54	59	64	69	74	254	259	264	269	274	454	459	464	469	474
55	60	65	70	75	255	260	265	270	275	455	460	465	470	475
76	81	86	91	96	276	281	286	291	296	476	481	486	491	496
77	82	87	92	97	277	282	287	292	297	477	482	487	492	497
78	83	88	93	98	278	283	288	293	298	478	483	488	493	498
79	84	89	94	99	279	284	289	294	299	479	484	489	494	499
80	85	90	95	100	280	285	290	295	300	480	485	490	495	500
101	106	111	116	121	301	306	311	316	321	501	506	511	516	521
102	107	112	117	122	302	307	312	317	322	502	507	512	517	522
103	108	113	118	123	303	308	313	318	323	503	508	513	518	523
104	109	114	119	124	304	309	314	319	324	504	509	514	519	524
105	110	115	120	125	305	310	315	320	325	505	510	515	520	525
126	131	136	141	146	326	331	336	341	346	526	531	536	541	546
127	132	137	142	147	327	332	337	342	347	527	532	537	542	547
128	133	138	143	148	328	333	338	343	348	528	533	538	543	548
129	134	139	144	149	329	334	339	344	349	529	534	539	544	549
130	135	140	145	150	330	335	340	345	350	530	535	540	545	550
151	156	161	166	171	351	356	361	366	371	551	556	561	566	571
152	157	162	167	172	352	357	362	367	372	552	557	562	567	572
153	158	163	168	173	353	358	363	368	373	553	558	563	568	573
154	159	164	169	174	354	359	364	369	374	554	559	564	569	574
155	160	165	170	175	355	360	365	370	375	555	560	565	570	575
176	181	186	191	196	376	381	386	391	396	576	581	586	591	596
177	182	187	192	197	377	382	387	392	397	577	582	587	592	597
178	183	188	193	198	378	383	388	393	398	578	583	588	593	598
179	184	189	194	199	379	384	389	394	399	579	584	589	594	599
180	185	190	195	200	380	385	390	395	400	580	585	590	595	600

TO RECEIVE MORE INFORMATION



TEAR

out the perforated card.
Please print or type your
name and address where
indicated.

CIRCLE

the numbers on the card
that correspond to the
reader service numbers on
the advertisements that
interest you.

ORDER

a one year subscription to
AmigaWorld by circling 500
on the card.

MAIL

the card with your check,
money order or U.S.
currency to:
AmigaWorld
Reader Service
Management Department
P.O. Box 5170
Pittsfield, MA 01203-5170
Or, you may request billing.

LOOK FOR

your subscription in 10 to
12 weeks.

REMEMBER

to put the proper postage
on the card.

READER SERVICE



PLEASE USE
FIRST CLASS
LETTER
POSTAGE

AmigaWorld
Reader Service
Management Department
P.O. Box 5170
Pittsfield, MA 01203-5170



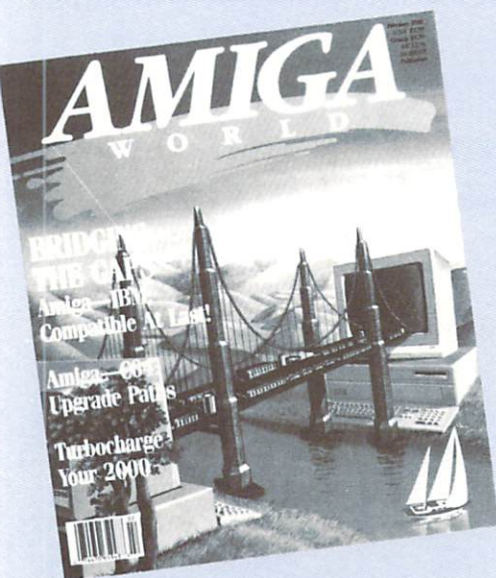
PLEASE USE
FIRST CLASS
LETTER
POSTAGE

AmigaWorld
Reader Service
Management Department
P.O. Box 5170
Pittsfield, MA 01203-5170



AMIGA WORLD

**Subscribe Now
And Save
37% OFF
The Cover Price**



- *AmigaWorld*...the only high-quality Amiga-specific magazine on the market. It's as fresh and dazzling as the computer itself!
- *AmigaWorld*...where expert authors will lead you through the exciting and revolutionary features of the Amiga!
- *AmigaWorld*...helping you discover and utilize a whole new world of computer graphics and sounds!
- *AmigaWorld*...because creative computing was never so exciting and easy!

**Get 12 Issues
of AmigaWorld for
\$29.97.
That's 37% Off The
Basic Newsstand Price!**

The IDG Communications Guarantee

As the world's largest publisher of computer-related information, we unconditionally guarantee your *AmigaWorld* subscription. If you're not completely satisfied, tell us. We'll refund the full price of your subscription—no questions asked.

YES!

I want to save 37% off the newsstand rate. Enter my 12 issue subscription to *AmigaWorld* for the low subscription price of \$29.97. If I'm not satisfied at any time, I will receive a full refund—no questions asked!

☐ Bill Me

☐ Payment Enclosed

Name _____

Address _____

City _____ State _____ Zip _____

Please make checks payable to *AmigaWorld*.

Canada & Mexico \$38.97, Foreign Surface \$49.97, Foreign Airmail \$84.97 (U.S. Funds drawn on U.S. Bank). Prepayment is required on all Foreign Surface and Foreign Airmail orders. All prices are 1 year only. Please allow 6-8 weeks for delivery.

AMIGA WORLD

4A6G3

YES!

I want to save 37% off the newsstand rate. Enter my 12 issue subscription to *AmigaWorld* for the low subscription price of \$29.97. If I'm not satisfied at any time, I will receive a full refund—no questions asked!

☐ Bill Me

☐ Payment Enclosed

Name _____

Address _____

City _____ State _____ Zip _____

Please make checks payable to *AmigaWorld*.

Canada & Mexico \$38.97, Foreign Surface \$49.97, Foreign Airmail \$84.97 (U.S. Funds drawn on U.S. Bank). Prepayment is required on all Foreign Surface and Foreign Airmail orders. All prices are 1 year only. Please allow 6-8 weeks for delivery.

AMIGA WORLD

4A6G3

YES!

I want to save 37% off the newsstand rate. Enter my 12 issue subscription to *AmigaWorld* for the low subscription price of \$29.97. If I'm not satisfied at any time, I will receive a full refund—no questions asked!

☐ Bill Me

☐ Payment Enclosed

Name _____

Address _____

City _____ State _____ Zip _____

Please make checks payable to *AmigaWorld*.

Canada & Mexico \$38.97, Foreign Surface \$49.97, Foreign Airmail \$84.97 (U.S. Funds drawn on U.S. Bank). Prepayment is required on all Foreign Surface and Foreign Airmail orders. All prices are 1 year only. Please allow 6-8 weeks for delivery.

AMIGA WORLD



BUSINESS REPLY MAIL

FIRST-CLASS PERMIT NO. 1247 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

IDG Communications/Peterborough
AmigaWorld
P.O. Box 50365
Boulder, CO 80321-0365



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED
STATES



BUSINESS REPLY MAIL

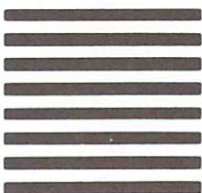
FIRST-CLASS PERMIT NO. 1247 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

IDG Communications/Peterborough
AmigaWorld
P.O. Box 50365
Boulder, CO 80321-0365



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED
STATES



BUSINESS REPLY MAIL

FIRST-CLASS PERMIT NO. 1247 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

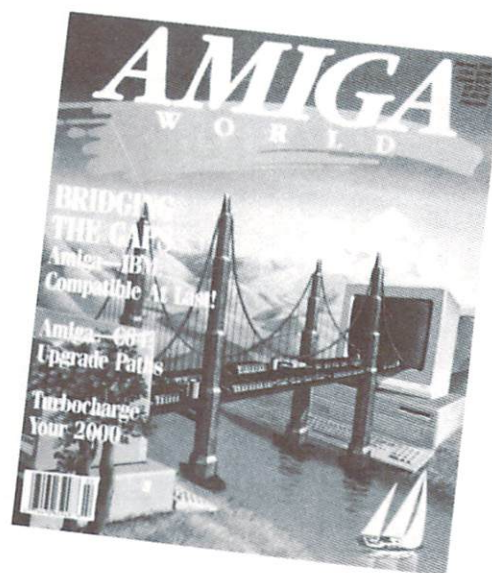
IDG Communications/Peterborough
AmigaWorld
P.O. Box 50365
Boulder, CO 80321-0365



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED
STATES



**Subscribe Now
And Save
37% OFF
The Cover Price**



- *AmigaWorld*. . .the only high-quality Amiga-specific magazine on the market. It's as fresh and dazzling as the computer itself!
- *AmigaWorld*. . .where expert authors will lead you through the exciting and revolutionary features of the Amiga!
- *AmigaWorld*. . .helping you discover and utilize a whole new world of computer graphics and sounds!
- *AmigaWorld*. . .because creative computing was never so exciting and easy!

**Get 12 Issues
of AmigaWorld for
\$29.97.**

**That's 37% Off The
Basic Newsstand Price!**

The IDG Communications Guarantee

As the world's largest publisher of computer-related information, we unconditionally guarantee your *AmigaWorld* subscription. If you're not completely satisfied, tell us. We'll

Save
\$17.43

Off the Cover Price on



Order Today!

Mail the attached card or

Call Toll-Free

-800-258-5473



SAVINGS
AMT.

SEVENTEEN AND $\frac{43}{100}$

DOLLARS

\$ 17.43

TO THE NAME _____
ORDER OF _____

ADDRESS _____

CITY _____

STATE _____

ZIP _____

☐ YES, I want to save \$17.43 on my AMIGAWORLD
subscription. Please send me 12 issues for \$29.97

☐ Payment Enclosed

(please make check payable to AMIGAWORLD)

☐ Bill Me.

Canada & Mexico \$38.97,
Foreign Surface \$49.97,
Foreign Airmail \$84.97
(U.S. Funds drawn on U.S.
Bank). Prepayment is re-
quired on all Foreign Sur-
face and Foreign Airmail
orders. All prices are 1 year
only. Please allow 6-8
weeks for delivery.

4A6A6

No. 1988

SAVINGS CHECK

**BUSINESS REPLY CARD**

FIRST-CLASS PERMIT NO. 1247 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

IDG Communications/Peterborough



P.O. Box 50365

Boulder, CO 80321-0365



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



SAVE
\$17.43
OFF THE
COVER PRICE

ON

AMIGA
WORLD**ORDER TODAY!**Mail the Attached Card
or Call Toll-Free**1-800-258-547**

DIGI-PAINT 3 TAKES OFF!

(below) This image demonstrates the use of Texture Mapping (the cube and perspective floor), user controllable Transparency (the reflections on the floor and the wall) and the 4096 color Hold and Modify mode.



NewTek has launched the latest in Amiga graphics technology, and computer artwork will never be the same. This article looks at some of the most important new features of Digi-Paint 3.

Wait a minute — what happened to Digi-Paint 2? “Well, this new version is about three orders of magnitude better than Digi-Paint,” explained Tim Jenison, president of NewTek. “And it’s the result of over three man-years of software development. So the name ‘Digi-Paint 3’ really fits.”

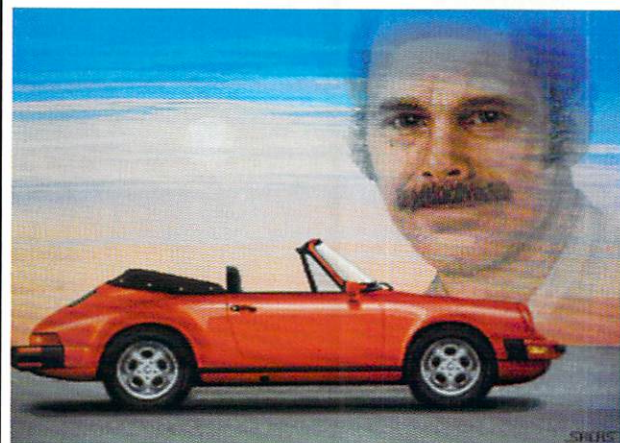
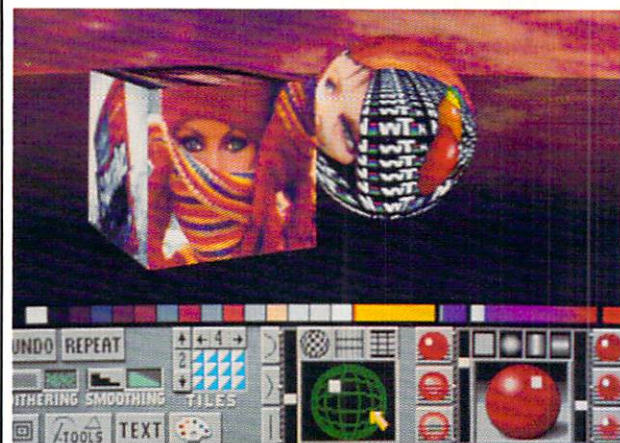
The user interface is the key to making the program’s power available so Digi-Paint 3’s interface received months of design work, and was implemented by Jim Sachs (renowned as the premier Amiga artist). The result makes using the program simple for both beginning and advanced artists. When you’re using super bit maps that can be up to 1024 pixels high or wide, navigating on the bitmap is no problem. Just move the pointer to the edge of the screen, and Digi-Paint 3’s real-time Auto-Scrolling allows you to easily move to another part of the bitmap or perform global screen operations.

Digi-Paint 3 works in the Amiga’s unique Hold-And-Modify (HAM) mode, making all 4,096 colors of the Amiga palette available at once.

The Transfer 24 software included with Digi-Paint 3 turns your Amiga into the ultimate image manipulation workstation. Convert your HAM pictures to any Amiga resolution and display mode (including halfbrite and hi-res) with the same advanced pixel synthesis and averaging algorithms used with NewTek’s best-selling Digi-View Gold video digitizer. Transfer 24 also gives you complete control of the RGB levels, contrast, brightness, saturation and sharpness of your images, as well as the ability to remap them to any palette.

The 11 different drawing modes in Digi-Paint 3 give you different ways of applying paint to the screen. The Range Painting mode lets you blend colors and create smooth gradient-filled backgrounds. Using Colorize mode, a black and white picture turns into lifelike color.

Resizing a custom brush looks terrific with Digi-Paint 3’s sophisticated Smoothing power. Smoothing, also known as



“Digi-Paint 3’s unlimited transparency control allows me to easily create effects that would quite simply be impossible on other paint programs” — Jim Sachs

anti-aliasing, is the process of adding intermediate colors to reduce the “jaggies” that normally result when you resize.

Digi-Paint 3 adds another dimension to painting with powerful and flexible anti-aliased Texture Mapping: multiple levels of warping and control of the location and type of warping (horizontal, vertical or point) are provided; fully variable transparency produces matchless subtlety and realism; varying the amount of warping or transparency as the brush is re-drawn is possible.

The Transparency controls add translucency to any painting operation in any drawing mode (including Texture Mapping).

The advanced text handling of Digi-Paint 3 lets you render any Amiga font in any drawing mode. The Smoothing function in the Text Rendering controls uses anti-aliasing to make the text appear sharper and of greater resolution. This is perfect for video work.

Now that you’ve heard what we have to say, here are two of the most famous Amiga artists’ thoughts on Digi-Paint 3:

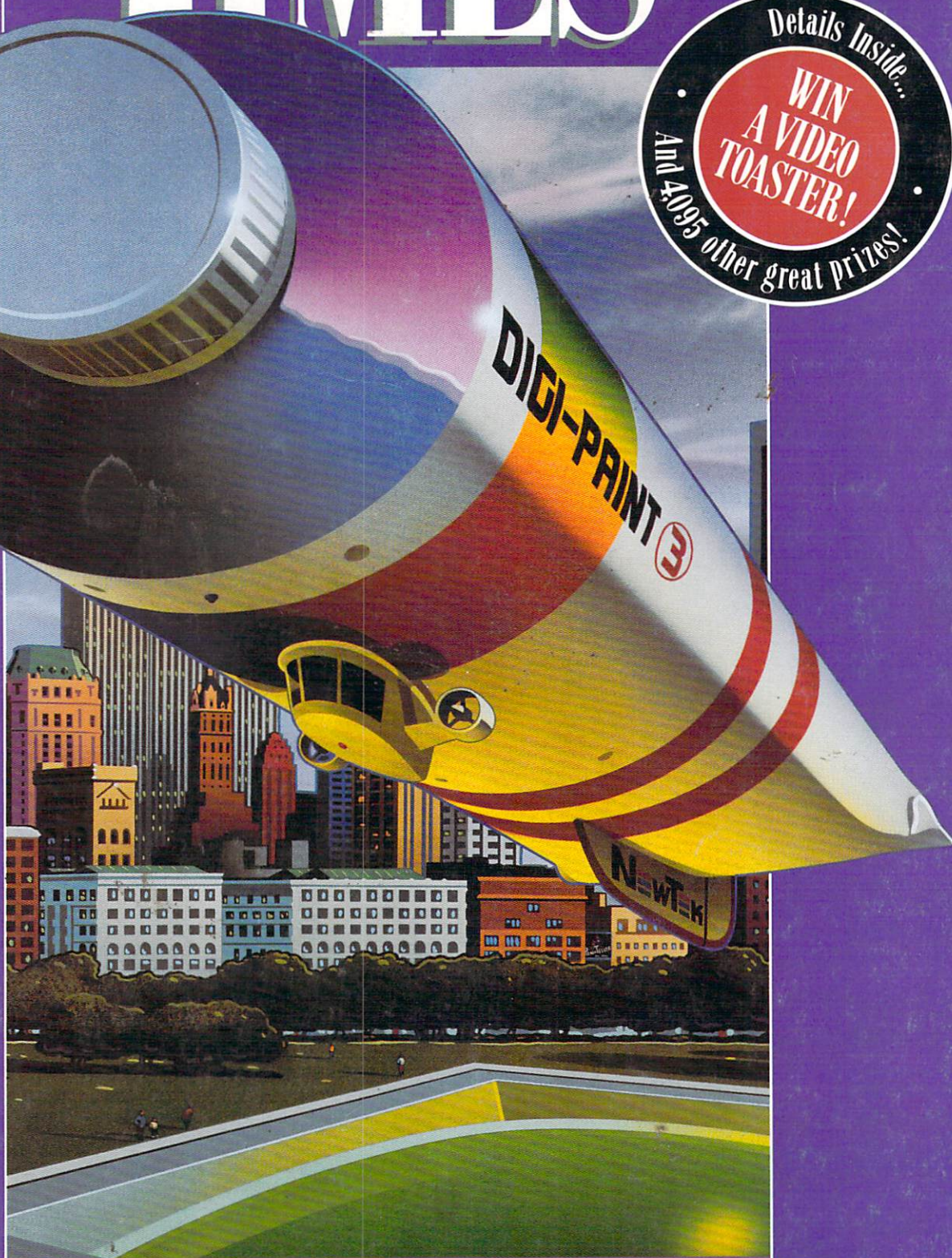
- “Digi-Paint 3’s unlimited transparency control allows me to easily create effects that would quite simply be impossible on other paint programs” — Jim Sachs
- “Digi-Paint 3 is not only a great stand-alone HAM paint program, but also the perfect companion for enhancing ray-traces and digitizations” — Louis Markoya

Turn to the last page of this newsletter to find out how to upgrade to Digi-Paint 3 and enter the 4096 Prize Contest.

NeWTeK TIMES



- Video Toaster Update
- New! Digi-View Gold
- Upgrade Any Paint Program to Digi-Paint 3



THE LAUNCHING OF DIGI-PAINT 3